Houghton Mifflin Harcourt Co
Form 10-K
February 28, 2019
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934, or

For the fiscal year ended December 31, 2018

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

Commission file number 001-36166

Houghton Mifflin Harcourt Company

(Exact name of registrant as specified in its charter)

Delaware	**27-1566372**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

125 High Street

Boston, MA 02110

(617) 351-5000

(Address, including zip code, and telephone number, including area code, of registrant s principal executive offices)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Name of each exchange on which registered**
Common Stock, $0.01 par value	**The Nasdaq Stock Market LLC**

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the Registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of Registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of large accelerated filer, accelerated filer smaller reporting company and emerging growth company in Rule 12b-2 of the Exchange Act.

Large accelerated filer	Accelerated filer
Non-accelerated filer	Smaller reporting company

Emerging growth company
If an emerging growth company, indicate by check mark if the Registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

The aggregate market value of the voting stock held by non-affiliates of the Registrant as of June 30, 2018, was approximately $787.5 million.

The number of shares of common stock, par value $0.01 per share, outstanding as of February 1, 2019 was 123,665,925.

Documents incorporated by reference and made a part of this Form 10-K:

The information required by Part III of this Form 10-K, to the extent not set forth herein, is incorporated herein by reference from the Registrant s Definitive Proxy Statement for its 2019 Annual Meeting of Stockholders, to be filed with the Securities and Exchange Commission not later than 120 days after December 31, 2018.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

The statements contained herein include forward-looking statements, which involve risks and uncertainties. These forward-looking statements can be identified by the use of forward-looking terminology, including the terms believes, estimates, projects, anticipates, expects, could, intends, may, will, should, forecast, intend, pl target or, in each case, their negative, or other variations or comparable terminology. Forward-looking statements include all statements that are not statements of historical facts. They include statements regarding our intentions, beliefs or current expectations concerning, among other things, our results of operations; financial condition; liquidity; prospects, growth and strategies; our competitive strengths; the industry in which we operate; the impact of new accounting guidance and tax laws; expenses; effective tax rates; future liabilities; the outcome and impact of pending or threatened litigation; decisions of our customers; education expenditures; population growth; state curriculum adoptions and purchasing cycles; the impact of dispositions, acquisitions and other investments; our share repurchase program; the timing, structure and expected impact of our operational efficiency and cost-reduction initiatives and the estimated savings and amounts expected to be incurred in connection therewith; and potential business decisions. We derive many of our forward-looking statements from our operating budgets and forecasts, which are based upon many detailed assumptions. We caution that it is very difficult to predict the impact of known factors, and, of course, it is impossible for us to anticipate all factors that could affect our actual results. All forward-looking statements are based upon information available to us on the date of this report.

By their nature, forward-looking statements involve risks and uncertainties because they relate to events and depend on circumstances that may or may not occur in the future. We caution you that forward-looking statements are not guarantees of future performance and that actual results may differ materially from those made in or suggested by the forward-looking statements contained herein. In addition, even if actual results are consistent with the forward-looking statements contained herein, those results or developments may not be indicative of results or developments in subsequent periods.

Important factors that could cause actual results to vary from expectations include, but are not limited to: changes in state and local education funding and/or related programs, legislation and procurement processes; changes in state academic standards; industry cycles and trends; the rate and state of technological change; state requirements related to digital instructional materials; changes in product distribution channels and concentration of retailer power; changes in our competitive environment, including free and low-cost open educational resources; periods of operating and net losses; our ability to enforce our intellectual property and proprietary rights; risks based on information technology systems and potential breaches of those systems; dependence on a small number of print and paper vendors; third-party software and technology development; possible defects in digital products; our ability to identify, complete, or achieve the expected benefits of, acquisitions; unanticipated consequences of the recently completed disposition of our Riverside clinical and standardized testing business; our ability to execute on our long-term growth strategy; increases in our operating costs; exposure to litigation; major disasters or other external threats; contingent liabilities; risks related to our indebtedness; future impairment charges; changes in school district payment practices; a potential increase in the portion of our sales coming from digital sales; risks related to doing business abroad; changes in tax law or interpretation; management and personnel changes; timing, higher costs and unintended consequences of our operational efficiency and cost-reduction initiatives; and other factors discussed in the Risk Factors section of our Annual Report on Form 10-K (this Annual Report). In light of these risks, uncertainties and assumptions, the forward-looking events described herein may not occur.

We undertake no obligation, and do not expect, to publicly update or publicly revise any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law. All subsequent written and oral forward-looking statements attributable to us or to persons acting on our behalf are expressly qualified in their entirety by the cautionary statements contained herein.

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Item 1. Business

As used in this Annual Report, the terms we, us, our, HMH and the Company refer to Houghton Mifflin Harcou Company, formerly known as HMH Holdings (Delaware), Inc., and its consolidated subsidiaries, unless otherwise expressly stated or the context otherwise requires.

Our Company

Houghton Mifflin Harcourt Company is a global learning company committed to delivering integrated solutions that engage learners, empower educators and improve student outcomes. We serve over 50 million students and three million teachers in more than 150 countries worldwide.

HMH focuses on the kindergarten through 12th grade (K-12) market and, in the United States, we are a market leader. We specialize in comprehensive core curriculum, supplemental and intervention solutions, as well as provide ongoing support in professional learning, coaching and technical services for educators and administrators. HMH offerings are rooted in learning science, and we work with research partners, universities and third-party organizations as we design, build, implement and iterate our offerings to maximize their effectiveness. We are purposeful about innovation, leveraging technology to create engaging and immersive experiences designed to deepen learning experiences for students and to extend teachers capabilities so that they can focus on making meaningful connections with their students.

HMH s diverse portfolio enables us to help ensure that every student and teacher has the tools needed for success. We are able to build deep partnerships with school districts and leverage the scope of our offerings to provide holistic solutions at scale with the support of our far-reaching sales force and talented field-based specialists and consultants. We provide print, digital and hybrid solutions that are tailored to a district s needs, goals and technological readiness.

For nearly two centuries, HMH s Trade Publishing division has brought renowned and awarded children s, fiction, nonfiction, culinary and reference titles to readers throughout the world. Our distinguished author list includes ten Nobel Prize winners, forty-eight Pulitzer Prize winners, and fifteen National Book Award winners. We are home to popular characters and titles such as Curious George, Carmen Sandiego, *The Lord of the Rings, The Whole 30,* The Best American Series, the Peterson Field Guides, CliffsNotes, and *The Polar Express,* and published distinguished authors such as Philip Roth, Temple Grandin, Tim O Brien, Amos Oz, Kwame Alexander, Lois Lowry, and Chris Van Allsburg.

On October 1, 2018, we completed the previously announced sale of all the assets, including intellectual property, used primarily in our Riverside clinical and standardized testing business (Riverside Business).

Market Overview

HMH operates predominantly within the U.S. K-12 Education market, which represents over $600 billion of total spending annually, and specifically within the U.S. market for K-12 instructional materials and services, which we estimate to be approximately $11.0 billion in size. Internationally, we export and sell K-12 English language education products to premium private schools that utilize the U.S. curriculum, located primarily in Asia, the Pacific, the Middle East, Latin America, the Caribbean and Africa. We also participate in the U.S. Trade publishing market, which is estimated to be approximately $16.0 billion according to the Association of American Publishers.

The U.S. Education market comprises approximately 13,600 K-12 public school districts, 132,900 public and private schools, 3.7 million teachers and 56.6 million total student enrollment across public, private and charter schools. From

Fall 2016 to Fall 2026, total elementary and secondary school enrollment, a major long-term driver of growth in the K-12 Education market, is projected to increase by 2% to 56.8 million students, according to the National Center for Education Statistics.

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The primary sources of funding for public schools in the U.S. are state and local tax collections, with Federal funding accounting for approximately 9% of public education spending nationally. Consequently, general or localized economic conditions as well as legislative and political decisions which affect the ability of state and school districts to raise revenue through tax collections can have a significant impact on spending and growth in the K-12 Education market. Public K-12 education has been, and remains, a high priority for political leaders, accounting for more than one-fifth of all state and local government spending.

Education policy and curriculum choices have traditionally been local prerogatives in the U.S., but Federal law and policy also play an important role. The Elementary and Secondary Education Act, reauthorized in 2015 by the Every Student Succeeds Act (ESSA), requires that states, as a condition to receiving Federal education funds, adopt challenging academic content standards, administer annual student tests aligned to those standards, develop systems of accountability tied to specific goals for student achievement, and take measures to identify and support low performing schools. ESSA gives states more flexibility than they had under prior law, but still requires standards-based, largely assessment-driven accountability with a focus on the achievement of students in all demographic subgroups.

One important change brought about by ESSA is that states are now permitted to use growth in student achievement as measured by statewide assessments, in addition to grade-level proficiency, as an academic indicator for purposes of accountability. Instructional solutions that incorporate interim assessments and data analytics to help monitor student performance in real time can be especially useful in states that incorporate student growth as a significant element of their accountability systems. Other changes brought about by ESSA include a greater emphasis on English language learners, with progress towards English proficiency now a required element of state accountability plans, a requirement that products and solutions paid for with Federal education funds have evidence of effectiveness, and new requirements and expectations for Federally funded educator professional learning programs. The new law also gives states and school districts greater flexibility in how they spend Federal dollars and how they demonstrate that Federal funds are used to supplement and not supplant state and local spending.

Title I, the largest program within ESSA, and other ESSA programs also provide targeted funding for specific activities, such as early childhood education, school improvement, dropout prevention, and before- and after-school programs. The Individuals with Disabilities Education Act (IDEA) governs how states and public agencies provide early intervention, special education and related services to children with disabilities. In addition, school districts in many states are now able to spend educational funds on instructional materials that include core and supplemental materials, computer software, digital media, digital courseware, and online services.

Academic content standards, which are grade-level expectations for student learning, are established at the state level. States generally review and revise standards in each of the various subject areas every six to eight years, and the revision or adoption of new standards typically gives rise to the need for new instructional materials and services aligned to the new or revised standards. A large percentage of states have adopted the Common Core State Standards (CCSS) in English language arts and mathematics or standards largely based on the Common Core, and, as of December 2018, nineteen states had adopted Next Generation Science Standards (NGSS). Both the CCSS and NGSS are products of state-led collaborations. The adoption of these standards has led to greater uniformity among states, but has not completely eliminated differences or the need for customized state-specific instructional materials.

Market Segments

Core Curriculum

In the U.S., K-12 core curriculum programs provides educational content and assessments to over 56.6 million students across approximately 132,900 public and private elementary and secondary schools. Core

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programs cover curriculum standards in a particular subject and include a comprehensive offering of teacher and student materials necessary to conduct the class throughout the year. Products and services include students print and digital offerings and a variety of supporting materials such as teacher s editions, formative assessments, supplemental materials, whole group instruction materials, practice aids, educational games and services.

Core curriculum programs traditionally have been the primary resource for classroom instruction in most K-12 academic subjects, and as a result, enrollment trends are a major driver of industry growth. Although economic cycles may affect short-term buying patterns, school enrollments, a driver of growth in the educational content industry, are highly predictable and are expected to trend upward over the longer term.

Demand for core curriculum programs is also affected by changes in state curriculum standards, which drive instruction, assessment, and accountability in each state. A significant change in state curriculum standards requires that assessments, teacher training programs, and instructional materials be revised or replaced to align to the new standards, which historically has driven demand for new comprehensive curriculum programs.

In the U.S., core instructional material programs are typically selected and purchased at the school district level and, in some cases, at the individual school level. In nineteen states, before districts make their selections, programs are first evaluated at the state level for alignment to state academic standards and other criteria. These states are commonly referred to as adoption states, while states that do not have a state level review process are called open states or open territory. In some adoption states, districts are required to select materials from the state-adopted list; in others the state list is just a recommendation, and districts are free to purchase and use whatever materials they choose, whether or not adopted by the state. Adoption states typically review materials in the various subject areas on a six- to eight-year cycle. School districts in those states tend to follow the state review cycle and replace core programs in the year or years immediately following state adoption. In open states, each individual school or school district evaluates and purchases materials independently, typically according to a five- to ten-year cycle. As a result, in individual adoption states, purchases of core instructional materials in a particular subject area tend to be clustered in a window of one to three years, while in individual open territory states they may be spread over several years.

The following map illustrates the current adoption and open territory states:

The formal determination whether to approve a program for state adoption is typically made by the state board of education or chief state school officer, informed by recommendations by one or more instructional materials review committees comprised of educators, curriculum specialists, and or subject area experts. The district level selection process varies but, in both adoption and open states, usually entails presentation to and evaluation by a committee of educators. State level evaluations typically focus primarily on alignment to state academic standards, whereas local evaluators consider, in addition to standards alignment, more subjective factors such as ease of use and suitability for particular student populations. Providers of instructional content often, although not always, customize their programs for particular states, including both adoption and open

states, to strengthen alignment to state standards and assessments and/or to address specific needs and preferences of students and educators in a state.

The student population in adoption states represented approximately 48% of the U.S. public school elementary and secondary school-age population. A number of adoption states, and a few open territory states, provide categorical state funding for instructional materials; that is, funds that cannot be used for any purpose other than to purchase instructional content or, in some cases, technology equipment used to deliver instruction. In some states, categorical instructional materials funds can be used only for the purchase of materials on the state-approved list. In states that do not provide categorical state instructional materials funding, districts pay for materials primarily out of general purpose state formula aid and/or local funds.

Supplemental

Supplemental resources encompass a wide variety of targeted solutions that enrich learning and support student achievement beyond core curriculum. Supplemental resources can be print and/or digital, and can include workbooks, test-prep materials, software, games and apps. Many teachers augment their core curriculum with supplemental resources for additional practice and personalized instruction around particular areas of need, such as writing or vocabulary. Supplemental materials are purchased by individual teachers, schools and districts whose purchases are not tied to adoption schedules and who use funding from local, state and federal sources.

Intervention

Intervention solutions are generally purchased by individual schools or districts. Demand for intervention materials is significant and growing in the United States. In the latest NAEP (National Assessment of Educational Progress) assessments conducted in 2017, more than 60 percent of public school students performed below proficiency in both literacy and mathematics. These students are strong candidates for intervention programs that are focused on improving outcomes and ensuring students perform at grade level. As demand for digital content and personalized learning solutions is growing, traditional distinctions between core, supplemental and intervention materials and assessments are blurring.

Intervention products and services are funded through state and local funding as well as federal funding allocations pursuant to the ESSA and IDEA. Title I provides funding to schools and school districts with high concentrations of students from low income families and is often used to purchase intervention products and services.

Professional Learning

The professional learning market segment includes consulting and support services to assist individual schools and school districts in raising student achievement, implementing new programs and technology effectively, developing effective teachers, principals and leaders, as well as school and school-district turnaround and improvement solutions. We believe all districts and schools contract for some level of professional services. These services may include support for up-front training, in-classroom coaching, institutes, author workshops, professional learning communities, leadership development, technical support and maintenance, and program management.

Professional learning is directly addressed in ESSA. ESSA restructured Title II, the section of the law addressing teacher quality, and eliminated federal highly qualified teacher requirements. ESSA prohibits U.S. Department of Education mandates and incentives to evaluate teachers based on student test scores, which in recent years have channeled resources and attention to the development of educator evaluation systems, measurement tools, and related training. Title II now focuses instead on the role of the profession in improving student achievement, including new

requirements to ensure professional development is not only sustained (no one-day workshops), but also job-embedded, data-driven, and personalized. It is expected that school districts will

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need to focus their applications for teacher training to ensure teacher alignment with high quality standards, as well as priorities for funds to low-performing schools where comprehensive support and improvement plans are in place. There are also significant funding opportunities for professional learning as part of state programs, especially in states where they have consolidated program funding and want solutions that are evidence-based.

The professional learning services segment, which is relatively fragmented in the United States, is expected to grow as the transition to digital learning in classrooms increases the need for technology training and implementation support for educators. We believe that the use of interim data, differentiation, teacher content knowledge (in mathematics) and the use of technology in the classroom are the areas in which teachers and leaders are most seeking support. Also, demand for teacher training and professional development opportunities tied to the implementation of new or revised standards at the state level is expected to continue. In addition, the need for new teacher development over the next several years is expected to grow as we continue to see the greening of the teaching force, with approximately 360,000 new teachers hired every year and approximately 33% of teachers leaving within their first five years in the profession.

Trade Publishing

The Trade Publishing market includes children s, fiction, nonfiction, culinary and reference titles. While digital formats have gained some traction in this market, print remains the primary format in which trade books are produced and distributed. In recent years, ebook sales in the industry have declined while the market overall grew.

Our Products and Services

HMH is organized along two reporting segments: Education and Trade Publishing. Our primary segment measures are net sales and Adjusted EBITDA. The Education segment is our largest business, representing approximately 85%, 86% and 87% of our total net sales for the years ended December 31, 2018, 2017 and 2016, respectively.

Education

Our Education segment provides integrated solutions that engage learners, empower educators and improve student outcomes. The principal customers for our Education products are K-12 school districts, which purchase core curriculum, supplemental and intervention solutions and professional learning services.

The Education segment net sales and Adjusted EBITDA were $1,122.7 million and $210.6 million, $1,146.5 million and $223.9 million, and $1,126.4 million and $194.6 million for the years ended December 31, 2018, 2017 and 2016, respectively. Our Education offerings consist of the following:

> *Core Solutions*: Our core curriculum offerings include education programs in disciplines including reading, math, social studies and science that serve as primary sources of classroom instruction. HMH s core programs are created to provide educators with the resources needed to align with state standards and support students in their mastery of the subject matter, resulting in positive outcomes and competency. HMH s market-leading programs within this space include *Journeys* for reading, *Collections* for literature, *Go Math!* for math, and *Science Dimensions* and *Science Fusion* for Science. Several new core programs are planned for 2019: *Into Reading*, *Into Literature*, and *Into Math*.

Supplemental Solutions: HMH s supplemental offerings include a variety of targeted solutions that enrich learning and support student achievement beyond the core curriculum. Supplemental resources can be print and/or digital, and can include workbooks, test-prep materials, software, games and apps. Many teachers augment core curriculum with supplemental resources that can provide additional practice for their students and further personalize learning instruction to support student growth in essential areas such as writing or vocabulary. HMH s offerings in the supplemental space include

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Steck-Vaughn language arts, math and GED prep workbooks, *Saxon Phonics and Spelling*, *Rigby Leveled Readers*, and our popular Classroom Reading Libraries, which provide individually-curated collections of just-right books to strengthen literacy development and foster independent reading.

Intervention Solutions: Intervention solutions also address curricular needs outside of the core disciplines, supporting student achievement for those with unique needs, such as English language learners, a growing population, and students performing below grade level. Our intervention solutions support struggling learners through comprehensive offerings, including market-leading products such as *MATH 180, READ 180 Universal, System 44* and *iRead*. The products within this area generate net sales and earnings that do not vary greatly with the adoption cycle and require significantly less capital investment than the development of a core curriculum program.

Professional Services: HMH brings together its world-renowned authors and education experts to work directly with K-12 educators and administrators to build instructional excellence, cultivate leadership and provide school districts with the comprehensive support they need to raise student achievement. Offerings include ongoing curriculum support and expertise in professional development, technical services, coaching, and strategic consulting from trusted names like the International Center for Leadership in Education (ICLE) and Math Solutions®.

Heinemann: Heinemann provides professional resources and educational services for teachers, kindergarten through college. Heinemann is the leading professional publisher for educators, and features well-known and respected authors such as Irene Fountas, Gay Su Pinnell, Lucy Calkins, and Jennifer Serravallo, who support the practice of teachers through books, videos, workshops, online courses, and most recently through explicit teaching materials.

Trade Publishing

Our Trade Publishing segment, founded in 1832, primarily develops, markets and sells consumer books in print and digital formats and licenses book rights to other publishers and electronic businesses in the United States and abroad. The principal distribution channels for Trade Publishing products are retail stores (both physical and online) and wholesalers. Reference materials are also sold to schools, colleges, libraries, office supply distributors and other businesses.

Our Trade Publishing segment offers an extensive library of general interest, young readers and reference works that include well-known characters and brands. Our award-winning general interest titles include literary fiction, culinary, and non-fiction in hardcover, ebook and paperback formats, including the Mariner Books paperback line. Among the general interest properties are the popular J.R.R. Tolkien titles, the prolific The Best American Series and major cookbook brands such as Betty Crocker and Better Homes and Gardens in addition to recent best sellers including the *How to Cook Everything* series and *Whole30*. In young readers publishing, our list addresses a broad age group and includes recognized characters and titles such as Curious George and Martha Speaks, Five Little Monkeys, Gossie & Friends, Polar Express, Little Blue Truck, and many more. We also publish novels for young adults, a growing genre, including titles from Lois Lowry, author of *The Giver,* and Kwame Alexander. Most recently, our Trade Publishing business launched the series *Carmen Sandiego* on Netflix as part of our strategy to expand our content across media platforms.

For the years ended December 31, 2018, 2017 and 2016, Trade Publishing net sales and Adjusted EBITDA were approximately $199.7 million and $21.9 million, $180.6 million and $12.1 million, and $165.6 million and $6.3 million, respectively.

Seasonality

Approximately 85% of our net sales for the year ended December 31, 2018 were derived from our Education segment, which is a markedly seasonal business. Schools conduct the majority of their purchases in

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the second and third quarters of the calendar year in preparation for the beginning of the school year. Thus, over our latest three completed fiscal years, approximately 67% of consolidated net sales were realized in the second and third quarters. Sales of K-12 instructional materials are also cyclical, with some years offering more sales opportunities than others. The amount of funding available at the state level for educational materials also has a significant effect on year-to-year net sales. Although the loss of a single customer would not have a material adverse effect on our business, schedules of school adoptions and market acceptance of our products can materially affect year-to-year net sales performance.

Competition

We sell our products in highly competitive markets. In these markets, product quality, innovation and customer service are major differentiating factors between companies. Other factors affecting competition include: (i) competitive pricing, sampling and gratis costs; (ii) digitization and innovative delivery; and (iii) educational effectiveness of the program. In addition to national curriculum publishers, we also compete with a variety of specialized or regional publishers that focus on select disciplines and/or geographic regions in the K-12 market. There are also multiple competitors in the Trade Publishing, supplemental and assessment segments offering content that school districts increasingly are using as part of their core classroom instructional materials. In addition, school districts in many states are able to spend educational funds on instructional materials that include core and supplemental materials, computer software, digital media, digital courseware, and online services. Our larger competitors in the educational market include Pearson Education, Inc., McGraw Hill Education, Cengage Learning, Inc., Scholastic Corporation, Curriculum Associates, LLC, Benchmark Education, LLC, Accelerate Learning, Inc., and Amplify Education, Inc. Also competing in our market as a substitute are open educational resources. These resources are free, digital solutions that range from supplemental resources to full Core Solutions programs.

Printing and binding; raw materials

We outsource the printing and binding of our products, with approximately 49% of our printing requirements handled by one major supplier. We have procurement agreements that provide volume and scheduling flexibility and price predictability. We have a longstanding relationship with these parties. Approximately 14% of our printed materials (consisting primarily of teacher s editions and other ancillary components) are printed outside of the United States and approximately 86% of our printed materials (including most student editions) are printed within the United States. Paper is one of our principal raw materials. We purchase our paper primarily through one paper merchant and also directly through suppliers for limited product types. We maintain various agreements that protect against supply availability and unbound price increases. We manage our paper supply concentration by having primary and secondary sources and staying ahead of dramatic market changes.

Distribution

We operate three distribution facilities from which we coordinate our own distribution process: one each in Indianapolis, Indiana; Geneva, Illinois; and Troy, Missouri. We also utilize select suppliers to assist us with coordinating the distribution process for a limited number of product types. Additionally, some adoption states require us to use in-state textbook depositories for educational materials sold in that particular state. We utilize various delivery firms, such as United Parcel Service Inc., FedEx Freight, etc., to facilitate the principally ground transportation of products.

Employees

As of December 31, 2018, we had approximately 3,600 employees, none of which were covered by collective bargaining agreements. These employees are substantially located in the United States with 197 employees located outside of the United States. We believe that relations with employees are generally good.

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Intellectual property

Our principal intellectual property assets consist of our trademarks and copyrights in our content. Substantially all of our publications are protected by copyright, whether registered or unregistered, either in our name as the author of a work made for hire or the assignee of copyright, or in the name of an author who has licensed us to publish the work. Ownership of such copyrights secures the exclusive right to publish the work in the United States and in many countries abroad for specified periods: in the United States, in most cases, either 95 years from publication or for the author s life plus 70 years, but in any event a minimum of 28 years for works published prior to 1978 and 35 years for works published thereafter. In most cases, the authors who retain ownership of their copyright have licensed to us exclusive rights for the full term of copyright. Under U.S. copyright law, for licenses granted by an author during or after 1978, such exclusive licenses are subject to termination by the author or certain of the author s heirs for a five year period beginning at the end of 35 years after the date of publication of the work or 40 years after the date of the license grant, whichever term ends earlier.

We do not own any material patents, franchises or concessions, but we have registered certain trademarks and service marks in connection with our publishing businesses. We believe we have taken, and take in the ordinary course of business, appropriate available legal steps to reasonably protect our intellectual property in all material jurisdictions.

Environmental matters

We generally contract with independent printers and binders for their services, and our operations are generally not otherwise affected by environmental laws and regulations. However, as the owner and lessee of real property, we are subject to environmental laws and regulations, including those relating to the discharge of hazardous materials into the environment, the remediation of contaminated sites and the handling and disposal of wastes. It is possible that we could face liability, regardless of fault, and can be held jointly or severally liable, if contamination were to be discovered on the properties that we own or lease or on properties that we have formerly owned or leased. We are currently unaware of any material environmental liabilities or other material environmental issues relating to our properties or operations and anticipate no material expenditures for compliance with environmental laws or regulations.

Additional information

We are headquartered in Boston, Massachusetts. Our corporate website is www.hmhco.com. We make available our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to these reports, as well as other information, free of charge through our corporate website under the Financial Information link located at: ir.hmhco.com, as soon as reasonably practicable after being filed with or furnished to the Securities and Exchange Commission (the SEC). The information found on our website or any other website we refer to in this Annual Report is not part of this Annual Report or any other report we file with or furnish to the SEC.

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Item 1A. Risk Factors

Our business and results of operations may be adversely affected by changes in federal, state and local education funding, and changes in legislation and public policy.

A majority of our sales are to public school districts in the United States, most of which rely primarily on a combination of local tax revenues and state legislative appropriations for general operating funds and to pay for purchases of goods and services, including instructional materials. Funding for public schools at both the state and local levels can be affected by tax collections, which are typically sensitive to general economic conditions, and by political and policy choices made by state and local governments. A reduction in funding levels, whether due to an economic downturn or legislative action, or a failure of projected funding increases to materialize, can constrain resources available to school districts for making purchases of instructional materials and adversely affect our business and results of operations.

Some states, including a majority of adoption states, provide dedicated state funding for the purchase of instructional content and/or classroom technology, and expenditures for instructional materials in those states tend to be highly dependent on appropriation of those funds. If dedicated funding is not appropriated, or if the amount is substantially less than anticipated or legislative action is taken to lift restrictions on the use of those funds, then purchases of instructional materials may be significantly reduced and our net sales may be adversely impacted.

In addition, many school districts, including most large urban districts, receive substantial federal funding through Title I of the Elementary and Secondary Education Act (ESEA), the Individuals with Disabilities Act (IDEA), and other federal education programs. These funds supplement state and local funding and are used primarily to serve specific populations, such as low-income students and families, students with disabilities, and English language learners as well as to support programs to improve the quality of instruction, including educator professional learning. The funding of these programs is subject to Congressional appropriation. A significant reduction in appropriation levels could have an adverse effect on our sales, particularly sales of intervention and professional learning products and services.

Federal and state legislative and policy changes can also affect our business. For example, changes to federal education law in the Every Student Succeeds Act (ESSA) give states greater latitude in how they approach assessment and accountability, support and improvement of low performing schools, as well as accounting for the expenditure of federal program funds. The changes in ESSA also provided for new requirements regarding evidence of effectiveness of educational products and services purchased with federal funds. The changes in ESSA and state legislation and administrative policy decisions on matters such as assessment and accountability, curriculum and intervention with respect thereto could affect demand for our products.

State instructional materials adoptions, which account for a significant portion of our net sales of K-12 instructional materials, are highly cyclical and pose significant inherent risks that could materially impact our results of operations.

Due to the revolving and staggered nature of predetermined state adoption schedules, sales of K-12 instructional materials have traditionally been cyclical, with some years offering more and/or larger sales opportunities than others. Since a large portion of our sales are derived from state adoptions, our overall results can be materially affected from year to year by the adoption schedule, particularly in large adoption states. For example, over the next few years adoptions are scheduled or have already begun in one or more of the primary subjects of reading, language arts and literature, social studies, science and mathematics in, among other states, California, Florida and Texas, which are the three largest adoption states. Our failure to secure approval for our programs or perform according to our expectations

in larger new adoption opportunities could materially and adversely affect our net sales for the year of the adoption and in subsequent years.

In any state adoption, there is the inherent risk that one or more of our programs will not be approved by a particular state board of education or other adopting authority. While school districts in most adoption states are not precluded from purchasing materials that have not been approved by the state, in many cases, exclusion of a program on the state-adopted list can materially and adversely impact our ability to compete effectively at the school district level. Moreover, even if our program is approved by the state, we face significant competition and there is no guarantee that school districts will select our program or that we will be able to capture a meaningful share of the sales in such state.

State adoptions can be delayed, postponed or cancelled sometimes with little or no warning and after we have made significant investments in anticipation of the adoption due to various reasons, such as funding shortfalls, delays in development and approval of state academic standards and specifications, competing priorities or school readiness. In addition, individual school districts may decline to purchase new programs in accordance with the state s adoption schedule. A substantial delay, postponement or cancellation of a larger adoption opportunity can adversely affect the amount and timing of our net sales return on investment for the affected product, our business and our results of operations.

Further, the timing of the legislative appropriations process in most states is such that it is often impossible to know with certainty whether implementation of an adoption will be funded until after products have been submitted for review. By that time, investments have been made for product development and substantial expenses incurred for sales, marketing and other costs. If the legislature in a state that provides dedicated funding for instructional materials decides not to appropriate those funds or appropriates substantially less than anticipated, due to a revenue shortfall or other reasons, or if the legislature lifts restrictions on use of those funds, then implementation of that adoption could be substantially compromised or delayed and our net sales and return on investment could be adversely affected.

Changes in state academic standards could affect our market and require investment in development of new programs or modifications to our existing programs and any delays or controversies in the implementation of such standards could impact our results of operations.

States may adopt new academic standards or revise existing standards, which may affect our market and require investment in the development of new programs or modifications to our existing programs offered for sale in states that adopt such changes. Delays or controversies in the implementation of the adoption of new or revised academic standards may result in insufficient lead time before the deadline to submit instructional materials for an adoption. As a result, we may have to invest more than planned in order to complete product development or make the modifications in the compressed timeframe to bring our program into alignment with the new or revised standards, which could adversely affect our return on investment. Alternatively, we may determine that completing product development or making the modifications within the available timeframe is not practicable, and elect not to participate in the adoption, forgoing what might have been a significant sales opportunity which could materially and adversely affect our net sales for the year of the adoption and subsequent years.

We may not be able to execute on our long-term growth strategy or achieve expected benefits from actions taken in furtherance of our strategy, which could materially and adversely affect our business, financial condition and results of operations and/or our growth.

If we are not able to execute on our long-term growth strategy or achieve expected benefits from our actions in furtherance of our strategy, it could materially and adversely affect our business, financial condition and results of operations and/or our growth. In any event, actions taken in furtherance of our strategy, such as transitioning to new business models or entering into new market segments could adversely impact our cash flow and our business in unforeseen ways.

Our investments in new products, service offerings, platforms and/or technologies could impact our profitability.

We operate in highly competitive markets that continue to change to adapt to customer needs. These needs include an increasing demand for integrated learning solutions. In order to address these needs, we are investing in new products, new technology and infrastructure, and a new common platform to integrate our products, services and solutions. These investments may be less profitable than what we have experienced historically, may consume substantial financial resources and/or may divert management s attention from existing operations, all of which could materially and adversely affect our business, results of operations and financial condition.

We rely on third-party software and technology development as part of our digital platform.

We rely on third parties for some of our software and technology development. For example, some of the technologies and software that compose our instruction and assessment technologies are developed by third parties. We rely on those third parties for the development of future components and modules. Thus, we face risks associated with technology and software product development and the ability of those third parties to meet our needs and their obligations under our contracts with them. In addition, we rely on third parties for our internet-based product hosting. The loss of one or more of these third-party partners, a material disruption in their business or their failure to otherwise perform in the expected manner could cause disruptions in our business that may materially and adversely affect our results of operations and financial condition.

Defects in our digital products and platforms could cause financial loss and reputational damage.

In the fast-changing digital marketplace, demand for innovative technology has generally resulted in short lead times for producing products that meet customer needs. Growing demand for innovation and additional functionality in digital products increases the risk that our digital products and platforms may contain flaws or corrupted data that may only become apparent after product launch, particularly for new products and platforms and new features for existing products and platforms that are developed and brought to market under tight time constraints. Problems with the performance of our digital products and platforms could result in liability, loss of revenue or harm to our reputation.

Changes in product distribution channels and concentration of retailer power may restrict our ability to grow and affect our profitability in our Trade Publishing segment.

Distribution channels such as online retailers and ecommerce sites, digital delivery platforms, expanding social media, digital discovery and marketing platforms, combined with the increased concentration of retailer power, pose threats and provide opportunities to traditional consumer publishing models of our Trade Publishing segment, potentially impacting both sales volume and profitability. The reduction in brick and mortar booksellers, the resulting concentration of power held by our largest retailers, and the increased concentration of consumer book spending on best-selling titles could negatively affect our business, financial condition and results of operations.

We operate in a highly competitive environment where the risks from competition are intensified due to rapid changes in our markets and industry; as a result we must continue to adapt to remain competitive.

We operate in highly competitive markets. The risks of competition are intensified in the current environment where investment in new technology is ongoing and there are rapid changes in the products and services our customers are seeking and our competitors are offering, as well as new technologies, sales and distribution channels. In addition to national curriculum publishers, we compete with a variety of specialized or regional publishers that focus on select disciplines and/or geographic regions in the K-12 market. There are multiple competitors in the Trade Publishing segment and supplemental market offering content that school districts increasingly are using as part of their core

classroom instructional materials. Our larger competitors in

the educational market include Pearson Education, Inc., McGraw Hill Education, Cengage Learning, Inc., Scholastic Corporation, Curriculum Associates, LLC, Benchmark Education, LLC, Accelerate Learning, Inc., and Amplify Education, Inc. Some of these established competitors may have greater resources and less debt than us and, therefore, may be able to adapt more quickly to new or emerging technologies and changes in customer requirements or devote greater resources to the development, promotion and sale of their products and services than we can. Also competing in our market as a substitute are open educational resources. In addition, the market shift toward digital education solutions has induced both established technology companies and new start-up companies to enter certain segments of our market. These new competitors have the possible advantage of not needing to transition from a print business to a digital business. In addition, many established technology companies have substantial resources that they could devote to developing or acquiring digital educational products and/or content and, distributing their own and/or aggregated educational content to the K-12 market, which could negatively affect our business, financial condition and results of operations. There is also a risk of further disintermediation, which is the occurrence of state, district and other customers contracting directly with technology companies, enabling technology companies to develop direct relationships with our customers, and accordingly, have significant influence over access to and, pricing and distribution of digital and print education materials. We may not be able to adapt as needed to remain competitive in the market given the foregoing factors.

The availability of free and low-cost open education resources could adversely affect our net sales and exert downward pressure on prices for our education products.

In the K-12 market, we face growing competition from free, openly licensed content, often referred to as open education resources (OER). Free or low-cost OER content is typically delivered via the internet, and in some cases print versions and related services are available for purchase. A number of states support the use of OER by providing curated resources and others, including New York, Louisiana, Michigan and Texas, are funding development of OER or have done so in the past. Twenty states have signed on to the U.S Department of Education s GoOpen campaign, which seeks to support users of OER and promote coordination and sharing of OER among states. In addition, in recent years there have been initiatives by not-for-profit organizations such as the Gates Foundation and the Hewlett Foundation to develop educational content that can be open sourced and made available to educational institutions for free or nominal costs. The increased availability of free and low-cost OER could negatively affect our customers perception of the value of our content, reduce demand for our educational products, and/or exert downward pressure on prices for our products, and adversely impact our net sales.

Our operating results fluctuate on a seasonal and quarterly basis and our business has historically been dependent on our results of operations for the third quarter.

Our business is seasonal. Approximately 85% of our net sales for the year ended December 31, 2018 were derived from our Education segment, which is a markedly seasonal business. Purchases of K-12 products are typically made in the second and third quarters of the calendar year in preparation for the beginning of the school year. We typically realize a significant portion of net sales during the third quarter, making third-quarter results material to full-year performance. This sales seasonality affects operating cash flow from quarter to quarter. We typically incur a net cash deficit from all of our activities through the middle of the third quarter of the year. We cannot be sure that our second and third quarter net sales will continue to be sufficient to fund our business and meet our obligations or that they will be higher than our net sales for our other quarters or in the prior-year periods. In the event that we do not derive sufficient net sales for the second and third quarter, we may have a liquidity shortfall and be unable to fund our business and/or meet our debt service requirements and other obligations.

Our net sales, operating profit or loss and net cash provided or used by operations are impacted by the inherent seasonality of the academic calendar. As purchases of K-12 products are typically made in the second and third

quarters of a given calendar year, changes in our customers ordering patterns may impact the

comparison of results between a quarter and the same quarter of the prior year, between a quarter and the prior consecutive quarter or between a fiscal year and the prior fiscal year, which can make it difficult for us to forecast the timing of customer purchases and assess our financial performance until late in the year.

Our history of operations includes periods of operating and net losses, and we may incur operating and net losses in the future. Such losses may impact our liquidity.

For the years ended December 31, 2018, 2017 and 2016, we generated operating losses of $90.5 million, $135.1 million and $322.7 million, respectively, and net losses of $94.2 million, $103.2 million and $284.6 million, respectively. If we continue to suffer operating and net losses, our liquidity may suffer and we may not be able to fund our business and/or meet our debt service requirements and other obligations. Furthermore, the market price of our common stock may decline significantly.

Our ability to enforce our intellectual property and proprietary rights may be limited, which may harm our competitive position and materially and adversely affect our business and results of operations.

Our products are largely comprised of intellectual property content delivered through a variety of media, including print, digital and web-based media. We rely on a combination of copyright, trademark and other intellectual property laws and rights as well as employee agreements and other contracts to establish and protect our proprietary rights in our products and technology. However, our efforts to protect our intellectual property and proprietary rights may not be sufficient and we cannot make assurances that our proprietary rights will not be challenged, invalidated or circumvented. Moreover, we conduct business in certain other countries where the extent of effective legal protection for intellectual property rights is uncertain. It is possible we could be involved in expensive and time-consuming litigation to maintain, defend or enforce our intellectual property.

Furthermore, despite the existence of copyright and trademark protection under applicable laws, third parties may nonetheless violate our intellectual property rights, and our ability to remedy such violations, including in certain foreign countries where we conduct or seek to conduct business, may be limited. In addition, the copying and distribution of content over the Internet creates additional challenges for us in protecting our proprietary rights. If we are unable to adequately protect and enforce our intellectual property and proprietary rights, our competitive position may be harmed, and our business and financial results could be materially and adversely affected.

Failure to comply with privacy laws or adequately protect personal data could cause financial loss and reputational damage.

Across our businesses we hold large volumes of personal data, including that of employees, customers and students. We are subject to a wide array of different privacy laws, rules, regulations and standards in the U.S. as well as in foreign jurisdictions where we conduct business, including but not limited to (i) the Children s Online Privacy Protection Act and state student data privacy laws in connection with personally identifiable information of students, (ii) the Payment Card Industry Data Security Standards in connection with collection of credit card information from customers, and (iii) various EU data protection and privacy laws, including a comprehensive General Data Privacy Regulation that became effective in May 2018.

There has been increased public attention regarding the use of personal information and data transfer, accompanied by legislation and regulations intended to strengthen data protection, information security and consumer and personal privacy. The law in these areas continues to develop and the changing nature of privacy laws in the U.S., the European Union and elsewhere could impact our processing of personal and sensitive information of our employees, vendors and customers.

Continued privacy concerns may result in new or amended laws and regulations. Our brands and customer relationships are important assets. Future laws and regulations with respect to the collection, compilation, use,

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and publication of information and consumer privacy could result in limitations on our operations, increased compliance or litigation expense, adverse publicity, reputational damage to our brands and customer relationships, potential cancellation of existing business and diminished ability to compete for future business. It is also possible that we could be prohibited from collecting or disseminating certain types of data, which could affect our ability to meet our customers needs.

We are subject to risks based on Information Technology systems. A major breach in security or information technology system failure could interrupt the availability of our internet-based products and services, result in corruption and/or loss of data, cause liability or reputational damage to our brands and business and/or result in financial loss.

Our business is dependent on information technology systems to support our complex operational and logistical arrangements across our businesses. We provide software and/or internet-based products and services to our customers. We also use complex information technology systems and products to support our business activities, particularly in infrastructure and as we move our products and services to an increasingly digital delivery platform.

We face several technological risks associated with software and/or internet-based product and service delivery in our educational businesses, including with respect to information technology capability, reliability and security, enterprise resource planning, system implementations and upgrades. Failures of our information technology systems and products (including because of operational failure, natural disaster, computer virus or hacker attacks) could interrupt the availability of our internet-based products and services, result in corruption or loss of data or breach in security and result in liability, reputational damage to our brands and/or adversely impact our operating results.

While we have policies, processes, internal controls and cybersecurity mechanisms in place intended to ensure the stability of our information technology, provide security from unauthorized access to our systems and maintain business continuity, no mechanisms are entirely free from the risk of failure and we have no guarantee that our security mechanisms will be adequate to prevent all possible security threats. Our brand, reputation, especially in the K-12 market, and consequently our operating results may be adversely impacted by unanticipated system failures, corruption, loss of data and/or breaches in security.

Failure to prevent or detect a malicious cyber-attack on our information technology systems could result in liability, reputational damage, loss of revenue and/or financial loss.

Cyber-attacks and hackers are becoming more sophisticated and pervasive. Our business is dependent on information technology systems to support our complex operational and logistical arrangements across our businesses. We provide software and/or internet-based products and services to our customers. We also use complex information technology systems and products to support our business activities, particularly in infrastructure and as we move our products and services to an increasingly digital delivery platform. Across our businesses we hold large volumes of personal data, including that of employees, customers and students.

Efforts to prevent cyber-attacks and hackers from entering our systems are expensive to implement and may limit the functionality of our systems. Individuals try to gain unauthorized access to our systems and data for malicious purposes, and our security measures may fail to prevent such unauthorized access. Cyber-attacks and/or intentional hacking of our systems could adversely affect the performance or availability of our products, result in loss of customer data, adversely affect our ability to conduct business, or result in theft of our funds or proprietary information, the occurrence of which could result in liability, reputational damage, loss of revenue and/or financial loss.

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We are dependent on a small number of third parties to print and bind our products and to supply paper, a principal material for our products. If we were to lose our relationship with our key print vendor and/or paper merchant, our business and results of operations may be materially and adversely affected.

We outsource the printing and binding of our products and currently rely on one key third-party print vendor that handles approximately 49% of our printing requirements, and we expect a small number of print vendors will continue to account for a substantial portion of our printing requirements for the foreseeable future. The loss of, or a significant adverse change in our relationship with our key print vendor could have a material adverse effect on our business and cost of sales.

In addition, we purchase paper, a principal raw material for our print products, primarily through one paper merchant. Further, paper merchants, including our paper merchant, rely on paper mills to produce the paper that they broker. There can be no assurance that our relationships with our print vendor and/or paper merchant will continue or that their business or operations will not be affected by disruptions in the industries that they rely on, including a disruption in the paper mill industry, major disasters or other external factors. The loss of our key print vendor and/or paper merchant, a material change in our relationship with them, a material disruption in their business or their failure to otherwise perform in the expected manner could cause disruptions in our business that may materially and adversely affect our results of operations and financial condition.

We may not be able to identify and complete any future acquisitions or achieve the expected benefits from any future acquisitions, which could materially and adversely affect our business, financial condition and results of operations and/or our growth.

We have at times used acquisitions as a means of expanding our business and technologies, and expect that we will continue to do so in the future as part of our capital allocation strategy. We may be unable to identify suitable acquisition opportunities and, even if we were able to do so, we may not be able to finance or complete any such future acquisition on terms satisfactory to us. Further, we may not be able to successfully integrate acquisitions into our existing business, achieve anticipated operating advantages and/or realize anticipated cost savings or other synergies. The acquisition and integration of businesses involve a number of risks, including: use of available cash, issuance of equity or debt securities, incurrence of new indebtedness or borrowings under our revolving credit facility to consummate the acquisition and/or integrate the acquired business; diversion of management s attention from operations of our existing businesses and those of the acquired business to the integration; integration of complex systems, technologies and networks into our existing systems; difficulties in the assimilation and retention of employees; unexpected costs, delays or other risks related to transition support services provided under any transition services agreement that may be executed as part of the acquisition. These transactions may create multiple and overlapping product lines that are offered, priced and supported differently, which could cause customer confusion and delays in service. The demands on our management related to the increase in our size after an acquisition also may have potential adverse effects on our operating results.

If we are unable to finance or complete any future acquisition on terms satisfactory to us (or at all) and/or we are unable to successfully integrate any acquisitions into our existing business, achieve anticipated operating advantages and/or realize anticipated cost savings or other synergies from any such acquired business, it could materially and adversely affect our business, financial condition and results of operations.

If we are unable to attract, retain and focus a strong leadership team, a dynamic sales force, software engineers and other key personnel, it could have an adverse effect on our business and ability to remain competitive, financial condition and results from operations.

Our success depends, in part, on our ability to continue to attract, focus and retain a strong leadership team, a dynamic sales force, software engineers and other key personnel at economically reasonable compensation levels. We operate in highly competitive industry segments that continue to change to adapt to customer needs and technological advances and in which there is intense competition for experienced and highly effective

personnel. If we are unable to timely attract and retain key personnel with relevant skills for our evolving industry segments it could adversely affect our business and ability to remain competitive, financial condition and results of operations.

In addition, our business results depend largely upon the experience and knowledge of local market dynamics and long-standing customer relationships of our sales personnel. Our inability to attract, retain and focus effective sales and other key personnel at economically reasonable compensation levels could materially and adversely affect our ability to operate profitably and grow our business.

If we fail to maintain strong relationships with our authors, illustrators and other creative talent, as well as to develop relationships with new creative talent, our net sales and results of operations could be adversely affected.

Our Trade Publishing business and certain aspects of our K-12 business are highly dependent on maintaining strong relationships with the authors, illustrators and other creative talent who produce books and other products sold to our customers. We operate in a number of highly visible industry segments where there is intense competition for successful authors, illustrators and other creative talent. Any overall weakening of these relationships, or the failure to develop successful new relationships, could have an adverse effect on our net sales and results of operations.

Our major operating costs and expenses include employee compensation as well as paper, printing and binding costs and expenses for product-related manufacturing, and a significant increase in such costs and expenses could have a material adverse effect on our profitability.

Our major operating costs and expenses include employee compensation as well as paper, printing and binding costs for product-related manufacturing.

We offer competitive salary and benefit packages in order to attract and retain the employees required to grow and expand our businesses. Compensation costs are influenced by general economic and business factors, including those affecting the cost of health insurance, payout of commissions and incentive compensation and post-retirement benefits, as well as trends specific to the employee skillsets we require.

Paper is one of our principal raw materials. Paper prices fluctuate based on the worldwide demand for and supply of paper in general and for the specific types of paper we use. The price of paper may fluctuate significantly in the future, and changes in the market supply of, or demand for paper, could affect delivery times and prices. Paper mills and other suppliers may consolidate or there may be disruptions in their industry and as a result, there may be future shortfalls in quality and quantity supplies necessary to meet the demands of the entire marketplace, including our demands. As a result, we may need to find alternative sources for paper from time to time. In addition, we have extensive printing and binding requirements. We outsource the printing and binding of our books, workbooks and other printed products to third parties, typically under multi-year contracts. Increases in any of these operating costs and expenses could materially and adversely affect our business, profitability, financial condition and results of operations. Further, higher energy costs and other factors affecting the cost of publishing, transporting and distributing our products could adversely affect our financial results.

We also have other significant operating costs, and unanticipated increases in these costs could adversely affect our operating margins. Our inability to absorb the impact of increases in paper, printing and binding costs and other costs of publishing, transporting and distributing our products or any strategic determination not to pass on all or a portion of these increases to our customers could adversely affect our business, financial condition and results of operations.

Exposure to litigation could have a material effect on our financial position and results of operations.

In the ordinary course of business, we are involved in legal actions, claims litigation and other matters arising from our business operations and face the risk that additional actions and claims will be filed in the future.

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Litigation alleging infringement of copyrights and other intellectual property rights, particularly with respect to proprietary photographs and images, is common in the educational publishing industry. While management does not expect any of the existing legal actions and claims arising from our business operations to have a material adverse effect on our results of operations, financial position or cash flows, due to the inherent uncertainty of the litigation process, the costs of pursuing or defending against any particular legal proceeding, or the resolution of any particular legal proceeding could have a material effect on our financial position and results of operations.

We have insurance in such amounts and with such coverage and deductibles as management believes is reasonable. However, our coverage for certain business lines has been exhausted and there can be no assurance that our liability insurance for other business lines will cover all events or that the limits of such coverage will be sufficient to fully cover all potential liabilities thereunder.

Operational disruption to our business caused by a major disaster or other external threats could restrict our ability to supply products and services to our customers.

Across all our businesses, we manage complex operational and logistical arrangements including distribution centers, data centers and large office facilities. Failure to recover from a major disaster (such as fire, flood or other natural disaster) or other external threat (such as terrorist attacks, strikes, weather or political unrest or other external factors) at a key center or facility could affect our business and employees, disrupt our daily business activities and/or restrict our ability to supply products and services to our customers.

We are subject to contingent liabilities that may affect liquidity and our ability to meet our obligations.

In the ordinary course of business, we issue performance-related surety bonds and letters of credit posted as security for our operating activities, some of which obligate us to make payments if we fail to perform under certain contracts in connection with the sale of instructional materials and assessment programs. The surety bonds are partially backstopped by letters of credit. As of December 31, 2018, our contingent liability for all letters of credit was approximately $24.3 million, of which $0.1 million were issued to backstop $4.4 million of surety bonds. The letters of credit reduce the borrowing availability on our revolving credit facility, which could affect liquidity and, therefore, our ability to meet our obligations. We may increase the number and amount of contracts that require the use of letters of credit, which may further restrict liquidity and, therefore, our ability to meet our obligations in the future.

Our substantial level of indebtedness could adversely affect our financial condition and results of operations.

As of December 31, 2018, we had approximately $772.0 million ($763.6 million, net of discount and issuance costs) outstanding under our term loan facility and no amounts outstanding under our revolving credit facility. Our substantial outstanding indebtedness could have important consequences, including the following:

- our high level of indebtedness could make it more difficult for us to satisfy our obligations;
- our high level of indebtedness could adversely impact our credit rating;
- the restrictions imposed on the operation of our business under the agreements governing such indebtedness may hinder our ability to take advantage of strategic opportunities to grow our business and to make

attractive investments;

our ability to obtain additional financing for working capital, capital expenditures, product development, debt service requirements, restructuring, acquisitions or general corporate purposes may be impaired, which could be exacerbated by volatility in the credit markets;

we must use a substantial portion of our cash flow from operations to pay principal and interest on our indebtedness, which will reduce the funds available to us for operations, working capital, capital expenditures and other purposes;

- our high level of indebtedness could place us at a competitive disadvantage compared to our competitors that may have proportionately less debt;

- our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate may be limited;

- our failure to satisfy our obligations under the agreements governing our indebtedness could result in an event of default, which could result in all of our debt becoming immediately due and payable and could permit our secured lenders to foreclose on our assets securing such indebtedness;

- our high level of indebtedness makes us more vulnerable to economic downturns and adverse developments in our business and industry; and

- we may be vulnerable to interest rate increases, as certain of our borrowings bear interest at variable rates. A 1% increase or decrease in the interest rate will change our interest expense by approximately $7.7 million on an annual basis for our term loan facility and $2.5 million on an annual basis for our revolving credit facility, assuming it is fully drawn.

Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations, prospects and ability to satisfy our obligations. In addition, we may incur substantial additional indebtedness in the future. The terms of the agreements governing our existing indebtedness do not, and any future debt may not, fully prohibit us from doing so. If new indebtedness is added to our current indebtedness levels, the related risks that we now face could substantially intensify.

We expect to refinance our debt.

As of December 31, 2018, we had approximately $772.0 million ($763.6 million, net of discount and issuance costs) outstanding under our term loan facility which matures on May 29, 2021. We expect to refinance all or a portion of our outstanding debt prior to maturity. There is a risk that we may not be able to refinance existing debt or that the terms of any refinancing may not be as favorable as the terms of our existing debt. Furthermore, if prevailing interest rates or other factors at the time of refinancing result in higher interest rates upon refinancing, then the interest expense relating to that refinanced indebtedness would increase. In addition, changes by any rating agency to our outlook or credit rating could negatively affect our debt and increase the interest amounts we pay on future debt. These risks could adversely affect our financial condition and results of operations.

We may not be able to generate sufficient cash to service all of our indebtedness and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.

Our ability to make scheduled payments or to refinance our debt obligations and to fund planned capital expenditures and other growth initiatives depends on our financial and operating performance, which is subject to prevailing economic and competitive conditions and to certain financial, business and other factors beyond our control. We may not be able to maintain a level of cash flow from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our indebtedness or to fund our other liquidity needs.

If our cash flows and capital resources are insufficient to fund our debt service obligations, we may be forced to reduce or delay capital expenditures, sell assets, seek additional capital or seek to restructure or refinance our indebtedness. These alternative measures may not be successful and may not permit us to meet our scheduled debt service obligations. In the absence of such operating results and resources, we could face substantial liquidity problems and might be required to sell material assets or operations to attempt to meet our debt service and other obligations. Our term loan facility and revolving credit facility have certain restrictions on our ability to use the proceeds from asset sales. We may not be able to consummate those asset sales to raise capital or sell assets at prices that we believe are fair and proceeds that we do receive may not be adequate to meet any debt service obligations then due.

We may record future goodwill or additional indefinite-lived intangibles impairment charges related to our reporting units, which could have a material adverse impact on our results of operations.

We test our goodwill and indefinite-lived intangibles asset balances for impairment during the fourth quarter of each year, or more frequently if indicators are present or changes in circumstances suggest that impairment may exist. In evaluating the potential for impairment of goodwill and indefinite-lived intangible assets, we make assumptions regarding estimated net sales projections, growth rates, cash flows and discount rates. Although we use consistent methodologies in developing the assumptions and estimates underlying the fair value calculations used in our impairment tests, these estimates are uncertain by nature and can vary from actual results. Declines in the future performance and cash flows of the business or small changes in other key assumptions may result in future impairment charges, which could have a material adverse impact on our results of operations.

A change from up-front payment by school districts for multi-year programs and actions taken in furtherance of our long-term growth strategy could adversely affect our cash flow.

In keeping with the past practice of payments, school districts typically pay up-front when buying multi-year programs. If school districts changed their payment practices to spread their payments to us over the term of a program, our cash flow could be adversely affected. Further, as we execute on our long-term growth strategy, actions taken in furtherance of our strategy, such as transitioning to new business models could adversely impact our cash flow and our business in unforeseen ways.

The shift to sales of greater digital content or an increase in consumable print core programs may affect the comparability of our revenue to prior periods and cause increases or decreases in our sales to be reflected in our results of operations on a delayed basis.

Our customers typically pay for purchased products up-front; however, we recognize a significant portion of our time-based digital sales over their respective terms, as required by Generally Accepted Accounting Principles in the United States. As a result, an increase in the portion of our sales coming from digital sales may impact the comparison of our revenue results for a period with the same prior-year or consecutive period. Further, sales of consumable print core programs typically result in net sales being recognized over longer periods similar to time-based digital products. As more product offerings move to a consumable print format, more revenue will be deferred and recognized over a longer period of time.

Another effect of recognizing revenue from digital and consumable print core program sales over their respective terms is that any increases or decreases in sales during a particular period may not translate into proportional increases or decreases in revenue during that period. Consequently, deteriorating sales activity may be less immediately observable in our results of operations.

We face risks of doing business abroad.

We conduct business in a number of regions outside of the U.S., including emerging markets in South America, Asia and the Middle East. Accordingly, we face exposure to the risks of doing business abroad, including, but not limited to, longer customer payment terms in certain countries; increased credit risk; difficulties in protecting intellectual property, enforcing or terminating agreements and collecting receivables under certain foreign legal systems; compliance under local privacy laws, rules, regulations and standards; the need to comply with U.S. Foreign Corrupt Practices Act and local laws, rules and regulations; and in some countries, a higher risk of political instability, economic volatility, terrorism, corruption, and social and ethnic unrest.

Although we are committed to conducting business in a legal and ethical manner in compliance with local and international statutory requirements and standards applicable to our business, there is a risk that our management, employees or representatives may take actions that violate applicable laws and regulations prohibiting the making of improper payments for the purposes of obtaining or keeping business, including laws such as the U.S. Foreign Corrupt Practices Act or the UK Bribery Act. Responding to investigations is costly and

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requires a significant amount of management s time and attention. In addition, investigations may adversely impact our reputation, or lead to litigation and financial impacts.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our principal executive office is located at 125 High Street, Boston, Massachusetts 02110. The following table describes the approximate building areas in square feet, principal uses and the years of expiration on leased premises of our significant operating properties as of December 31, 2018. We believe that these properties are suitable and adequate for our present and anticipated business needs, satisfactory for the uses to which each is put, and, in general, fully utilized.

Location	Expiration year	Approximate area	Principal use of space	Segment used by
Owned Premises:				
Indianapolis, Indiana	Owned	491,779	Warehouse	All segments
Troy, Missouri	Owned	575,000	Office and warehouse	Education
Leased Premises:				
Orlando, Florida (a)	2029	250,842	Office	Education
Evanston, Illinois	2027	111,398	Office	Education
Geneva, Illinois	2022	485,989	Office and warehouse	Education
Boston, Massachusetts (Corporate office)	2033	194,946	Office	All segments
Portsmouth, New Hampshire	2019	25,145	Office	Education
New York, New York	2025	31,815	Office	Education
New York, New York	2027	101,841	Office	All segments
Austin, Texas	2028	87,570	Office	Education
Dublin, Ireland	2025	28,994	Office	Education
Orlando, Florida	2021	25,400	Warehouse	Corporate Records Center
St Charles, Illinois	2024	26,029	Office	Education

In addition, we lease several other offices that are not material to our operations and, in some instances, are partially or fully subleased. Portions of certain properties listed above are also subleased.

(a) Effective October 2019, lease square footage will be reduced to approximately 111,000.

Item 3. Legal Proceedings

We are involved in legal actions, claims, litigation and other matters incidental to our business. Litigation alleging infringement of copyrights and other intellectual property rights, particularly with respect to proprietary photographs and images, is common in the educational publishing industry.

While management believes there is a reasonable possibility we may incur a loss associated with the existing legal actions, claims and litigation, we are not able to estimate such amount, but we do not expect any of these matters to have a material adverse effect on our results of operations, financial position or cash flows. We have insurance in such amounts and with such coverage and deductibles as management believes is reasonable. However, there can be no assurance that our liability insurance will cover all events or that the limits of such coverage will be sufficient to fully cover all potential liabilities thereunder.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Market for Registrant s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market information. Our common stock is listed on the Nasdaq Global Select Market (Nasdaq) under the symbol HMHC .

Holders. As of February 1, 2019, there were approximately 5 stockholders of record of our common stock, one of which was Cede & Co., a nominee for The Depository Trust Company. All of our common stock held by brokerage firms, banks and other financial institutions as nominees for beneficial owners are considered to be held of record by Cede & Co., who is considered to be one stockholder of record. A substantially greater number of holders of our common stock are street name or beneficial holders, whose shares of common stock are held of record by banks, brokers and other financial institutions. Because such shares of common stock are held on behalf of stockholders, and not by the stockholders directly, and because a stockholder can have multiple positions with different brokerage firms, banks and other financial institutions, we are unable to determine the total number of stockholders we have.

Dividends. We have never paid or declared any cash dividends on our common stock. At present, we intend to retain our future earnings, if any, to fund operations, the growth of our business and, as appropriate, execute our share repurchase program. Our future decisions concerning the payment of dividends on our common stock will depend upon our results of operations, financial condition and capital expenditure plans, as well as other factors as our board of directors, in its discretion, may consider relevant, and the extent to which the declaration or payment of dividends may be limited by agreements we have entered into or cause us to lose the benefits of certain of our agreements. See Management s Discussion and Analysis of Financial Condition and Results of Operations Liquidity and Capital Resources.

Performance Graph. The graph below matches the cumulative return of holders of the Company s common stock with the cumulative returns of the Dow Jones Publishing index, the S&P 500 index, the Nasdaq Composite index, the Russell 2000 index, and a Peer Group index of certain public companies in the educational space, comprised of Pearson PLC, Scholastic Corporation, K-12 Inc., and John Wiley & Sons, Inc. The Russell 2000 index was included as the Company was added to that index during 2014. The graph assumes that the value of the investment in the Company s common stock, in each index (including reinvestment of dividends) was $100 on November 14, 2013 and tracks it through February 1, 2019. All prices reflect closing prices on the last day of trading at the end of each period. Notwithstanding any general incorporation by reference of this Annual Report into any other document, the information contained in the graph shall not be deemed to be soliciting material or to be filed with the SEC or subject to Regulation 14A or 14C under the Exchange Act of 1934, as amended (the Exchange Act) or to the liabilities of Section 18 of the Exchange Act, except: (i) as expressly required by applicable law or regulation; or (ii) to the extent that the Company specifically requests that such information be treated as soliciting material or specifically incorporates it by reference into a filing under the Securities Act of 1933, as amended, or the Exchange Act.

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The stock price performance shown on the graph is not necessarily indicative of future price performance. Information used in the graph was obtained from a source we believe to be reliable, but we do not assume responsibility for any errors or omissions in such information.

Recent sales of unregistered securities. There have been no sales of unregistered securities by the Company in the three year period ended December 31, 2018.

Issuer Purchases of Equity Securities

There were no purchases of equity securities in the fourth quarter of 2018 and for the year ended December 31, 2018. Our Board of Directors previously authorized the repurchase of up to $1.0 billion in aggregate value of the Company s common stock through December 31, 2018. As of December 31, 2018, when this repurchase authorization expired, there was approximately $482.0 million remaining under this authorization.

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Item 6. Selected Financial Data

The following table summarizes the consolidated historical financial data of Houghton Mifflin Harcourt Company. We derived the consolidated historical financial data as of December 31, 2018 and 2017 and for the years ended December 31, 2018, 2017, and 2016 from our audited consolidated financial statements included in this Annual Report. We derived the consolidated historical financial statement data as of December 31, 2015 and 2014 and for the years ended December 31, 2015 and 2014 from our consolidated financial statements for such years, which are not included in this Annual Report. The sale of the Riverside Business is considered a Discontinued Operation and accordingly, all results of the Riverside Business have been removed from continuing operations for all periods presented. Historical results for any prior period are not necessarily indicative of results to be expected in any future period. The data set forth in the following table should be read together with the section entitled Management s Discussion and Analysis of Financial Condition and Results of Operations and our consolidated financial statements and related notes thereto.

	Years Ended December 31,				
	2018 (4) (6) (7)	**2017 (4) (6)**	**2016 (4) (6)**	**2015 (4) (6)**	**2014 (6)**
Operating Data:					
Net sales	$ 1,322,417	$ 1,327,029	$ 1,291,978	$ 1,319,416	$ 1,279,210
Cost and expenses:					
Cost of sales, excluding publishing rights and pre-publication amortization	581,467	588,518	578,317	582,411	544,511
Publishing rights amortization	34,713	46,238	61,351	81,007	105,624
Pre-publication amortization	109,257	119,908	121,866	112,892	120,767
Cost of sales	725,437	754,664	761,534	776,310	770,902
Selling and administrative	649,295	636,326	681,170	655,887	585,989
Other intangible asset amortization	26,933	29,248	26,375	22,038	12,170
Impairment charge for pre-publication costs, intangible assets, investment in preferred stock, and fixed assets (1)		3,980	130,205		1,679
Restructuring (2)	4,657	37,775			
Severance and other charges (3)	6,821	177	15,371	4,146	6,679
Gain on sale of assets	(201)				
Operating loss	(90,525)	(135,141)	(322,677)	(138,965)	(98,209)
Other income (expense)					

Retirement benefits non-service income	1,280	3,486	4,253	2,787	2,649
Interest expense	(45,680)	(42,805)	(39,181)	(32,254)	(18,495)
Interest income	2,550	1,338	518	209	250
Loss on extinguishment of debt				(3,051)	
Change in fair value of derivative instruments	(1,374)	1,366	(614)	(2,362)	(1,593)
Income from transition services agreement	1,889				
Loss from continuing operations before taxes	(131,860)	(171,756)	(357,701)	(173,636)	(115,398)
Income tax expense (benefit) for continuing operations	5,597	(51,419)	(51,556)	(20,411)	4,823
Loss from continuing operations	(137,457)	(120,337)	(306,145)	(153,225)	(120,221)
Earnings from discontinued operations, net of tax	12,833	17,150	21,587	19,356	8,730
Gain on sale of discontinued operations, net of tax	30,469				
Income from discontinued operations, net of tax	43,302	17,150	21,587	19,356	8,730
Net loss	$ (94,155)	$ (103,187)	$ (284,558)	$ (133,869)	$ (111,491)
Net loss per share attributable to common stockholders					
Basic and diluted:					
Continuing operations	$ (1.11)	$ (0.98)	$ (2.50)	$ (1.12)	$ (0.85)
Discontinued operations	0.35	0.14	0.18	0.14	0.06
Net loss	$ (0.76)	$ (0.84)	$ (2.32)	$ (0.98)	$ (0.79)
Weighted average shares outstanding Basic and diluted	123,444,943	122,949,064	122,418,474	136,760,107	140,594,689

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	Years Ended December 31,				
	2018 (4) (6) (7)	**2017 (4) (6)**	**2016 (4) (6)**	**2015 (4) (6)**	**2014 (6)**
Balance Sheet Data (as of period end):					
Cash, cash equivalents and short-term investments	$ 303,198	$ 235,428	$ 306,943	$ 432,403	$ 743,345
Working capital	218,586	126,567	209,982	384,912	750,779
Total assets (5)	2,495,124	2,439,830	2,604,307	2,976,759	2,834,779
Debt (short-term and long-term) (5)	763,649	768,194	772,738	777,283	235,265
Stockholders equity	768,470	795,193	880,040	1,198,321	1,759,680
Statement of Cash Flows Data:					
Net cash provided by (used in):					
Operating activities	104,084	104,748	111,785	311,906	467,500
Investing activities	427	(193,895)	(106,117)	(667,739)	(346,684)
Financing activities	(4,124)	(7,330)	(37,960)	106,104	19,529
Other Data:					
Capital expenditures:					
Pre-publication capital expenditures	123,403	131,282	118,603	100,465	111,633
Property, plant, and equipment capital expenditures	53,741	55,092	103,152	77,183	59,177
Depreciation and intangible asset amortization	142,819	146,535	162,193	168,787	184,283

(1) Primarily represents tradenames and to a lesser extent software and program development costs, along with a preferred stock investment.

(2) Represents cash and noncash charges incurred as a result of our 2017 Restructuring Plan.

(3) Represents severance and real estate charges not part of our 2017 Restructuring Plan.

(4) Includes the results of our acquisition of the EdTech business from May 29, 2015 through December 31, 2018.

(5) 2014 through 2015 include the retrospective adoption of new guidance for the recognition and measurement of debt issuance costs effective for annual reporting periods beginning after December 15, 2015.

(6) The sale of the Riverside Business, which was effective October 1, 2018, is considered a Discontinued Operation and accordingly, all results of the Riverside Business have been removed from continuing operations for all periods presented.

(7) The 2018 amounts have been impacted by the January 1, 2018 adoption of the new revenue standard. Please refer to the Note 2 included in Item 8. for further details.

Item 7. Management s Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis is intended to facilitate an understanding of our results of operations and financial condition and should be read in conjunction with our consolidated financial statements and the related notes thereto included elsewhere in this Annual Report. The following discussion and analysis of our financial condition and results of operations contains forward-looking statements about our business, operations and industry that involve risks and uncertainties, such as statements regarding our plans, objectives, expectations and intentions. Actual results and the timing of events may differ materially from those expressed or implied in such forward-looking statements due to a number of factors, including those set forth under Risk Factors and elsewhere in this Annual Report. See Risk Factors and Special Note Regarding Forward-Looking Statements.

Overview

We are a global learning company, committed to delivering integrated solutions that engage learners, empower educators and improve student outcomes. We serve over 50 million students and three million teachers in more than 150 countries worldwide. In the United States, we are a leading provider of K-12 educational content by market share. We believe our long-standing reputation and trusted brand enable us to capitalize on consumer and digital trends in the education market through our existing and developing channels. Furthermore, our trade and reference materials, including adult and children s fiction and non-fiction books, have won industry awards such as the Pulitzer Prize, Newbery and Caldecott medals and National Book Award.

Recent Developments

Sale of Clinical and Standardized Testing Business and Discontinued Operations

On October 1, 2018, we completed the previously announced sale of all the assets, including intellectual property, used primarily in our Riverside clinical and standardized testing business (Riverside Business) for cash consideration received of $140.0 million, subject to final working capital adjustment, and the purchaser s assumption of all liabilities relating to the Riverside Business subject to specified exceptions. Net proceeds from the sale after the payment of transaction costs were approximately $135.0 million with a post-tax book gain on sale of approximately $30.5 million.

The sale of the Riverside Business is considered a Discontinued Operation due to its relative size and strategic rationale, and accordingly, all results of the Riverside Business have been removed from continuing operations for all periods presented, including from discussions of total net sales and other results of operations. On the balance sheet, all assets and liabilities transferring to the acquirer have been classified as Assets of discontinued operations or Liabilities of discontinued operations. The results of the Riverside Business were previously reported in our Education segment.

Key Aspects and Trends of Our Operations

Business Segments

We are organized along two business segments: Education and Trade Publishing. Our Education segment is our largest segment and represented approximately 85%, 86% and 87% of our total net sales for the years ended December 31, 2018, 2017 and 2016. Our Trade Publishing segment represented approximately 15%, 14% and 13% of our total net sales for the years ended December 31, 2018, 2017 and 2016. The Corporate and Other category represents certain general overhead costs not fully allocated to the business segments, such as legal, accounting, treasury, human resources and executive functions.

Net Sales

We derive revenue primarily from the sale of print and digital content and instructional materials, trade books, multimedia instructional programs, license fees for book rights, content, software and services, consulting

and training. We primarily sell to customers in the United States. Our net sales are driven primarily as a function of volume and, to a certain extent, changes in price. Our net sales consist of our billings for products and services, less revenue that will be deferred until future recognition along with the transaction price allocation adjusted to reflect the estimated returns for the arrangement. Deferred revenues primarily derive from online interactive digital content, digital and online learning components along with undelivered work-texts, workbooks and services. The work-texts, workbooks and services are deferred until control is transferred to the customer, which often extends over the life of the contract, and our hosted online and digital content is typically recognized ratably over the life of the contract. The digitalization of education content and delivery is driving a shift in the education market. As the K-12 educational market transitions to purchasing more digital, personalized education solutions, we believe our ability now or in the future to offer embedded assessments, adaptive learning, real-time interaction and student specific personalization of educational content in a platform- and device-agnostic manner will provide new opportunities for growth. An increasing number of schools are utilizing digital content in their classrooms and implementing online or blended learning environments, which is altering the historical mix of print and digital educational materials in the classroom. As a result, our business model includes integrated solutions comprised of both print and digital offerings/products to address the needs of the education marketplace. The level of revenues being deferred can fluctuate depending upon the mix of product offering between digital and non-digital products, the length of programs and the mix of product delivered immediately or over time.

Core curriculum programs, which typically represent the most significant portion of our Education segment net sales, cover curriculum standards in a particular K-12 academic subject and include a comprehensive offering of teacher and student materials required to conduct the class throughout the school year. Products and services in these programs include print and digital offerings for students and a variety of supporting materials such as teacher s editions, formative assessments, supplemental materials, whole group instruction materials, practice aids, educational games and professional services. The process through which materials and curricula are selected and procured for classroom use varies throughout the United States. Currently, nineteen states, known as adoption states, review and approve new programs usually every six to eight years on a state-wide basis. School districts in those states typically select and purchase materials from the state-approved list. The remaining states are known as open states or open territories. In those states, materials are not reviewed at the state level, and each individual school or school district is free to procure materials at any time, although most follow a five-to-ten year replacement cycle. The student population in adoption states represents approximately 48% of the U.S. elementary and secondary school-age population. Some adoption states provide categorical funding for instructional materials, which means that those state funds cannot be used for any other purpose. Our core curriculum programs, primarily in adoption states, typically have higher deferred sales than other parts of the business. The higher deferred sales are primarily due to the length of time that our programs are being delivered, along with greater component and digital product offerings. A significant portion of our Education segment net sales is dependent upon our ability to maintain residual sales, which are subsequent sales after the year of the original adoption, and our ability to continue to generate new business by developing new programs that meet our customers evolving needs. In addition, our market is affected by changes in state curriculum standards, which drive instruction, assessment and accountability in each state. Changes in state curriculum standards require that instructional materials be revised or replaced to align to the new standards, which historically has driven demand for core curriculum programs.

We also derive our Education segment net sales from supplemental products that target struggling learners through comprehensive intervention solutions aimed at raising student achievement by providing solutions that combine technology, content and other educational products, as well as consulting and professional development services. We also offer products targeted at assisting English language learners.

In international markets, we predominantly export and sell K-12 books to premium private schools that utilize the U.S. curriculum, which are located primarily in Asia, the Pacific, the Middle East, Latin America, the Caribbean and

Africa. Our international sales team utilizes a global network of distributors in local markets around the world.

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Our Trade Publishing segment sells works of fiction and non-fiction in the General Interest and Young Reader s categories, dictionaries and other reference works. While print remains the primary format in which trade books are produced and distributed, the market for trade titles in digital format, primarily ebooks generally represents approximately 8%-10% of our annual Trade Publishing net sales.

Factors affecting our net sales include:

Education

- state or district per student funding levels;
- federal funding levels;
- the cyclicality of the purchasing schedule for adoption states;
- student enrollments;
- adoption of new education standards;
- state acceptance of submitted programs and participation rates for accepted programs;
- technological advancement and the introduction of new content and products that meet the needs of students, teachers and consumers, including through strategic agreements pertaining to content development and distribution; and
- the amount of net sales subject to deferrals which is impacted by the mix of product offering between digital and non-digital products, the length of programs and the mix of product delivered immediately or over time.

Trade Publishing

- consumer spending levels as influenced by various factors, including the U.S. economy and consumer confidence;
- the publishing of bestsellers along with obtaining recognized authors;

- film and series tie-ins to our titles that spur sales of current and backlist titles, which are titles that have been on sale for more than a year; and

- market growth or contraction.

State or district per-student funding levels, which closely correlate with state and local receipts from income, sales and property taxes, impact our sales as institutional customers are affected by funding cycles. Most public school districts, the primary customers for K-12 products and services, are largely dependent on state and local funding to purchase materials.

We monitor the purchasing cycles for specific disciplines in the adoption states in order to manage our product development and to plan sales campaigns. Our sales may be materially impacted during the years that major adoption states, such as Florida, California and Texas, are or are not scheduled to make significant purchases. For example, Florida adopted social studies materials in 2016, for purchase in 2017 and adopted Science materials in 2017 for purchase in 2018.Texas adopted Reading/English Language Arts materials in 2018 for purchase in 2019. California adopted history social science materials in 2017 for purchase in 2018 and continuing through 2020 and adopted Science materials in 2018 for purchase in 2019 and continuing through 2021. Both Florida and Texas, along with several other adoption states, provide dedicated state funding for instructional materials and classroom technology, with funding typically appropriated by the legislature in the first half of the year in which materials are to be purchased. Texas has a two-year budget cycle, and in the 2018 legislative session appropriated funds for purchases in 2018 and 2019. California funds instructional materials in part with a dedicated portion of state lottery proceeds and in part out of general formula funds, with the minimum

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overall level of school funding determined according to the Proposition 98 funding guarantee. We do not currently have contracts with these states for future instructional materials adoptions and there is no guarantee that our programs will be accepted by the state (for example, our K-8 social science materials were not adopted in California in 2017).

Long-term growth in the U.S. K-12 market is positively correlated with student enrollments, which is a driver of growth in the educational publishing industry. Although economic cycles may affect short-term buying patterns, school enrollments are highly predictable and are expected to trend upward over the longer term. From 2015 to 2027, total public school enrollment, a major long-term driver of growth in the K-12 Education market, is projected to increase by 3% to 52.1 million students, according to the National Center for Education Statistics.

As the K-12 educational market purchases more digital solutions, we believe our ability to offer embedded assessments, adaptive learning, real-time interaction and student specific personalized learning and educational content in a platform- and device-agnostic manner will provide new opportunities for growth.

Our Trade Publishing segment is heavily influenced by the U.S. and broader global economy, consumer confidence and consumer spending. As the economy continues to recover, both consumer confidence and consumer spending have increased.

While print remains the primary format in which trade books are produced and distributed, the market for trade titles in digital format, primarily ebooks, has developed over the past several years, as the industry evolved to embrace new technologies for developing, producing, marketing and distributing trade works. We continue to focus on the development of innovative new digital products which capitalize on our strong content, our digital expertise and the consumer demand for these products.

In the Trade Publishing segment, annual results can be driven by bestselling trade titles. Furthermore, backlist titles can experience resurgence in sales when made into films or series. In the past years, a number of our backlist titles such as *The Hobbit*, *The Lord of the Rings*, *Life of Pi*, *The Handmaid s Tale*, *The Polar Express, The Giver* and *The Time Traveler s Wife* have benefited in popularity due to movie or series releases and have subsequently resulted in increased trade sales.

We employ several pricing models to serve various customer segments, including institutions, government agencies, consumers and other third parties. In addition to traditional pricing models where a customer receives a product in return for a payment at the time of product receipt, we currently use the following pricing models:

- Pay-up-front: Customer makes a fixed payment at time of purchase and we provide a specific product/service in return;

- Pre-pay Subscription: Customer makes a one-time payment at time of purchase, but receives a stream of goods/services over a defined time horizon; for example, we currently provide customers the option to purchase a multi-year subscription to textbooks where for a one-time charge, a new copy of the work text is delivered to the customer each year for a defined time period. Pre-pay subscriptions to online textbooks are another example where the customer receives access to an online book for a specific period of time; and

Pay-as-you-go Subscription: Similar to the pre-pay subscription, except that the customer makes periodic payments in a pre-described manner.

Cost of sales, excluding publishing rights and pre-publication amortization

Cost of sales, excluding publishing rights and pre-publication amortization, include expenses directly attributable to the production of our products and services, including the non-capitalizable costs associated with

our content and platform development group. The expenses within cost of sales include variable costs such as paper, printing and binding costs of our print materials, royalty expenses paid to our authors, gratis costs or products provided at no charge as part of the sales transaction, and inventory obsolescence. Also included in cost of sales are labor costs related to professional services and the non-capitalized costs associated with our content and platform development group. We also include amortization expense associated with our customer-facing software platforms. Certain products such as trade books and products associated with our renowned authors carry higher royalty costs; conversely, digital offerings usually have a lower cost of sales due to lower costs associated with their production. Also, sales to adoption states usually contain higher cost of sales. A change in the sales mix of our products or services can impact consolidated profitability.

Publishing rights and Pre-publication amortization

A publishing right is an acquired right that allows us to publish and republish existing and future works as well as create new works based on previously published materials. As part of our March 9, 2010 restructuring, we recorded an intangible asset for publishing rights and amortize such asset on an accelerated basis over the useful lives of the various copyrights involved. This amortization will continue to decrease approximately 25% annually through March of 2023.

We capitalize the art, prepress, manuscript and other costs incurred in the creation of the master copy of our content, known as the pre-publication costs. Pre-publication costs are primarily amortized from the year of sale over five years using the sum-of-the-years-digits method, which is an accelerated method for calculating an asset s amortization. Under this method, the amortization expense recorded for a pre-publication cost asset is approximately 33% (year 1), 27% (year 2), 20% (year 3), 13% (year 4) and 7% (year 5). We utilize this policy for all pre-publication costs, except with respect to our Trade Publishing segment s consumer books, which we generally expense such costs as incurred, and the acquired content of our 2015 acquisition, which we amortize over 7 years using an accelerated amortization method. The amortization methods and periods chosen best reflect the pattern of expected sales generated from individual titles or programs. We periodically evaluate the remaining lives and recoverability of capitalized pre-publication costs, which are often dependent upon program acceptance by state adoption authorities.

Selling and administrative expenses

Our selling and administrative expenses include the salaries, benefits and related costs of employees engaged in sales and marketing, fulfillment and administrative functions. Also included within selling and administrative costs are variable costs such as commission expense, outbound transportation costs (approximately $33.8 million for the year ended December 31, 2018) and depository fees, which are fees paid to state-mandated depositories that fulfill centralized ordering and warehousing functions for specific states. Additionally, significant fixed and discretionary costs include facilities, telecommunications, professional fees, promotions, sampling and advertising along with depreciation.

Other intangible asset amortization

Our other intangible asset amortization expense primarily includes the amortization of acquired intangible assets consisting of tradenames, customer relationships, content rights and licenses. The tradenames, customer relationships, content rights and licenses are amortized over varying periods of 6 to 25 years. The expense for the year ended December 31, 2018 was $26.9 million.

Interest expense

Our interest expense includes interest accrued on our term loan facility along with, to a lesser extent, our revolving credit facility, capital leases, the amortization of any deferred financing fees and loan discounts, and payments in connection with interest rate hedging agreements. Our interest expense for the year ended December 31, 2018 was $45.7 million.

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Results of Operations

Consolidated Operating Results for the Years Ended December 31, 2018 and 2017

(dollars in thousands)	Year Ended December 31, 2018	Year Ended December 31, 2017	Dollar change	Percent Change
Net sales	$ 1,322,417	$ 1,327,029	$ (4,612)	(0.3)%
Costs and expenses:				
Cost of sales, excluding publishing rights and pre-publication amortization	581,467	588,518	(7,051)	(1.2)%
Publishing rights amortization	34,713	46,238	(11,525)	(24.9)%
Pre-publication amortization	109,257	119,908	(10,651)	(8.9)%
Cost of sales	725,437	754,664	(29,227)	(3.9)%
Selling and administrative	649,295	636,326	12,969	2.0%
Other intangible asset amortization	26,933	29,248	(2,315)	(7.9)%
Impairment charge for pre-publication costs		3,980	(3,980)	NM
Restructuring	4,657	37,775	(33,118)	(87.7)%
Severance and other charges	6,821	177	6,644	NM
Gain on sale of assets	(201)		(201)	NM
Operating loss	(90,525)	(135,141)	44,616	33.0%
Other income (expense):				
Retirement benefits non-service income	1,280	3,486	(2,206)	(63.3)%
Interest expense	(45,680)	(42,805)	(2,875)	(6.7)%
Interest income	2,550	1,338	1,212	90.6%
Change in fair value of derivative instruments	(1,374)	1,366	(2,740)	NM
Income from transition services agreement	1,889		1,889	NM
Loss from continuing operations before taxes	(131,860)	(171,756)	39,896	23.2%
Income tax expense (benefit)	5,597	(51,419)	57,016	NM
Net loss from continuing operations	$ (137,457)	$ (120,337)	$ (17,120)	(14.2)%
Income from discontinued operations, net of tax	12,833	17,150	(4,317)	(25.2)%
Gain on sale of discontinued operations, net of tax	30,469		30,469	NM
Net loss	$ (94,155)	$ (103,187)	$ 9,032	8.8%

NM = not meaningful

Net sales for the year ended December 31, 2018 decreased $4.6 million, or 0.3%, from $1,327.0 million in 2017 to $1,322.4 million. The net sales decrease was driven by a $23.8 million decrease in our Education segment, partially offset by a $19.2 million increase in our Trade Publishing segment. Within our Education segment the net sales decrease was primarily due to lower net sales from Core Solutions, which declined by $57.0 million from $595.0 million in 2017 to $538.0 million. The primary drivers of the decrease in Core Solutions sales were decreases in sales relating to disciplines reaching the end of their product lifecycle that are scheduled to be replaced in 2019 with newer programs. Net sales within our science discipline, which is a new program, increased year over year offsetting some of the older program declines. Also contributing to the decline in Core Solutions sales was the non-recurrence of the $5.0 million one-time fee we recognized in 2017 in connection with the expiration of a distribution agreement. Partially offsetting the decrease in our Core Solutions sales was an increase in sales from our Extensions businesses, which primarily consist of our Heinemann brand, intervention and supplemental products as well as professional services. Extensions businesses net sales increased $33.0 million from $551.0 million in 2017 to $584.0 million in 2018 primarily driven by higher Heinemann net sales. The primary driver of the increase in our Heinemann net sales was sales of the *Fountas &*

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Pinnell Classroom product, which was introduced in the third quarter of 2017 and additional product launches during the third quarter of 2018. Within our Trade Publishing segment, the increase was primarily due to licensing revenue driven by a new agreement pertaining to our classic backlist titles *1984* and *Animal Farm*. There was also additional licensing revenue associated with the new Netflix original series, *Carmen Sandiego*. The increase was partially offset by a decrease in ebook sales of $3.0 million.

Operating loss for the year ended December 31, 2018 favorably changed by $44.6 million from a loss of $135.1 million in 2017 to a loss of $90.5 million, due primarily to the following:

- A $33.1 million lower charge in 2017 associated with our 2017 Restructuring Plan, which was substantially completed prior to 2018,

- A $24.5 million reduction in amortization expense related to publishing rights, pre-publication and other intangible assets, primarily due to our use of accelerated amortization methods for publishing rights amortization along with a decline in pre-publication amortization attributed to the timing of product releases,

- Our cost of sales, excluding publishing rights and pre-publication amortization, decreased $7.1 million in 2018, of which $5.0 million is attributed to improved profitability as our cost of sales, excluding publishing rights and pre-publication amortization, as a percentage of net sales decreased to 44.0% from 44.3% due to product mix,

- A reduction in impairment charge for pre-publication costs of $4.0 million. In 2017, we impaired $4.0 million of pre-publication costs for certain products that will not have sales in future periods,

- Partially offsetting the favorable change in operating loss was a $13.0 million increase in selling and administrative costs, due to an increase of $6.5 million in net labor costs related to higher employee benefit and medical expenses as well as planned merit increases offset by actions taken under the 2017 Restructuring Plan; an increase in variable expenses such as samples, commissions and depository fees of $6.6 million, an increase in discretionary costs of $3.5 million related to travel and entertainment, promotion expense and professional fees along with higher depreciation expense of $3.0 million. Offsetting the increase in selling and administrative costs was lower IT expenses of $6.4 million relating to maintenance contracts, hardware and telecommunications, and facilities, and

- A $6.6 million increase in severance and other charges as the majority of such expenses during 2017 were in connection with our 2017 Restructuring Plan and were included within the restructuring line item.

Retirement benefits non-service income for the year ended December 31, 2018 changed unfavorably by $2.2 million due to the lowering of the expected return on plan assets assumption in the calculation of net periodic benefit cost in 2018.

Interest expense for the year ended December 31, 2018 increased $2.9 million from $42.8 million in 2017 to $45.7 million, primarily due to an increase in interest on the term loan facility of $6.3 million due to an increase in variable interest rates, offset by a reduction of $3.4 million of net settlement payments on our interest rate derivative instruments during 2018.

Interest income for the year ended December 31, 2018 increased $1.2 million from $1.3 million in 2017 to $2.5 million, primarily due to increases in interest rates on our investments and higher investment balances.

Change in fair value of derivative instruments for the year ended December 31, 2018 unfavorably changed by $2.7 million from a gain of $1.4 million in 2017 to a loss of $1.4 million in 2018. The change in fair value of derivative instruments was related to foreign exchange forward contracts executed on the Euro that were unfavorably impacted by the stronger U.S. dollar against the Euro.

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Income from transition services agreement for the year ended December 31, 2018 was $1.9 million and was related to transition service fees under the transition services agreement with the purchaser of the Riverside Business whereby we provide certain support functions for a period of up to 18 months from the disposition date in the fourth quarter of 2018.

Income tax expense for the year ended December 31, 2018 increased $57.0 million, from a benefit of $51.4 million in 2017 to an expense of $5.6 million in 2018. The 2018 income tax expense was primarily related to movement in the deferred tax liability associated with tax amortization on indefinite-lived intangibles, and state and foreign taxes. The 2017 income tax benefit was partially offset by movement in the deferred tax liability associated with tax amortization on indefinite-lived intangibles, and state and foreign taxes. For both periods, the income tax benefit was impacted by certain discrete tax items including the accrual of potential interest and penalties on uncertain tax positions. Including the effects of these discrete items, the effective tax rate was (4.2)% and 29.9% for the years ended December 31, 2018 and 2017.

Consolidated Operating Results for the Years Ended December 31, 2017 and 2016

(dollars in thousands)	Year Ended December 31, 2017	Year Ended December 31, 2016	Dollar change	Percent Change
Net sales	$ 1,327,029	$ 1,291,978	$ 35,051	2.7%
Costs and expenses:				
Cost of sales, excluding publishing rights and pre-publication amortization	588,518	578,317	10,201	1.8%
Publishing rights amortization	46,238	61,351	(15,113)	(24.6)%
Pre-publication amortization	119,908	121,866	(1,958)	(1.6)%
Cost of sales	754,664	761,534	(6,870)	(0.9)%
Selling and administrative	636,326	681,170	(44,844)	(6.6)%
Other intangible asset amortization	29,248	26,375	2,873	10.9%
Impairment charge for pre-publication costs and intangible assets	3,980	130,205	(126,225)	(96.9)%
Restructuring	37,775		37,775	NM
Severance and other charges	177	15,371	(15,194)	(98.8)%
Operating loss	(135,141)	(322,677)	187,536	58.1%
Other income (expense):				
Retirement benefits non-service income	3,486	4,253	(767)	(18.0)%
Interest expense	(42,805)	(39,181)	(3,624)	(9.2)%
Interest income	1,338	518	820	NM
Change in fair value of derivative instruments	1,366	(614)	1,980	NM
Loss from continuing operations before taxes	(171,756)	(357,701)	185,945	52.0%
Income tax benefit	(51,419)	(51,556)	137	0.3%

Net loss from continuing operations	$	(120,337)	$	(306,145)	$ 185,808	60.7%
Income from discontinued operations, net of tax		17,150		21,587	(4,437)	(20.6)%
Net loss	$	(103,187)	$	(284,558)	$ 181,371	63.7%

NM = not meaningful

Net sales for the year ended December 31, 2017 increased $35.1 million, or 2.7%, from $1,292.0 million in 2016 to $1,327.0 million. The net sales increase was driven by a $20.1 million increase in our Education segment

and a $15.0 million increase in our Trade Publishing segment during 2017. Within our Education segment, the increase was primarily due to greater sales from our Extension businesses, which primarily consist of Heinemann, intervention, supplemental and assessment products as well as professional services. Extension businesses net sales for 2017 increased $28.0 million from $523.0 million in 2016 to $551.0 million primarily driven by higher Heinemann and supplemental net sales in 2017. The primary drivers of the increase in our Heinemann net sales were sales of Classroom Libraries along with the introduction of *Fountas & Pinnell Classroom* product. The primary drivers of the increase in our supplemental net sales were sales of custom book bundles. Also, within our Extension businesses, intervention net sales declined year over year, offsetting a portion of the above increases. Partially offsetting the increase in our Extension businesses net sales were lower Core Solutions sales, inclusive of international sales, which declined by $8.0 million from $603.0 million in 2016 to $595.0 million in 2017. The primary drivers of the decrease in our Core Solutions business were lower Reading and Math program net sales in open territory states, lower Math program sales in adoption states and lower sales from our international business, primarily due to a large Department of Defense order in 2016 not repeated in 2017. Partially offsetting the decrease in Core Solutions net sales was a $5.0 million one-time fee we recognized in 2017 in connection with the expiration of a distribution agreement. Within our Trade business, the increase was primarily due to sales of the *Whole30* series and Tim Ferriss *Tribe of Mentors and Tools of Titans*, stronger ebook sales, such as *The Handmaid s Tale* and *1984*, and backlist print title sales, such as *The Polar Express* and *The Giver,* along with a lower product return rate and higher subrights income.

Operating loss for the year ended December 31, 2017 favorably changed by $187.5 million from a loss of $322.7 million in 2016 to a loss of $135.1 million, due primarily to the following:

A reduction in Impairment charge for pre-publication costs and intangible assets of $126.2 million. In 2016, we incurred an impairment charge pertaining to certain tradenames within the education business due to a strategic decision to gradually migrate away from specific imprints, primarily Holt McDougal, and our various supplemental brands, in favor of branding our products under the HMH and Houghton Mifflin Harcourt names. In 2017, we impaired $4.0 million of pre-publication costs for products that will not have sales in future periods,

An increase in net sales of $35.1 million,

A $44.8 million decrease in selling and administrative costs primarily due to lower professional fees of $18.9 million (of which $10.0 million relates to legal settlement costs for copyright litigation during the prior year period coupled with a net $3.6 million insurance reimbursement during 2017), a reduction of internal and outside labor related costs of $16.9 million, and lower discretionary expense such as promotion and travel and entertainment expenses of $15.7 million, all largely due to actions taken under the 2017 Restructuring Plan. Additionally, variable expenses such as samples, transportation and depository fees were $7.4 million lower in 2017, and fixed costs and depreciation were $6.3 million lower. The decrease in selling and administrative costs was partially offset by $16.9 million of higher commission expense and annual incentive plan compensation due to greater achievement of targeted levels than in the prior-year period, and $5.0 million of higher office lease cost due to the expiration of favorable office leases,

A $14.2 million net reduction in amortization expense related to publishing rights, pre-publication and other intangible assets, primarily due to our use of accelerated amortization methods for publishing rights

amortization, partially offset by the amortization of certain previously unamortized tradenames, due to a change in estimate of their useful lives during the fourth quarter of 2016,

A $15.2 million reduction in severance and other charges as the majority of such expenses during 2017 were under our 2017 Restructuring Plan and have been included within the restructuring line item,

Partially offsetting the favorable change in operating loss was a $37.8 million charge associated with our 2017 Restructuring Plan, which includes severance and termination benefits of $16.2 million, real estate consolidation costs of $5.0 million, implementation costs of $7.5 million and an impairment charge related to a certain long-lived asset included within property, plant, and equipment of $9.1 million, and

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Our cost of sales, excluding publishing rights and pre-publication amortization, increased $10.2 million of which $15.7 million is attributed to higher sales volume offset by $5.6 million of improved profitability as our cost of sales, excluding publishing rights and pre-publication amortization, as a percentage of net sales decreased to 44.3% from 44.8% due to product mix, increased Trade ebook sales, and a $5.0 million one-time fee we recognized associated with the expiration of distribution agreement that did not carry any cost of sales.

Retirement benefits non-service income for the year ended December 31, 2017 changed unfavorably by $0.8 million due to the increase in amortization of net loss in the calculation of net periodic benefit cost in 2017.

Interest expense for the year ended December 31, 2017 increased $3.6 million, or 9.2%, from $39.2 million in 2016 to $42.8 million, primarily due to $4.1 million of net settlement payments on our interest rate derivative instruments during 2017, offset by the lower outstanding balance on our term loan facility.

Interest income for the year ended December 31, 2017 increased $0.8 million from $0.5 million in 2016 to $1.3 million, primarily due to increases in interest rates on our investments.

Change in fair value of derivative instruments for the year ended December 31, 2017 favorably changed by $2.0 million from a loss of $0.6 million in 2016 to a gain of $1.4 million in 2017. The change in fair value of derivative instruments was related to foreign exchange forward contracts executed on the Euro that were favorably impacted by the weaker U.S. dollar against the Euro.

Income tax benefit for the year ended December 31, 2017 decreased $0.2 million, from a benefit of $51.6 million in 2016 to a benefit of $51.4 million in 2017. The 2017 income tax benefit was primarily related to the following effects of U.S. tax reform:

A $31.5 million benefit related to the remeasurement of U.S. net deferred tax liabilities associated with indefinite-lived intangible assets to reflect the change in U.S. corporate tax rate from 35% to 21%, and

A $40.4 million benefit related to the release of valuation allowance due to the Company s ability to utilize indefinite-lived deferred tax liabilities as a source of future taxable income in its assessment of realization of deferred tax assets. This is a result of the U.S. tax law change that would extend net operating losses generated in taxable years beginning after December 31, 2017 to an unlimited carryforward period subject to an 80% utilization against future taxable earnings.

The 2017 income tax benefit was partially offset by movement in the deferred tax liability associated with tax amortization on indefinite-lived intangibles, and state and foreign taxes. The 2016 income tax benefit was primarily related to a change from indefinite-lived intangibles to definite-lived, partially offset by movement in the deferred tax liability associated with tax amortization on indefinite-lived intangibles, and state and foreign taxes. For both periods, the income tax benefit was impacted by certain discrete tax items including the accrual of potential interest and penalties on uncertain tax positions. Including the effects of these discrete items, the effective tax rate was 29.9% and 14.4% for the years ended December 31, 2017 and 2016.

Adjusted EBITDA From Continuing Operations

To supplement our financial statements presented in accordance with GAAP, we have presented Adjusted EBITDA from continuing operations, which is not prepared in accordance with GAAP. This information should be considered

as supplemental in nature and should not be considered in isolation or as a substitute for the related financial information prepared in accordance with GAAP. Management believes that the presentation of Adjusted EBITDA provides useful information to investors regarding our results of operations because it assists both investors and management in analyzing and benchmarking the performance and value of our business. Adjusted EBITDA provides an indicator of general economic performance that is not affected by debt restructurings, fluctuations in interest rates or effective tax rates, non-cash charges, or levels of depreciation or

amortization along with costs such as severance, separation and facility closure costs, acquisition/disposition-related activity costs, restructuring costs and integration costs. Accordingly, our management believes that this measurement is useful for comparing general operating performance from period to period. In addition, targets in Adjusted EBITDA (further adjusted to include changes in deferred revenue) are used as performance measures to determine certain compensation of management, and Adjusted EBITDA is used as the base for calculations relating to incurrence covenants in our debt agreements. Other companies may define Adjusted EBITDA differently and, as a result, our measure of Adjusted EBITDA may not be directly comparable to Adjusted EBITDA of other companies. Although we use Adjusted EBITDA as a financial measure to assess the performance of our business, the use of Adjusted EBITDA is limited because it does not include certain material costs, such as interest and taxes, necessary to operate our business. Adjusted EBITDA should be considered in addition to, and not as a substitute for, net loss/income in accordance with GAAP as a measure of performance. Adjusted EBITDA is not intended to be a measure of liquidity or free cash flow for discretionary use. You are cautioned not to place undue reliance on Adjusted EBITDA.

Below is a reconciliation of Adjusted EBITDA from continuing operations to our net loss from continuing operations for the years ended December 31, 2018, 2017 and 2016:

	Years Ended December 31,		
	2018	**2017**	**2016**
Net loss from continuing operations	$ (137,457)	$ (120,337)	$ (306,145)
Interest expense	45,680	42,805	39,181
Interest income	(2,550)	(1,338)	(518)
Provision (benefit) for income taxes	5,597	(51,419)	(51,556)
Depreciation expense	75,116	71,049	74,467
Amortization expense film asset	6,057		
Amortization expense	170,903	195,394	209,592
Non-cash charges stock-compensation	13,248	10,728	10,491
Non-cash charges (gain) loss on derivative instruments	1,374	(1,366)	614
Non-cash charges asset impairment charges		3,980	130,205
Purchase accounting adjustments			5,116
Fees, expenses or charges for equity offerings, debt or acquisitions/dispositions	2,883	1,464	1,123
2017 Restructuring Plan	4,657	37,775	
Restructuring/Integration			14,364
Severance, separation costs and facility closures	6,821	177	15,371
Legal (reimbursement) settlement		(3,633)	10,000
Gain on sale of assets	(201)		
Adjusted EBITDA from continuing operations	$ 192,128	$ 185,279	$ 152,305

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Segment Operating Results

Results of Operations Comparing Years Ended December 31, 2018, 2017 and 2016

Education

	Years Ended December 31,			2018 vs. 2017		2017 vs. 2016	
	2018	2017	2016	Dollar change	Percent change	Dollar change	Percent change
Net sales	$ 1,122,689	$ 1,146,453	$ 1,126,363	$ (23,764)	(2.1)%	$ 20,090	1.8%
Costs and expenses:							
Cost of sales, excluding publishing rights and pre-publication amortization	451,195	472,925	466,593	(21,730)	(4.6)%	6,332	1.4%
Publishing rights amortization	28,059	38,721	52,660	(10,662)	(27.5)%	(13,939)	(26.5)%
Pre-publication amortization	108,953	119,540	121,459	(10,587)	(8.9)%	(1,919)	(1.6)%
Cost of sales	588,207	631,186	640,712	(42,979)	(6.8)%	(9,526)	(1.5)%
Selling and administrative	518,014	498,334	522,806	19,680	3.9%	(24,472)	(4.7)%
Other intangible asset amortization	20,989	23,436	22,875	(2,447)	(10.4)%	561	2.5%
Impairment charge for pre-publication costs and intangible assets		3,980	130,205	(3,980)	NM	(126,225)	NM
Gain on sale of assets	(201)			(201)	NM		NM
Operating loss from continuing operations	$ (4,320)	$ (10,483)	$ (190,235)	$ 6,163	58.8%	$ 179,752	94.5%
Net loss from continuing operations	$ (4,320)	$ (10,483)	$ (190,235)	$ 6,163	58.8%	$ 179,752	94.5%
Adjustments from net income (loss) from continuing operations to Education segment Adjusted EBITDA							
Depreciation expense	$ 57,124	$ 48,747	$ 52,552	$ 8,377	17.2%	$ (3,805)	(7.2)%
Amortization expense	158,001	181,697	196,994	(23,696)	(13.0)%	(15,297)	(7.8)%
Non-cash charges asset impairment charges		3,980	130,205	(3,980)	NM	(126,225)	(96.9)%

Purchase accounting adjustments			5,116		NM	(5,116)	NM
Gain on sale of assets	(201)			(201)	NM		NM
Education segment Adjusted EBITDA	$ 210,604	$ 223,941	$ 194,632	$ (13,337)	(6.0)%	$ 29,309	15.1%
Education segment Adjusted EBITDA as a % of net sales	18.8%	19.5%	17.3%				

NM = not meaningful

Our Education segment net sales for the year ended December 31, 2018 decreased $23.8 million, or 2.1%, from $1,146.5 million in 2017 to $1,122.7 million. The net sales decrease was primarily due to lower net sales from Core Solutions, which declined by $57.0 million from $595.0 million in 2017 to $538.0 million. The

primary drivers of the decrease in Core Solutions sales were decreases in sales relating to disciplines reaching the end of their product lifecycle that are scheduled to be replaced in 2019 with newer programs. Net sales within our science discipline, which is a new program, increased year over year offsetting some of the older program declines. Also contributing to the decline in Core Solutions sales was the non-recurrence of the $5.0 million one-time fee we recognized in 2017 in connection with the expiration of a distribution agreement. Partially offsetting the decrease in our Core Solutions sales was an increase in sales from our Extensions businesses, which primarily consist of our Heinemann brand, intervention and supplemental products as well as professional services. Extensions businesses net sales increased $33.0 million from $551.0 million in 2017 to $584.0 million in 2018 primarily driven by higher Heinemann net sales. The primary driver of the increase in our Heinemann net sales was sales of the *Fountas & Pinnell Classroom* product, which was introduced in the third quarter of 2017 and additional product launches during the third quarter of 2018.

Our Education segment net sales for the year ended December 31, 2017 increased $20.1 million, or 1.8%, from $1,126.4 million in 2016 to $1,146.5 million. The net sales increase was primarily due to greater sales from our Extension businesses, which primarily consist of Heinemann, intervention, supplemental and assessment products as well as professional services. Extension businesses net sales for 2017 increased $28.0 million from $523.0 million in the 2016 to $551.0 million primarily driven by higher Heinemann and supplemental net sales. The primary drivers of the increase in our Heinemann net sales were sales of our Classroom Libraries offering along with the introduction of our *Fountas & Pinnell Classroom* product. The primary drivers of the increase in our supplemental net sales for the year ended December 31, 2017 were sales of custom book bundles. Also within our Extension businesses, our assessment and intervention net sales declined year over year, offsetting a portion of the above increases. Partially offsetting the increase in our Extension businesses net sales were lower Core Solutions sales, inclusive of international sales, which declined by $8.0 million from $603.0 million in 2016 to $595.0 million in 2017. The primary drivers behind the decrease in our Core Solutions business were lower net sales of open territory programs, Core Solutions math programs across adoption states and lower sales from our international business, primarily due to a large Department of Defense order in the prior year not repeated in 2017. Partially offsetting the decrease in Core Solutions net sales was a $5.0 million one-time fee we recognized in connection with the expiration of a distribution agreement.

Our Education segment cost of sales for the year ended December 31, 2018 decreased $43.0 million, or 6.8%, from $631.2 million in 2017 to $588.2 million. Publishing rights and pre-publication amortization decreased by $21.2 million from 2017 primarily due a decline in pre-publication amortization attributed to the timing of product releases along with our use of accelerated amortization methods for publishing rights amortization. Our cost of sales, excluding publishing rights and pre-publication amortization, decreased $21.7 million from $472.9 million in 2017 to $451.2 million in 2018 of which $9.8 million is attributed to lower sales volume coupled with $11.9 million of improved profitability as our cost of sales, excluding publishing rights and pre-publication amortization, as a percentage of net sales decreased to 40.2% from 41.3%, primarily due to product mix.

Our Education segment cost of sales for the year ended December 31, 2017, decreased $9.5 million, or 1.5%, from $640.7 million in 2016 to $631.2 million. Publishing rights and pre-publication amortization decreased by $15.9 million from 2017 primarily due to our use of accelerated amortization methods for publishing rights amortization. Our cost of sales, excluding publishing rights and pre-publication amortization, increased $6.3 million primarily due to higher sales volume.

Our Education segment selling and administrative expense for the year ended December 31, 2018 increased $19.7 million, or 3.9%, from $498.3 million in 2017 to $518.0 million. The increase was driven by higher depreciation, an increase in professional fees, an increase in variable expenses such as commissions and depository fees and an increase in discretionary spending such as travel and entertainment. Partially offsetting the increases in costs was a reduction in labor related costs, partially offset by benefit and medical expenses as well as planned merit

increases, along with a decrease in technology costs due to reduced hosting and maintenance contracts in connection with the actions taken under the 2017 Restructuring Plan.

Our Education segment selling and administrative expense for the year ended December 31, 2017 decreased $24.5 million, or 4.7%, from $522.8 million in 2016 to $498.3 million. The decrease was driven by a reduction in internal and outside labor related costs, a reduction in marketing and advertising costs along with lower travel and entertainment expenses, primarily as a result of actions taken under the 2017 Restructuring Plan. Further, samples, transportation and depository fees were lower in 2017. The decrease was partially offset by higher incentive compensation, and higher commission expense due to greater achievement levels than in 2016 along with higher office lease cost due to the expiration of favorable office leases.

Our Education segment other intangible asset amortization expense for the year ended December 31, 2018 decreased $2.4 million, or 10.4%, from 2017, which was due to certain intangible assets becoming fully amortized in the middle of 2017.

Our Education segment other intangible asset amortization expense for the year ended December 31, 2017 increased $0.6 million from 2016, which was related to the amortization of certain previously unamortized tradenames, due to a change in estimate of their useful lives during the fourth quarter of 2016, partially offset by decline of other existing intangible assets.

Our Education segment impairment charge for pre-publication costs decreased $4.0 million in 2018 from 2017. There was no impairment charge in 2018. In 2017, the impairment charge of $4.0 million was related to a certain program included within pre-publication costs.

Our Education segment impairment charge for pre-publication costs and intangible assets decreased $126.2 million in 2017 from 2016. In 2016, the impairment charge of $130.2 million was for intangible assets, as the Company made the strategic decision to gradually migrate away from specific imprints, primarily Holt McDougal and various supplemental brands, in favor of branding our products under the HMH and Houghton Mifflin Harcourt names. In 2017, the impairment charge of $4.0 million was related to a certain program included within pre-publication costs.

Our Education segment Adjusted EBITDA for the year ended December 31, 2018 decreased $13.3 million, or 6.0%, from $223.9 million in 2017 to $210.6 million. Our Education segment Adjusted EBITDA excludes depreciation, amortization and loss on sale of assets. The decrease is due to the identified factors impacting net sales, cost of sales and selling and administrative expenses after removing those items not included in Education segment Adjusted EBITDA. Education segment Adjusted EBITDA as a percentage of net sales was 18.8% and 19.5% for each of the years ended December 31, 2018 and 2017, respectively.

Our Education segment Adjusted EBITDA for the year ended December 31, 2017, improved $29.3 million, or 15.1%, from $194.6 million in 2016 to $223.9 million in 2017. Our Education segment Adjusted EBITDA excludes depreciation, amortization, asset impairment charges and purchase accounting adjustments. The 2016 purchase accounting adjustments primarily relate to a 2015 acquisition. The increase is due to the identified factors impacting net sales, cost of sales and selling and administrative expenses after removing those items not included in Education segment Adjusted EBITDA. Education segment Adjusted EBITDA as a percentage of net sales was 19.5% and 17.3% for each of the years ended December 31, 2017 and 2016, respectively.

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Trade Publishing

	Years Ended December 31,			2018 vs. 2017		2017 vs. 2016	
	2018	2017	2016	Dollar change	Percent change	Dollar change	Percent change
Net sales	$ 199,728	$ 180,576	$ 165,615	$ 19,152	10.6%	$ 14,961	9.0%
Costs and expenses:							
Cost of sales, excluding publishing rights and pre-publication amortization	130,272	115,593	111,724	14,679	12.7%	3,869	3.5%
Publishing rights amortization	6,654	7,517	8,691	(863)	(11.5)%	(1,174)	(13.5)%
Pre-publication amortization	304	368	407	(64)	(17.4)%	(39)	(9.6)%
Cost of sales	137,230	123,478	120,822	13,752	11.1%	2,656	2.2%
Selling and administrative	54,129	53,288	48,227	841	1.6%	5,061	10.5%
Other intangible asset amortization	5,944	5,812	3,500	132	2.3%	2,312	66.1%
Operating income (loss)	$ 2,425	$ (2,002)	$ (6,934)	$ 4,427	NM	$ 4,932	71.1%
Net income (loss)	$ 2,425	$ (2,002)	$ (6,934)	$ 4,427	NM	$ 4,932	71.1%
Adjustments from net income (loss) to Trade Publishing segment Adjusted EBITDA							
Depreciation expense	$ 558	$ 401	$ 591	$ 157	39.2%	$ (190)	(32.1)%
Amortization expense film asset	6,057			6,057	NM		NM
Amortization expense	12,902	13,697	12,598	(795)	(5.8)%	1,099	8.7%
Trade Publishing segment Adjusted EBITDA	$ 21,942	$ 12,096	$ 6,255	$ 9,846	81.4%	$ 5,841	93.4%
Trade Publishing segment Adjusted EBITDA as a % of net sales	11.0%	6.7%	3.8%				

NM = not meaningful

Our Trade Publishing segment net sales for the year ended December 31, 2018 increased $19.2 million, or 10.6%, from $180.6 million in 2017 to $199.7 million. The increase was primarily due to licensing revenue driven by a new agreement pertaining to our classic backlist titles *1984* and *Animal Farm*. There was also additional licensing revenue associated with the new Netflix original series, *Carmen Sandiego*. Further, the year benefited from sales of the *Little Blue Truck* series, *Instant Pot Miracle* and the *Whole 30* series. Additionally, there were strong net sales of the

backlist title *Beautiful Boy* which benefited from the release of the movie. Partially offsetting the aforementioned was a decrease in ebook sales.

Our Trade Publishing segment net sales for the year ended December 31, 2017 increased $15.0 million, or 9.0%, from $165.6 million in 2016 to $180.6 million. The increase in net sales was driven by 2017 sales of the *Whole30* series and Tim Ferriss *Tribe of Mentors* and *Tools of Titans*, stronger ebook sales, such as *The Handmaid s Tale* and *1984*, and backlist print title sales, such as *The Polar Express* and *The Giver*, along with favorable product return experience and higher subrights income.

Our Trade Publishing segment cost of sales for the year ended December 31, 2018 increased $13.8 million, or 11.1%, from $123.5 million in 2017 to $137.2 million. The increase was primarily driven by our cost of sales, excluding publishing rights and pre-publication amortization which increased $14.7 million. Approximately

$12.3 million of the increase was driven by higher sales volume, coupled with an unfavorable change in profitability of $2.4 million as our cost of sales, excluding publishing rights and pre-publication amortization, as a percentage of net sales increased to 65.2% from 64.0%. The increase in rate was due to a product mix partially driven by a decrease in ebook sales. Partially offsetting the aforementioned increases were slightly lower publishing rights amortization due to our use of accelerated amortization methods.

Our Trade Publishing segment cost of sales for the year ended December 31, 2017 increased $2.7 million, or 2.2%, from $120.8 million in 2016 to $123.5 million. Approximately $10.1 million of the increase was driven by higher sales volume, partially offset by $6.2 million of lower costs as our cost of sales, excluding publishing rights and pre-publication amortization, as a percentage of net sales decreased to 64.0% from 67.5%. The decline in rate was due to a product mix partially driven by an increase in ebook sales. Further, the increase in our costs of sales was also slightly offset by $1.2 million of lower amortization expense of publishing rights and pre-publication amortization due to our use of accelerated amortization methods.

Our Trade Publishing segment selling and administrative expense for the year ended December 31, 2018 increased $0.8 million from $53.3 million in 2017, to $54.1 million. The increase was primarily due to higher marketing and advertising costs.

Our Trade Publishing segment selling and administrative expense for the year ended December 31, 2017 increased $5.1 million from $48.2 million in 2016, to $53.3 million. The increase was primarily due to higher transportation costs associated with increased sales volume along with higher costs to support consumer products, partially offset by a reduction of internal and outside labor related costs and lower discretionary costs, all largely due to actions taken under the 2017 Restructuring Plan.

Our Trade Publishing segment other intangible asset amortization expense for the year ended December 31, 2018 slightly increased from 2017.

Our Trade Publishing segment other intangible asset amortization expense for the year ended December 31, 2017 increased $2.3 million from 2016, which was related to amortization of certain previously unamortized tradenames, due to a change in estimate of their useful lives during the fourth quarter of 2016, offset by our use of accelerated amortization methods.

Our Trade Publishing segment Adjusted EBITDA for the year ended December 31, 2018 changed favorably from $12.1 million in 2017 to $21.9 million. Our Trade Publishing segment Adjusted EBITDA excludes depreciation and amortization costs. Our Trade Publishing segment Adjusted EBITDA as a percentage of net sales was 11.0% for the year ended December 31, 2018, which was a favorable change from 6.7% in 2017 due to the identified factors impacting net sales, cost of sales and selling and administrative expenses after removing those items not included in Trade Publishing segment Adjusted EBITDA.

Our Trade Publishing segment Adjusted EBITDA for the year ended December 31, 2017 improved $5.8 million, from $6.3 million in 2016 to $12.1 million in 2017. Our Trade Publishing segment Adjusted EBITDA excludes depreciation and amortization costs. Our Trade Publishing segment Adjusted EBITDA as a percentage of net sales was 6.7% for the year ended December 31, 2017, which was a favorable change from 3.8% in 2016 due to the identified factors impacting net sales, cost of sales and selling and administrative expenses after removing those items not included in Trade Publishing segment Adjusted EBITDA.

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Corporate and Other

	Years Ended December 31,			2018 vs. 2017		2017 vs. 2016	
	2018	2017	2016	Dollar change	Percent change	Dollar change	Percent change
Net sales	$	$	$	$	NM	$	NM
Costs and expenses:							
Cost of sales, excluding publishing rights and pre-publication amortization					NM		NM
Publishing rights amortization					NM		NM
Pre-publication amortization					NM		NM
Cost of sales					NM		NM
Selling and administrative	77,152	84,704	110,137	(7,552)	(8.9)%	(25,433)	(23.1)%
Restructuring	4,657	37,775		(33,118)	(87.7)%	37,775	NM
Severance and other charges	6,821	177	15,371	6,644	NM	(15,194)	(98.8)%
Operating loss	$ (88,630)	$ (122,656)	$ (125,508)	$ 34,026	27.7%	$ 2,852	2.3%
Retirement benefits non-service income	1,280	3,486	4,253	(2,206)	(63.3)%	(767)	(18.0)%
Interest expense	(45,680)	(42,805)	(39,181)	(2,875)	(6.7)%	(3,624)	(9.2)%
Interest income	2,550	1,338	518	1,212	90.6%	820	NM
Change in fair value of derivative instruments	(1,374)	1,366	(614)	(2,740)	NM	1,980	NM
Income from transition services agreement	1,889			1,889	NM		NM
Loss before taxes	(129,965)	(159,271)	(160,532)	29,306	18.4%	1,261	0.8%
Income tax (benefit) expense	5,597	(51,419)	(51,556)	57,016	NM	137	0.3%
Net loss	$ (135,562)	$ (107,852)	$ (108,976)	$ (27,710)	(25.7)%	$ 1,124	1.0%
Adjustments from net loss to Corporate and Other Adjusted EBITDA							
Interest expense	$ 45,680	$ 42,805	$ 39,181	$ 2,875	6.7%	$ 3,624	9.2%
Interest income	(2,550)	(1,338)	(518)	(1,212)	90.6%	(820)	NM
Provision (benefit) for income taxes	5,597	(51,419)	(51,556)	57,016	NM	137	0.3%
Depreciation expense	17,434	21,901	21,324	(4,467)	(20.4)%	577	2.7%
Non-cash charges loss on derivative instruments	1,374	(1,366)	614	2,740	NM	(1,980)	NM
Non-cash charges stock-compensation	13,248	10,728	10,491	2,520	23.5%	237	2.3%

Fees, expenses or charges for equity offerings, debt or acquisitions/dispositions	2,883	1,464	1,123	1,419	96.9%	341	30.4%
2017 Restructuring Plan	4,657	37,775		(33,118)	(87.7)%	37,775	NM
Restructuring/integration			14,364		NM	(14,364)	NM
Severance separation costs and facility closures	6,821	177	15,371	6,644	NM	(15,194)	(98.8)%
Legal (reimbursement) settlement		(3,633)	10,000	3,633	NM	(13,633)	NM
Corporate and Other Adjusted EBITDA	$ (40,418)	$ (50,758)	$ (48,582)	$ 10,340	20.4%	$ (2,176)	(4.4)%

NM= not meaningful

The Corporate and Other category represents certain general overhead costs not fully allocated to the business segments such as legal, accounting, treasury, human resources, technology and executive functions along with restructuring, severance and other non-operating costs.

Our selling and administrative expense for the Corporate and Other category for year the ended December 31, 2018 decreased $7.6 million, or 8.9%, from $84.7 million in 2017 to $77.2 million. The decrease was primarily due to $4.5 million of lower depreciation expense associated with the Company s technology infrastructure and lower labor costs, rent and technology cost, all attributed to the 2017 Restructuring actions partially offset by higher professional fees and stock compensation charges.

Our selling and administrative expense for the Corporate and Other category for the year ended December 31, 2017 decreased $25.4 million, or 23.1%, from $110.1 million in 2016 to $84.7 million. The decrease was primarily due to legal settlement costs for permissions litigation of $10.0 million in 2016 and a subsequent insurance net reimbursement of $3.6 million which occurred in 2017, and lower travel and entertainment expenses. Further, there were lower restructuring/integration costs as 2016 had costs associated with integration of systems to support the 2015 acquisition. Partially offsetting the decrease were higher annual incentive plan compensation costs in 2017 and costs under our 2017 Restructuring Plan.

Our 2017 Restructuring Plan costs for the year ended December 31, 2018 were $4.7 million of real estate consolidation costs.

Our 2017 Restructuring Plan costs for the year ended December 31, 2017 were $37.8 million, which included severance and termination benefits of $16.2 million, real estate consolidation costs of $5.0 million, implementation costs of $7.5 million and an impairment charge related to a certain long-lived asset included within property, plant, and equipment of $9.1 million.

Severance and other charges for the year ended December 31, 2018 changed unfavorably compared to the prior year by $6.6 million as the majority of such expenses during the 2017 period were in connection with our 2017 Restructuring Plan and were included within the restructuring line item.

Severance and other charges for the year ended December 31, 2017 changed favorably compared to the prior year by $15.2 million as the majority of such expenses during the 2017 period were in connection with our 2017 Restructuring Plan and were included within the restructuring line item.

Retirement benefits non-service income for the year ended December 31, 2018 changed unfavorably by $2.2 million due to the lowering of the expected return on plan assets assumption in the calculation of net periodic benefit cost in 2018.

Retirement benefits non-service income for the year ended December 31, 2017 changed unfavorably by $0.8 million due to the increase in amortization of net loss in the calculation of net periodic benefit cost in 2017.

Interest expense for the year ended December 31, 2018 increased $2.9 million from $42.8 million in 2017 to $45.7 million, primarily due to an increase in interest on the term loan facility of $6.3 million due to an increase in variable interest rates, offset by a reduction of $3.4 million of net settlement payments on our interest rate derivative instruments during 2018.

Our interest expense for the Corporate and Other category for the year ended December 31, 2017 increased $3.6 million, or 9.2%, from $39.2 million in 2016 to $42.8 million, primarily due to $4.1 million of net settlement payments on our interest rate derivative instruments during 2017, partially offset by the lower outstanding balance on our term loan facility.

Interest income for the year ended December 31, 2018 increased $1.2 million from $1.3 million in 2017 to $2.5 million, primarily due to increases in interest rates on our investments and higher investment balances.

Interest income for the year ended December 31, 2017 increased $0.8 million from $0.5 million in 2016 to $1.3 million, primarily due to increases in interest rates on our investments.

Change in fair value of derivative instruments for the year ended December 31, 2018 unfavorably changed by $2.7 million from a gain of $1.4 million in 2017 to a loss of $1.4 million in 2018. The change in fair value of derivative instruments was related to foreign exchange forward contracts executed on the Euro that were unfavorably impacted by the stronger U.S. dollar against the Euro.

Change in fair value of derivative instruments for the year ended December 31, 2017 favorably changed by $2.0 million from a loss of $0.6 million in 2016 to a gain of $1.4 million in 2017. The change in fair value of derivative instruments was related to foreign exchange forward contracts executed on the Euro that were favorably impacted by the weaker U.S. dollar against the Euro.

Income from transition services agreement for the year ended December 31, 2018 was $1.9 million and was related to transition service fees under the transition services agreement with the purchaser of the Riverside Business whereby we provide certain support functions for a period of up to 18 months from the disposition date in the fourth quarter of 2018.

Income tax expense for the year ended December 31, 2018 increased $57.0 million from a benefit of $51.4 million in 2017 to an expense of $5.6 million in 2018. The 2018 income tax expense was primarily related to movement in the deferred tax liability associated with tax amortization on indefinite-lived intangibles, and state and foreign taxes. The 2017 income tax benefit of $51.4 million was primarily related to the effects of the Tax Cuts and Jobs Act. As a result of the effects of new tax legislation, the Company recognized a $31.5 million benefit related to the remeasurement of U.S. deferred tax liabilities associated with indefinite-lived intangible assets to reflect the change in U.S. corporate tax rate from 35% to 21% and a $40.4 million benefit related to the release of valuation allowance due to the Company s ability to utilize indefinite-lived deferred tax liabilities as a source of future taxable income in the Company s assessment of its realization of deferred tax assets. This is a result of the U.S. tax law change that would extend net operating losses generated in taxable years beginning after December 31, 2017 to an unlimited carryforward period subject to an 80% utilization against future taxable earnings. The income tax benefit recognized from the effects of U.S. tax reform was partially offset by movement in the deferred tax liability associated with tax amortization on indefinite-lived intangibles, and state and foreign taxes. For both periods, the income tax expense was impacted by certain discrete tax items including the accrual of potential interest and penalties on uncertain tax positions. Including the tax effects of these discrete tax items, the effective tax rate was (4.2)% and 29.9% for the years ended December 31, 2018 and 2017, respectively.

Income tax benefit for the year ended December 31, 2017 decreased $0.2 million from a benefit of $51.6 million in 2016 to a benefit of $51.4 million in 2017. The 2017 income tax benefit was primarily related to the effects of the Tax Cuts and Jobs Act. As a result of the effects of new tax legislation, the Company recognized a $31.5 million benefit related to the remeasurement of U.S. deferred tax liabilities associated with indefinite-lived intangible assets to reflect the change in U.S. corporate tax rate from 35% to 21% and a $40.4 million benefit related to the release of valuation allowance due to the Company s ability to utilize indefinite-lived deferred tax liabilities as a source of future taxable income in the Company s assessment of its realization of deferred tax assets. This is a result of the U.S. tax law change that would extend net operating losses generated in taxable years beginning after December 31, 2017 to an unlimited carryforward period subject to an 80% utilization against future taxable earnings. The income tax benefit recognized from the effects of U.S. tax reform was partially offset by movement in the deferred tax liability associated with tax

amortization on indefinite-lived intangibles, and state and foreign taxes. The income tax benefit of $51.6 million for the year ended December 31, 2016 was primarily related to a change from indefinite-lived intangibles to definite-lived,

partially offset by movement in the deferred tax liability associated with tax amortization on indefinite-lived intangibles, and state and foreign taxes. For both periods, the income tax benefit was impacted by certain discrete tax items including the accrual of potential interest and penalties on uncertain tax positions. Including the tax effects of these discrete tax items, the effective tax rate was 29.9% and 14.4% for the years ended December 31, 2017 and 2016, respectively.

Adjusted EBITDA for the Corporate and Other category for the year ended December 31, 2018 favorably changed $10.3 million, or 20.4%, from a loss of $50.8 million in 2017 to a loss of $40.4 million. Our Adjusted EBITDA for the Corporate and Other category excludes interest, taxes, depreciation, derivative instruments charges, equity compensation charges, acquisition/disposition-related activity, restructuring costs, integration costs, severance and facility vacant space costs and legal settlement reimbursements. The favorable change in our Adjusted EBITDA for the Corporate and Other category was due to the factors described above after removing those items not included in Adjusted EBITDA for the Corporate and Other category.

Adjusted EBITDA for the Corporate and Other category for the year ended December 31, 2017 changed unfavorably by $2.2 million, or 4.4%, from a loss of $48.6 million in 2016 to a loss of $50.8 million. Our Adjusted EBITDA for the Corporate and Other category excludes interest, taxes, depreciation, derivative instruments charges, equity compensation charges, acquisition-related activity, restructuring costs, integration costs, severance and facility vacant space costs, and legal settlement charges/reimbursements. The unfavorable change in our Adjusted EBITDA for the Corporate and Other category was due to the factors described above after removing those items not included in Adjusted EBITDA for the Corporate and Other category.

Seasonality and Comparability

Our net sales, operating profit or loss and net cash provided by or used in operations are impacted by the inherent seasonality of the academic calendar. Consequently, the performance of our businesses may not be comparable quarter to consecutive quarter and should be considered on the basis of results for the whole year or by comparing results in a quarter with results in the same quarter for the previous year.

Approximately 85% of our net sales for the year ended December 31, 2018 were derived from our Education segment, which is a markedly seasonal business. Schools conduct the majority of their purchases in the second and third quarters of the calendar year in preparation for the beginning of the school year. Thus, over the past three completed fiscal years, approximately 67% of our consolidated net sales were realized in the second and third quarters. Sales of K-12 instructional materials are also cyclical, with some years offering more sales opportunities than others in light of the state adoption calendar. The amount of funding available at the state level for educational materials also has a significant effect on year-to-year net sales. Although the loss of a single customer would not have a material adverse effect on our business, schedules of school adoptions and market acceptance of our products can materially affect year-to-year net sales performance.

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The following table is indicative of the seasonality of our business and the related results:

Quarterly Results of Operations

(in thousands)	First Quarter 2017	Second Quarter 2017	Third Quarter 2017	Fourth Quarter 2017	First Quarter 2018	Second Quarter 2018	Third Quarter 2018	Fourth Quarter 2018
Education segment	$ 167,152	$ 330,949	$ 465,017	$ 183,335	$ 163,023	$ 321,276	$ 449,636	$ 188,754
Trade Publishing segment	36,533	42,444	51,189	50,410	36,736	36,089	66,619	60,284
Net sales	203,685	373,393	516,206	233,745	199,759	357,365	516,255	249,038
Costs and expenses:								
Cost of sales, excluding publishing rights and pre-publication amortization	100,183	168,485	202,053	117,797	99,733	160,058	201,748	119,928
Publishing rights amortization	13,398	10,867	10,987	10,986	10,090	8,148	8,238	8,237
Pre-publication amortization	26,402	28,238	32,113	33,155	25,621	26,332	28,094	29,210
Cost of sales	139,983	207,590	245,153	161,938	135,444	194,538	238,080	157,375
Selling and administrative	152,027	161,159	173,690	149,450	145,527	169,323	176,202	158,243
Other intangible asset amortization	7,701	7,753	6,873	6,921	6,866	6,676	6,696	6,695
Impairment charge for intangible assets				3,980				
Restructuring	3,798	30,515	1,845	1,617			3,077	1,580
Severance and other charges	670	213	272	(978)	3,943	2,075	362	441
Gain on sale of assets					884	(500)		(585)
Operating income (loss)	(100,494)	(33,837)	88,373	(89,183)	(92,905)	(14,747)	91,838	(74,711)

Other income (expense)								
Retirement benefits non-service income	872	872	871	871	320	320	320	320
Interest expense	(10,453)	(10,547)	(10,980)	(10,825)	(10,936)	(11,472)	(11,627)	(11,645)
Interest income	245	115	281	697	506	117	277	1,650
Change in fair value of derivative instruments	45	851	377	93	372	(1,097)	(249)	(400)
Income from transition services agreement								1,889
Loss from continuing operations before taxes	(109,785)	(42,546)	78,922	(98,347)	(102,643)	(26,879)	80,559	(82,897)
Income tax expense (benefit)	14,076	6,120	(9,714)	(61,901)	3,243	2,210	(3,349)	3,493
Net loss from continuing operations	$ (123,861)	$ (48,666)	$ 88,636	$ (36,446)	$ (105,886)	$ (29,089)	$ 83,908	$ (86,390)
Earnings from discontinued operations, net tax	3,203	1,799	1,870	10,278	4,575	5,817	2,441	
Gain on sale of discontinued operations, net of tax								30,469
Net income (loss)	$ (120,658)	$ (46,867)	$ 90,506	$ (26,168)	$ (101,311)	$ (23,272)	$ 86,349	$ (55,921)

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Liquidity and Capital Resources

	December 31,		
(in thousands)	2018	2017	2016
Cash and cash equivalents	$ 253,365	$ 148,979	$ 226,102
Short-term investments	49,833	86,449	80,841
Current portion of long-term debt	8,000	8,000	8,000
Long-term debt, net of discount	755,649	760,194	764,738

	Years ended December 31,		
	2018	2017	2016
Net cash provided by operating activities	$ 114,915	$ 135,130	$ 143,751
Net cash used in investing activities	(6,405)	(204,923)	(113,946)
Net cash (used in) provided by financing activities	(4,124)	(7,330)	(37,960)

Operating activities

Net cash provided by operating activities was $114.9 million for the year ended December 31, 2018, a $20.2 million decrease from the $135.1 million of net cash provided by operating activities for the year ended December 31, 2017. Net cash provided by operating activities included $10.8 million and $30.4 million of cash flow from discontinued operations in 2018 and 2017, respectively. Net cash provided by operating activities from continuing operations was $104.1 million in 2018 compared to $104.7 million in 2017. The $0.6 million decrease in cash provided by operating activities from continuing operations from 2017 to 2018 was primarily driven by unfavorable net changes in operating assets and liabilities of $13.2 million. The unfavorable net changes in operating assets and liabilities were primarily due to unfavorable changes in inventory of $41.6 million, unfavorable changes in accounts receivable of $23.6 million due to timing of collections and fourth quarter net sales, partially offset by favorable changes in accounts payable of $22.1 million, due to timing of payments, favorable changes in pension and post-retirement benefits of $6.0 million, favorable changes in deferred revenue of $5.8 million, and favorable changes in other assets and liabilities of $14.5 million and $3.6 million, respectively. The decrease in net cash provided by operating activities from continuing operations was partially offset by more profitable operations, net of non-cash items, of $12.6 million.

Net cash provided by operating activities was $135.1 million for the year ended December 31, 2017, a $8.7 million decrease from the $143.8 million of net cash provided by operating activities for the year ended December 31, 2016. Net cash provided by operating activities included $30.4 million and $32.0 million of cash flow from discontinued operations in 2017 and 2016, respectively. Net cash provided by operating activities from continuing operations was $104.7 million in 2017 compared to $111.8 million in 2016. The $7.1 million decrease in cash provided by operating activities from continuing operations from 2016 to 2017 was primarily driven by unfavorable net changes in operating assets and liabilities of $61.0 million, partially offset by more profitable operations, net of non-cash items, of $53.9 million. The unfavorable net changes in operating assets and liabilities were primarily due to unfavorable changes in deferred revenue of $52.7 due to lower billings of Core Solutions products, which typically carry a high deferral rate, unfavorable changes in accounts receivable of $25.3 million due to timing of collections and fourth quarter net sales, and unfavorable changes in pension and post-retirement benefits of $10.6 million, partially offset by favorable changes in accounts payable and royalties of $18.2 million and $11.3 million, respectively, due to timing of payments.

Investing activities

Net cash used in investing activities was $6.4 million for the year ended December 31, 2018, a decrease of $198.5 million from the $204.9 million used in investing activities for the year ended December 31, 2017. Net cash used in investing activities included $6.8 million and $11.0 million of expenditures from discontinued

operations in 2018 and 2017, respectively. Net cash provided by investing activities from continuing operations was $0.4 million in 2018 compared to net cash used in investing activities from continuing operations of $193.9 million in 2017. The decrease in net cash used in investing activities was primarily due to $140.0 million in proceeds from the sale of the Riverside Business and higher net proceeds from short-term investments of $42.5 million compared to 2017 and $9.2 million of lower capital expenditures.

Net cash used in investing activities was $204.9 million for the year ended December 31, 2017, an increase of $91.0 million from the $113.9 million used in investing activities for the year ended December 31, 2016. Net cash used in investing activities included $11.0 million and $7.8 million of expenditures from discontinued operations in 2017 and 2016, respectively. Net cash used in investing activities from continuing operations was $193.9 million in 2017 compared to $106.1 million in 2016. The increase in investing activities was primarily due to lower net proceeds from short-term investments of $122.2 million compared to 2016 along with $12.7 million of higher pre-publication costs in advance of 2018 adoptions. Partially offsetting, capital investing expenditures related to property, plant, and equipment decreased by $48.1 million, which was primarily due to lower spend on leasehold improvements related to various office moves and technology infrastructure.

Financing activities

Net cash used in financing activities was $4.1 million for the year ended December 31, 2018, a decrease of $3.2 million from the $7.3 million of net cash used in financing activities for the year ended December 31, 2017. The decrease in cash used in financing activities was primarily due to net collections and remittances under the transition services agreement.

Net cash used in financing activities was $7.3 million for the year ended December 31, 2017, a decrease of $30.7 million from the $38.0 million of net cash used in financing activities for the year ended December 31, 2016. The decrease in cash used in financing activities was primarily due to there being no share repurchases in 2017 under our share repurchase program for our common stock, compared to $55.0 million of share repurchases in 2016, partially offset by $24.0 million less proceeds related to stock option exercises during 2017 compared to 2016.

Debt

Under both our revolving credit facility and term loan facility, Houghton Mifflin Harcourt Publishers Inc., HMH Publishers LLC and Houghton Mifflin Harcourt Publishing Company are the borrowers (collectively, the Borrowers), and Citibank, N.A. acts as both the administrative agent and the collateral agent.

The obligations under the revolving credit facility and the term loan facility are guaranteed by the Company and each of its direct and indirect for-profit domestic subsidiaries (other than the Borrowers) (collectively, the Guarantors) and are secured by all capital stock and other equity interests of the Borrowers and the Guarantors and substantially all of the other tangible and intangible assets of the Borrowers and the Guarantors, including, without limitation, receivables, inventory, equipment, contract rights, securities, patents, trademarks, other intellectual property, cash, bank accounts and securities accounts and owned real estate. The revolving credit facility is secured by first priority liens on receivables, inventory, deposit accounts, securities accounts, instruments, chattel paper and other assets related to the foregoing (the Revolving First Lien Collateral), and second priority liens on the collateral which secures the term loan facility on a first priority basis. The term loan facility is secured by first priority liens on the capital stock and other equity interests of the Borrower and the Guarantors, equipment, owned real estate, trademarks and other intellectual property, general intangibles that are not Revolving First Lien Collateral and other assets related to the foregoing, and second priority liens on the Revolving First Lien Collateral.

Term Loan Facility

On May 29, 2015, we entered into an amended and restated $800.0 million term loan credit facility (the term loan facility). As of December 31, 2018, we had approximately $772.0 million ($763.6 million, net of discount and issuance costs) outstanding under the term loan facility.

The term loan facility has a six-year term and matures on May 29, 2021. The interest rate applicable to borrowings under the facility is based, at our election, on LIBOR plus 3.0% or an alternative base rate plus applicable margins. LIBOR is subject to a floor of 1.0%, with the length of the LIBOR contracts ranging up to six months at the option of the Company. As of December 31, 2018, the interest rate of the term loan facility was 5.5%.

The term loan facility is required to be repaid in quarterly installments of $2.0 million, may be prepaid, in whole or in part, at any time, without premium.

The term loan facility does not require us to comply with financial maintenance covenants. We are currently required to meet certain incurrence based financial covenants as defined under our term loan facility.

The term loan facility is subject to usual and customary conditions, representations, warranties and covenants, including restrictions on additional indebtedness, liens, investments, mergers, acquisitions, asset dispositions, dividends to stockholders, repurchase or redemption of our stock, transactions with affiliates and other matters. The term loan facility is subject to customary events of default. If an event of default occurs and is continuing, the administrative agent may, or at the request of certain required lenders shall, accelerate the obligations outstanding under the term loan facility.

We are subject to an excess cash flow provision under the term loan facility which is predicated upon our leverage ratio and cash flow. We were not required to make a payment under the excess cash flow provision in 2018 and 2017.

Revolving Credit Facility

On July 22, 2015, we entered into an amended and restated revolving credit facility (the revolving credit facility) to, among other things, reduce the pricing, extend the maturity, conform certain terms to those of our term loan facility and to provide greater availability and operational flexibility. The revolving credit facility provides borrowing availability in an amount equal to the lesser of $250.0 million and a borrowing base that is computed monthly or weekly as the case may be and comprised of the Borrowers and certain Guarantors eligible inventory and receivables.

The revolving credit facility includes a letter of credit subfacility of $50.0 million, a swingline subfacility of $20.0 million and the option to expand the facility by up to $100.0 million in the aggregate under certain specified conditions. The amount of any outstanding letters of credit reduces borrowing availability under the revolving credit facility on a dollar-for-dollar basis. As of December 31, 2018, no loans are currently drawn on the revolving credit facility. As of December 31, 2018, we had approximately $24.3 million of outstanding letters of credit and approximately $167.4 million of borrowing availability under the revolving credit facility. As of February 28, 2019, there were no amounts drawn on the revolving credit facility.

The revolving credit facility has a five year term and matures on July 22, 2020. The interest rate applicable to borrowings under the facility is based, at our election, on LIBOR plus 1.75% or an alternative base rate plus 0.75%; such applicable margins may increase up to 2.25% and 1.25%, respectively, based on average daily availability. The revolving credit facility may be prepaid, in whole or in part, at any time, without premium.

The revolving credit facility requires us to maintain a minimum fixed charge coverage ratio of 1.0 to 1.0 on a trailing four-quarter basis for periods in which excess availability under the facility is less than the greater of

$25.0 million and 12.5% of the lesser of the total commitment and the borrowing base then in effect, or less than $20.0 million if certain conditions are met. The minimum fixed charge coverage ratio was not applicable under the facility as of December 31, 2018, due to our level of borrowing availability.

The revolving credit facility is subject to usual and customary conditions, representations, warranties and covenants, including restrictions on additional indebtedness, liens, investments, mergers, acquisitions, asset dispositions, dividends to stockholders, repurchase or redemption of our stock, transactions with affiliates and other matters. The revolving credit facility is subject to customary events of default. If an event of default occurs and is continuing, the administrative agent may, or at the request of certain required lenders shall, accelerate the obligations outstanding under the revolving credit facility.

General

We had $253.4 million of cash and cash equivalents and $49.8 million of short-term investments at December 31, 2018. We had $149.0 million of cash and cash equivalents and $86.4 million of short-term investments at December 31, 2017.

Our business is impacted by the inherent seasonality of the academic calendar, which typically results in a cash flow usage in the first half of the year and a cash flow generation in the second half of the year. We expect our net cash provided by operations combined with our cash and cash equivalents and borrowing availability under our revolving credit facility to provide sufficient liquidity to fund our current obligations, capital spending, debt service requirements and working capital requirements over at least the next twelve months.

The ability of the Company to fund planned operations is based on assumptions, which involve significant judgment and estimates of future revenues, capital spend and other operating costs.

Critical Accounting Policies and Estimates

The preparation of financial statements in conformity with U.S. GAAP requires the use of estimates, assumptions and judgments by management that affect the reported amounts of assets, liabilities, net sales, expenses and related disclosure of contingent assets and liabilities in the amounts reported in the financial statements and accompanying notes. On an on-going basis, we evaluate our estimates and assumptions, including, but not limited to, book returns, deferred revenue and related standalone selling price estimates, allowance for bad debts, recoverability of advances to authors, valuation of inventory, financial instruments valuation, income taxes. pensions and other postretirement benefits obligations, contingencies, litigation, depreciation and amortization periods, and the recoverability of long-term assets such as property, plant and equipment, capitalized pre-publication costs, other identified intangibles, and goodwill. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from those estimates. For a complete description of our significant accounting policies, see Note 2 to the consolidated financial statements. The following policies and account descriptions include those identified as critical to our business operations and the understanding of our results of operations.

Revenue Recognition

Revenue is recognized when a customer obtains control of promised goods or services, in an amount that reflects the consideration which we expect to receive in exchange for those goods or services. To determine revenue recognition for arrangements that we determine are within the scope of the new revenue recognition accounting standard, we

perform the following five steps: (i) identify the contract with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) we satisfy a

performance obligation. We only apply the five-step model to contracts when it is probable that we will collect the consideration we are entitled to in exchange for the goods or services we transfer to the customer. At contract inception, we assess the goods or services promised within each contract and determine those that are performance obligations and assess whether each promised good or service is distinct. We then recognize as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

Revenue is measured as the amount of consideration we expect to receive in exchange for transferring products or services to a customer. To the extent the transaction price includes variable consideration, which generally reflects estimated future product returns, we estimate the amount of variable consideration that should be included in the transaction price utilizing the expected value method to which we expect to be entitled. Variable consideration is included in the transaction price if, in our judgment, it is probable that a significant future reversal of cumulative revenue under the contract will not occur. Estimates of variable consideration and the determination of whether to include estimated amounts in the transaction price are based largely on all information (historical, current and forecasted) that is reasonably available. Sales, value add, and other taxes collected on behalf of third parties are excluded from revenue.

We estimate the collectability of contracts upon execution. For contracts with rights of return, the transaction price is adjusted to reflect the estimated returns for the arrangement on these sales and is made at the time of sale based on historical experience by product line or customer. The transaction prices allocated are adjusted to reflect expected returns and are based on historical return rates and sales patterns. Shipping and handling fees charged to customers are included in net sales.

When determining the transaction price of a contract, an adjustment is made if payment from a customer occurs either significantly before or significantly after performance, resulting in a significant financing component. We do not assess whether a significant financing component exists if the period between when we perform our obligations under the contract and when the customer pays is one year or less. Significant financing components income is included in interest income.

Contracts are often modified to account for changes in contract specifications and requirements. Contract modifications exist when the modification either creates new, or changes the existing, enforceable rights and obligations. Generally, contract modifications are for products or services that are not distinct from the existing contract due to the inability to use, consume or sell the products or services on their own to generate economic benefits and are accounted for as if they were part of that existing contract. The effect of such a contract modification on the transaction price and measure of progress for the performance obligation to which it relates is recognized as an adjustment to revenue (either as an increase in or a reduction of revenue) on a cumulative catch-up basis.

Physical product revenue is generally recognized when the customer obtains control of our product, which occurs at a point in time, and may be upon shipment or upon delivery based on the contractual shipping terms of a contract. Revenues from static digital content commence upon delivery to the customer of the digital entitlement that is required to access and download the content and is typically recognized at a point in time. Revenues from subscription software licenses, related hosting services and product support are recognized evenly over the license term as we believe this best represents the pattern of transfer to the customer. The perpetual software licenses provide the customer with a functional license to our products and their related revenues are recognized when the customer receives entitlement to the software. For the technical services provided to customers in connection with the software license, including hosting services related to perpetual licenses, we recognize revenue upon delivery of the services. As the invoices are based on each day of service, this is directly linked to the transfer of benefit to the customer.

If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. We enter into certain contracts that have multiple performance obligations, one or more

of which may be delivered subsequent to the delivery of other performance obligations. These performance obligations may include print and digital media, professional development services, training, software licenses, access to hosted content, and various services related to the software including but not limited to hosting, maintenance and support, and implementation. We allocate the transaction price based on the estimated relative standalone selling prices of the promised products or services underlying each performance obligation. We determine standalone selling prices based on the price at which the performance obligation is sold separately. If the standalone selling price is not observable through past transactions, we estimate the standalone selling price taking into account available information such as market conditions and internally approved standard pricing discounts related to the performance obligations. Generally, our performance obligations include print and digital textbooks and instructional materials, trade books, reference materials, formative assessment materials and multimedia instructional programs; licenses to book rights and content; access to hosted content; and services including professional development, consulting and training. Our contracts may also contain software performance obligations including perpetual and subscription based licenses and software maintenance and support services.

Accounts Receivable

Accounts receivable include amounts billed and currently due from customers and are recorded net of allowances for doubtful accounts and reserves for returns. In the normal course of business, we extend credit to customers that satisfy predefined criteria. Allowances for doubtful accounts are established through the evaluation of accounts receivable aging and prior collection experience to estimate the ultimate collectability of these receivables.

Contract Assets

Contract assets include unbilled amounts where revenue is recognized over time as the services are delivered to the customer based on the extent of progress towards completion and revenue recognized exceeds the amount billed to the customer, and right of payment is not subject to the passage of time. Amounts may not exceed their net realizable value. Contract assets are included in prepaid expenses and other assets on our consolidated balance sheets.

Deferred Commissions

Our incremental direct costs of obtaining a contract, which consist of sales commissions, are deferred and amortized over the period of contract performance. Applying the practical expedient, we recognize sales commission expense when incurred if the amortization period of the assets that we otherwise would have recognized is one year or less. At December 31, 2018 and January 1, 2018, we had $22.6 million and $24.0 million of deferred commissions, respectively. We had $10.5 million of amortization expense related to deferred commissions during the year ended December 31, 2018. These costs are included in selling and administrative expenses.

Deferred Revenue

Our contract liabilities consist of advance payments and billings in excess of revenue recognized and are classified as deferred revenue on our consolidated balance sheets. Our contract assets and liabilities are accounted for and presented on a net basis as either a contract asset or contract liability at the end of each reporting period. We classify deferred revenue as current or noncurrent based on the timing of when we expect to recognize revenue. In order to determine revenue recognized in the period from contract liabilities, we first allocate revenue to the individual contract liability balance outstanding at the beginning of the period until the revenue exceeds that balance. If additional advances are received on those contracts in subsequent periods, we assume all revenue recognized in the reporting period first applies to the beginning contract liability as opposed to a portion applying to the new advances for the period.

Refer to Note 2 to the consolidated financial statements for a detailed description of the impact of the adoption of the new revenue recognition standard on our consolidated balance sheets and statements of operations.

Allowance for Doubtful Accounts and Reserves for Book Returns

Accounts receivable are recorded net of allowances for doubtful accounts and reserves for book returns. In the normal course of business, we extend credit to customers that satisfy predefined criteria. We estimate the collectability of our receivables. Allowances for doubtful accounts are established through the evaluation of accounts receivable aging, prior collection experience and specific facts and circumstances. Reserves for book returns are based on historical return rates and sales patterns. We determine the required reserves by segregating our returns into the applicable product or sales channel pools. Returns in the K-12 market have been historically low. We have experienced higher returns with respect to sales to resellers, international sales and Trade Publishing sales, which all result in a greater degree of risk and subjectivity when establishing the appropriate level of reserves for this customer base. At the time we determine that a receivable balance, or any portion thereof, is deemed to be permanently uncollectible, the balance is written off. The allowance for doubtful accounts and reserve for returns are reported as reductions of the accounts receivable balance and amounted to $2.2 million and $18.6 million, and $2.5 million and $20.6 million as of December 31, 2018 and 2017, respectively.

Inventories

Inventories are substantially stated at the lower of weighted average cost or net realizable value. The level of obsolete and excess inventory is estimated on a program or title-level basis by comparing the number of units in stock with the expected future demand. The expected future demand of a program or title is determined by the copyright year, the previous years sales history, the subsequent year s sales forecast, known forward-looking trends including our development cycle to replace the title or program and competing titles or programs. A change in sales trends could affect the estimated reserve. The inventory obsolescence reserve is reported as a reduction of the inventories balance and amounted to $46.5 million and $47.4 million as of December 31, 2018 and 2017, respectively.

Pre-publication Costs

Pre-publication costs are capitalized and are primarily amortized from the year of sale over five years using the sum-of-the-years-digits method, which is an accelerated method for calculating an asset s amortization. Under this method, the amortization expense recorded for a pre-publication cost asset is approximately 33% (year 1), 27% (year 2), 20% (year 3), 13% (year 4) and 7% (year 5). We utilize this policy for all pre-publication costs, except with respect to our Trade Publishing young readers and general interest books, for which we expense such costs as incurred. Additionally, pre-publication costs recorded in connection with the acquisition of the EdTech business are amortized over 7 years on a projected sales pattern. The amortization methods and periods chosen best reflects the pattern of expected sales generated from individual titles or programs. On a quarterly basis, we evaluate the remaining lives and recoverability of capitalized pre-publication costs, which are often dependent upon program acceptance by state adoption authorities.

Amortization expense related to pre-publication costs for the years ended December 31, 2018, 2017 and 2016 were $109.3 million, $119.9 million and $121.9 million, respectively.

For the year ended December 31, 2017, the Company recorded an impairment charge of $4.0 million related to assets that had no future value. For the years ended December 31, 2018 and 2016, no pre-publication costs were deemed to be impaired.

Goodwill and Indefinite-Lived Intangible Assets

Goodwill and indefinite-lived intangible assets (certain tradenames) are not amortized, but are reviewed at least annually for impairment or earlier, if an indication of impairment exists. Goodwill is allocated entirely to our Education reporting unit. Determining the fair value of a reporting unit is judgmental in nature and involves the use of significant estimates and assumptions. These estimates and assumptions may include net sales growth rates and operating margins used to calculate projected future cash flows, risk-adjusted discount rates, future economic and market conditions, the determination of appropriate market comparables as well as the fair value of individual assets and liabilities.

We have the option of first assessing qualitative factors to determine whether it is necessary to perform the current two-step impairment test for goodwill or we can perform the two-step impairment test without performing the qualitative assessment. In performing the qualitative (Step 0) assessment, we consider certain events and circumstances specific to the reporting unit and to the entity as a whole, such as macroeconomic conditions, industry and market considerations, overall financial performance and cost factors when evaluating whether it is more likely than not that the fair value of the reporting unit is less than its carrying amount.

Recoverability of goodwill can also be evaluated using a two-step process. In the first step, the fair value of a reporting unit is compared to its carrying value. If the fair value of a reporting unit exceeds the carrying value of the net assets assigned to a reporting unit, goodwill is considered not impaired and no further testing is required. If the carrying value of the net assets assigned to a reporting unit exceeds the fair value of a reporting unit, the second step of the impairment test is performed in order to determine the implied fair value of a reporting unit s goodwill. Determining the implied fair value of goodwill requires valuation of a reporting unit s tangible and intangible assets and liabilities in a manner similar to the allocation of purchase price in a business combination. If the carrying value of a reporting unit s goodwill exceeds its implied fair value, goodwill is deemed impaired and is written down to the extent of the difference. We estimate total fair value of the Education reporting unit by using various valuation techniques including an evaluation of our market capitalization and peer company multiples. With regard to indefinite-lived intangible assets, which includes the Houghton Mifflin Harcourt tradename at December 31, 2018 and 2017, the recoverability is evaluated using a one-step process whereby we determine the fair value by asset and then compare it to its carrying value to determine if the asset is impaired. We estimate the fair value based by preparing a relief-from-royalty discounted cash flow analysis using forwarding looking revenue projections. The significant assumptions used in discounted cash flow analysis include: future net sales, a long-term growth rate, a royalty rate and a discount rate used to present value future cash flows and the terminal value of the Education reporting unit. The discount rate is based on the weighted-average cost of capital method at the date of the evaluation.

We completed our annual goodwill impairment tests as of October 1, 2018 and 2017. The fair value of the Education reporting unit substantially exceeded its carrying value as of the evaluation dates and there was no goodwill impairment for the years ended December 31, 2018, 2017 and 2016. We will continue to monitor and evaluate the carrying value of goodwill. If market and economic conditions or business performance deteriorate, this could increase the likelihood of us recording an impairment charge.

We completed our annual indefinite-lived asset impairment tests as of October 1, 2018 and 2017. No indefinite-lived intangible assets were deemed to be impaired for the years ended December 31, 2018 and 2017.We recorded a non-cash impairment charge of $130.2 million for the year ended December 31, 2016. The impairment charge related to four specific tradenames within the Education segment in 2016 and primarily resulted from the strategic decision to market our products under the Houghton Mifflin Harcourt and HMH name rather than legacy imprints and certain declining sales projections.

Royalty Advances

Royalty advances to authors are capitalized and represent amounts paid in advance of the sale of an author s product and are recovered as earned. As advances are recorded, a partial reserve may be recorded immediately

based primarily upon historical sales experience to estimate the likelihood of recovery. Additionally, advances are evaluated periodically to determine if they are expected to be recovered on a title-by-title basis, with consideration given to the other titles in the author s portfolio also earning against the outstanding advance. Any portion of a royalty advance that is not expected to be recovered is fully reserved. The reserve for royalty advances is reported as a reduction of the royalty advances to authors balance and amounted to $117.8 million and $103.6 million as of December 31, 2018 and 2017, respectively.

Stock-Based Compensation

The fair value of each restricted stock and restricted stock unit was estimated at the date of the grant based upon the target value of the award and the current market price. The fair value of each market-based restricted stock unit was estimated at the date of grant using the Monte Carlo simulation, which requires management s use of highly subjective estimates and assumptions. The fair value of each stock option grant was estimated on the date of grant using the Black-Scholes option pricing model, which also requires management s use of highly subjective estimates and assumptions. The use of different estimates and assumptions in the option pricing model could have a material impact on the estimated fair value of option grants and the related expense. We estimate our expected volatility based on the historical volatility of our publicly traded peer companies (including our own) and expect to continue to do so until such time as we have adequate historical data regarding the volatility of our traded stock price. The expected life assumption is based on the simplified method for estimating the expected term for awards. This option has been elected as we do not have sufficient stock option exercise experience to support a reasonable estimate of the expected term. The risk-free interest rate is the yield currently available on U.S. Treasury zero-coupon issues with a remaining term approximating the expected term of the option. The expected dividend yield is based on actual dividends paid or to be paid. We recognize stock-based compensation expense over the awards requisite service period on a straight-line basis for time-based stock options, restricted stock and restricted stock units and on a graded basis for restricted stock and restricted stock units that are contingent on the achievement of performance conditions. We recognize compensation expense for only the portion of stock-based awards that are expected to vest. Accordingly, we have estimated expected forfeitures of stock-based awards based on our historical forfeiture rates and used these rates in developing a future forfeiture rate. If our actual forfeiture rate varies from our historical rates and estimates, additional adjustments to compensation expense may be required in future periods.

Income Taxes

We had accounted for the tax effects of The Tax Cuts and Jobs Act, enacted on December 22, 2017, on a provisional basis and have subsequently finalized our accounting analysis based on guidance, interpretations available at December 31, 2018. Adjustments made in the fourth quarter of 2018 upon finalization of our accounting analysis were not material to our financial statements. See Note 8 to the consolidated financial statements for further detail.

Impact of Inflation and Changing Prices

We believe that inflation has not had a material impact on our results of operations during the years ended December 31, 2018, 2017 and 2016. We cannot be sure that future inflation will not have an adverse impact on our operating results and financial condition in future periods. Our ability to adjust selling prices has always been limited by competitive factors and long-term contractual arrangements which either prohibit price increases or limit the amount by which prices may be increased. Further, a weak domestic economy at a time of low inflation could cause lower tax receipts at the state and local level, and the funding and buying patterns for textbooks and other educational materials could be adversely affected.

Covenant Compliance

As of December 31, 2018, we were in compliance with all of our debt covenants.

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We are currently required to meet certain incurrence based financial covenants as defined under our term loan facility and revolving credit facility. We have incurrence based financial covenants primarily pertaining to a maximum leverage ratio, fixed charge coverage ratio, and liquidity. A breach of any of these covenants, ratios, tests or restrictions, as applicable, for which a waiver is not obtained could result in an event of default, in which case our lenders could elect to declare all amounts outstanding to be immediately due and payable and result in a cross-default under other arrangements containing such provisions. A default would permit lenders to accelerate the maturity for the debt under these agreements and to foreclose upon any collateral securing the debt owed to these lenders and to terminate any commitments of these lenders to lend to us. If the lenders accelerate the payment of the indebtedness, our assets may not be sufficient to repay in full the indebtedness and any other indebtedness that would become due as a result of any acceleration. Further, in such an event, the lenders would not be required to make further loans to us, and assuming similar facilities were not established and we are unable to obtain replacement financing, it would materially affect our liquidity and results of operations.

Contractual Obligations

The following table provides information with respect to our estimated commitments and obligations as of December 31, 2018 (in thousands):

Contractual Obligations	**Total**	**Less than 1 year**	**1-3 years**	**3-5 years**	**More than 5 years**
Term loan facility due May 29, 2021 (1)	$ 772,000	$ 8,000	$ 764,000	$	$
Interest payable on term loan facility due May 29, 2021 (2)	103,220	39,155	64,065		
Operating leases (3)	308,922	32,694	53,007	52,018	171,203
Purchase obligations (4)	100,158	44,373	52,623	3,162	
Total cash contractual obligations	$ 1,284,300	$ 124,222	$ 933,695	$ 55,180	$ 171,203

(1) The term loan facility amortizes at a rate of 1.0% per annum of the original $800.0 million amount.

(2) As of December 31, 2018, the interest rate was 5.5%.

(3) Represents minimum lease payments under non-cancelable operating leases.

(4) Purchase obligations are agreements to purchase goods or services that are enforceable and legally binding. These goods and services consist primarily of author advances, subcontractor expenses, information technology licenses, and outsourcing arrangements.

In addition to the payments described above, we have employee benefit obligations that require future payments. For example, we expect to make $1.6 million of contributions in 2019 relating to our pension and postretirement benefit plans. We expect to periodically draw and repay borrowings under the revolving credit facility. We believe that we will be able to meet our cash interest obligations on our outstanding debt when they are due and payable.

Off-Balance Sheet Arrangements

We have no off-balance sheet arrangements.

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Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to market risk from foreign currency exchange rates and interest rates, which could affect operating results, financial position and cash flows. We manage exposure to these market risks through our regular operating and financing activities and, when appropriate, through the use of derivative financial instruments. These derivative financial instruments are utilized to hedge economic exposures as well as reduce our earnings and cash flow volatility resulting from shifts in market rates. As permitted, we may designate certain of these derivative contracts for hedge accounting treatment in accordance with authoritative guidance regarding accounting for derivative instruments and hedging activities. However, certain of these instruments may not qualify for, or we may choose not to elect, hedge accounting treatment and, accordingly, the results of our operations may be exposed to some level of volatility. Volatility in our results of operations will vary with the type and amount of derivative hedges outstanding, as well as fluctuations in the currency and interest rate market during the period. Periodically, we may enter into derivative contracts, including interest rate swap agreements and interest rate caps and collars to manage interest rate exposures, and foreign currency spot, forward, swap and option contracts to manage foreign currency exposures. The fair market values of all of these derivative contracts change with fluctuations in interest rates and/or currency rates and are designed so that any changes in their values are offset by changes in the values of the underlying exposures. Derivative financial instruments are held solely as risk management tools and not for trading or speculative purposes.

By their nature, all derivative instruments involve, to varying degrees, elements of market and credit risk not recognized in our financial statements. The market risk associated with these instruments resulting from currency exchange and interest rate movements is expected to offset the market risk of the underlying transactions, assets and liabilities being hedged. Our policy is to deal with counterparties having a single A or better credit rating at the time of the execution. We manage our exposure to counterparty risk of derivative instruments by entering into contracts with a diversified group of major financial institutions and by actively monitoring outstanding positions.

We continue to review liquidity sufficiency by performing various stress test scenarios, such as cash flow forecasting, which considers hypothetical interest rate movements. Furthermore, we continue to closely monitor current events and the financial institutions that support our credit facility, including monitoring their credit ratings and outlooks, credit default swap levels, capital raising and merger activity.

As of December 31, 2018, we had $772.0 million ($763.6 million, net of discount and issuance costs) of aggregate principal amount indebtedness outstanding under our term loan facility that bears interest at a variable rate. An increase or decrease of 1% in the interest rate will change our interest expense by approximately $7.7 million on an annual basis. We also have up to $250.0 million of borrowing availability, subject to borrowing base availability, under our revolving credit facility, and borrowings under the revolving credit facility bear interest at a variable rate. As of December 31, 2018, there were no amounts outstanding on the revolving credit facility. Assuming that the revolving credit facility is fully drawn, an increase or decrease of 1% in the interest rate will change our interest expense associated with the revolving credit facility by $2.5 million on an annual basis.

Our interest rate risk relates primarily to U.S. dollar borrowings partially offset by U.S. dollar cash investments. We have historically used interest rate derivative instruments to manage our earnings and cash flow exposure to changes in interest rates. On August 17, 2015, we entered into interest rate derivative contracts with various financial institutions having an aggregate notional amount of $400.0 million to convert floating rate debt into fixed rate debt, which we designated as cash flow hedges, and for which we had $400.0 million outstanding as of December 31, 2018. These contracts were effective beginning September 30, 2016 and mature on July 22, 2020.

We conduct various digital development activities in Ireland, and as such, our cash flows and costs are subject to fluctuations from changes in foreign currency exchange rates. We manage our exposures to this market risk through

the use of short-term foreign exchange forward and option contracts, when deemed appropriate, which were not significant as of December 31, 2018 and December 31, 2017. We do not enter into derivative transactions or use other financial instruments for trading or speculative purposes.

Item 8. Financial Statements and Supplementary Data

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of

Houghton Mifflin Harcourt Company:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Houghton Mifflin Harcourt Company and its subsidiaries (the Company) as of December 31, 2018 and December 31, 2017, and the related consolidated statements of operations, comprehensive loss, cash flows, and stockholders equity for each of the three years in the period ended December 31, 2018, including the related notes (collectively referred to as the consolidated financial statements). We also have audited the Company s internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and December 31, 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for revenues from contracts with customers in 2018.

Basis for Opinions

The Company s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management s Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company s consolidated financial statements and on the Company s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that

respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and

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testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company s internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts

February 28, 2019

We have served as the Company s auditor since 2003.

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Houghton Mifflin Harcourt Company

Consolidated Balance Sheets

(in thousands of dollars, except share information)	**December 31, 2018**	**2017**
Assets		
Current assets		
Cash and cash equivalents	$ 253,365	$ 148,979
Short-term investments	49,833	86,449
Accounts receivable, net of allowances for bad debts and book returns of $20.7 million and $23.1 million, respectively	203,574	192,569
Inventories	184,209	150,694
Prepaid expenses and other assets	15,297	29,919
Assets of discontinued operations		123,761
Total current assets	706,278	732,371
Property, plant, and equipment, net	125,925	148,659
Pre-publication costs, net	323,641	313,997
Royalty advances to authors, net	47,993	46,469
Goodwill	716,073	716,073
Other intangible assets, net	520,892	582,538
Deferred income taxes	3,259	3,593
Deferred commissions	22,635	
Other assets	28,428	19,891
Total assets	$ 2,495,124	$ 2,563,591
Liabilities and Stockholders Equity		
Current liabilities		
Current portion of long-term debt	$ 8,000	$ 8,000
Accounts payable	76,313	60,810
Royalties payable	66,893	66,798
Salaries, wages, and commissions payable	50,225	52,838
Deferred revenue	251,944	265,074
Interest payable	136	322
Severance and other charges	6,020	6,926
Accrued postretirement benefits	1,512	1,618
Other liabilities	26,649	19,657
Liabilities of discontinued operations		24,706
Total current liabilities	487,692	506,749
Long-term debt, net of discount and issuance costs	755,649	760,194

Long-term deferred revenue	395,500	418,734
Accrued pension benefits	29,320	24,133
Accrued postretirement benefits	14,300	20,285
Deferred income taxes	27,075	22,269
Other liabilities	17,118	16,034
Total liabilities	1,726,654	1,768,398
Commitments and contingencies (Note 12)		
Stockholders equity		
Preferred stock, $0.01 par value: 20,000,000 shares authorized; no shares issued and outstanding at December 31, 2018 and 2017		
Common stock, $0.01 par value: 380,000,000 shares authorized; 148,164,854 and 147,911,466 shares issued at December 31, 2018 and 2017, respectively; 123,587,820 and 123,334,432 shares outstanding at December 31, 2018 and 2017, respectively	1,481	1,479
Treasury stock, 24,577,034 shares as of December 31, 2018 and 2017, respectively, at cost	(518,030)	(518,030)
Capital in excess of par value	4,893,174	4,879,793
Accumulated deficit	(3,562,971)	(3,521,527)
Accumulated other comprehensive loss	(45,184)	(46,522)
Total stockholders equity	768,470	795,193
Total liabilities and stockholders equity	$ 2,495,124	$ 2,563,591

The accompanying notes are an integral part of these consolidated financial statements.

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Houghton Mifflin Harcourt Company

Consolidated Statements of Operations

(in thousands of dollars, except share and per share data)	Years Ended December 31, 2018	2017	2016
Net sales	$ 1,322,417	$ 1,327,029	$ 1,291,978
Costs and expenses			
Cost of sales, excluding publishing rights and pre-publication amortization	581,467	588,518	578,317
Publishing rights amortization	34,713	46,238	61,351
Pre-publication amortization	109,257	119,908	121,866
Cost of sales	725,437	754,664	761,534
Selling and administrative	649,295	636,326	681,170
Other intangible asset amortization	26,933	29,248	26,375
Impairment charge for pre-publication costs and intangible assets		3,980	130,205
Restructuring	4,657	37,775	
Severance and other charges	6,821	177	15,371
Gain on sale of assets	(201)		
Operating loss	(90,525)	(135,141)	(322,677)
Other income (expense)			
Retirement benefits non-service income	1,280	3,486	4,253
Interest expense	(45,680)	(42,805)	(39,181)
Interest income	2,550	1,338	518
Change in fair value of derivative instruments	(1,374)	1,366	(614)
Income from transition services agreement	1,889		
Loss from continuing operations before taxes	(131,860)	(171,756)	(357,701)
Income tax expense (benefit) for continuing operations	5,597	(51,419)	(51,556)
Loss from continuing operations	(137,457)	(120,337)	(306,145)
Earnings from discontinued operations, net of tax	12,833	17,150	21,587
Gain on sale of discontinued operations, net of tax	30,469		
Income from discontinued operations, net of tax	43,302	17,150	21,587
Net loss	$ (94,155)	$ (103,187)	$ (284,558)
Net loss per share attributable to common stockholders			

Basic and diluted:			
Continuing operations	$ (1.11)	$ (0.98)	$ (2.50)
Discontinued operations	0.35	0.14	0.18
Net loss	$ (0.76)	$ (0.84)	$ (2.32)
Weighted average shares outstanding			
Basic	123,444,943	122,949,064	122,418,474
Diluted	123,444,943	122,949,064	122,418,474

The accompanying notes are an integral part of these consolidated financial statements.

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Houghton Mifflin Harcourt Company

Consolidated Statements of Comprehensive Loss

(in thousands of dollars)	**Years Ended December 31, 2018**	**2017**	**2016**
Net loss	$ (94,155)	$ (103,187)	$ (284,558)
Other comprehensive income (loss), net of taxes:			
Foreign currency translation adjustments, net of tax	(156)	109	(1,220)
Net change in pension and benefit plan liabilities, net of tax	(2,056)	1,734	(9,937)
Unrealized gain (loss) on short-term investments, net of tax	9	(18)	57
Net change in unrealized gain (loss) on derivative financial instruments, net of tax	3,541	4,948	(2,467)
Other comprehensive income (loss), net of taxes	1,338	6,773	(13,567)
Comprehensive loss	$ (92,817)	$ (96,414)	$ (298,125)

The accompanying notes are an integral part of these consolidated financial statements.

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Houghton Mifflin Harcourt Company

Consolidated Statements of Cash Flows

(in thousands of dollars)	**Years Ended December 31, 2018**	**2017**	**2016**
Cash flows from operating activities			
Net loss	$ (94,155)	$ (103,187)	$ (284,558)
Adjustments to reconcile net loss to net cash provided by operating activities			
Earnings from discontinued operations, net of tax	(12,833)	(17,150)	(21,587)
Gain on sale of discontinued operations, net of tax	(30,469)		
Gain on sale of assets	(201)		
Depreciation and amortization expense	250,466	266,443	284,059
Amortization of debt discount and deferred financing costs	4,181	4,181	4,181
Deferred income taxes	5,140	(49,247)	(53,182)
Stock-based compensation expense	13,248	10,728	10,491
Impairment charge for pre-publication costs and intangible assets		3,980	130,205
Restructuring charges related to property, plant, and equipment		9,841	
Change in fair value of derivative instruments	1,374	(1,366)	614
Changes in operating assets and liabilities			
Accounts receivable	(11,005)	12,564	37,897
Inventories	(33,515)	8,122	8,465
Other assets	3,908	(10,548)	6,673
Accounts payable and accrued expenses	16,144	(5,937)	(24,155)
Royalties payable and author advances, net	(1,650)	(1,449)	(12,738)
Deferred revenue	(7,692)	(13,500)	39,249
Interest payable	(186)	129	87
Severance and other charges	(2,823)	221	4,315
Accrued pension and postretirement benefits	(904)	(6,932)	3,675
Other liabilities	5,056	(2,145)	(21,906)
Net cash provided by operating activities continuing operations	104,084	104,748	111,785
Net cash provided by operating activities discontinued operations	10,831	30,382	31,966
Net cash provided by operating activities	114,915	135,130	143,751
Cash flows from investing activities			
Proceeds from sales and maturities of short-term investments	86,539	80,690	197,724
Purchases of short-term investments	(49,553)	(86,211)	(81,086)
Additions to pre-publication costs	(123,403)	(131,282)	(118,603)
Additions to property, plant, and equipment	(53,741)	(55,092)	(103,152)
Proceeds from sale of business	140,000		
Acquisition of intangible asset		(2,000)	

Investment in preferred stock	(500)		(1,000)
Proceeds from sale of assets	1,085		
Net cash provided by (used in) investing activities continuing operations	427	(193,895)	(106,117)
Net cash used in investing activities discontinued operations	(6,832)	(11,028)	(7,829)
Net cash used in investing activities	(6,405)	(204,923)	(113,946)
Cash flows from financing activities			
Borrowings under revolving credit facility	50,000		
Payments of revolving credit facility	(50,000)		
Payments of long-term debt	(8,000)	(8,000)	(8,000)
Repurchases of common stock			(55,017)
Tax withholding payments related to net share settlements of restricted stock units and awards	(1,190)	(1,450)	(1,672)
Proceeds from stock option exercises		512	24,532
Issuance of common stock under employee stock purchase plan	1,263	1,608	2,197
Net collections (remittances) under transition service agreement	3,803		
Net cash used in financing activities continuing operations	(4,124)	(7,330)	(37,960)
Net increase (decrease) in cash and cash equivalents	104,386	(77,123)	(8,155)
Cash and cash equivalent at the beginning of the period	148,979	226,102	234,257
Cash and cash equivalent at the end of the period	$ 253,365	$ 148,979	$ 226,102
Supplemental disclosure of cash flow information			
Interest paid	$ 41,758	$ 38,295	$ 34,884
Income taxes paid	430	715	5,104
Non-cash investing activities			
Pre-publication costs included in accounts payable and accruals	$ 13,974	$ 16,681	$ 14,397
Property, plant, and equipment included in accounts payable and accruals	1,908	11,403	5,707
Property, plant, and equipment acquired under capital leases	480		

The accompanying notes are an integral part of these consolidated financial statements.

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Houghton Mifflin Harcourt Company

Consolidated Statements of Stockholders Equity

(in thousands of dollars, except share information)	**Common Stock**			**Capital in excess of Par Value**	**Accumulated Deficit**	**Accumulated Other Comprehensive Loss**	**Total**
	Shares Issued	**Par Value**	**Treasury Stock**				
Balance at December 31, 2015	145,613,978	$ 1,456	$ (463,013)	$ 4,833,388	$ (3,133,782)	$ (39,728)	$ 1,198,321
Net loss					(284,558)		(284,558)
Other comprehensive loss, net of tax						(13,567)	(13,567)
Issuance of common stock for employee purchase plan	140,579	1		2,777			2,778
Issuance of common stock for vesting of restricted stock units	102,151	1		(1)			
Issuance of common stock for exercise of stock options	1,879,924	19		23,714			23,733
Stock withheld to cover tax withholdings requirements upon vesting of restricted stock units				(1,672)			(1,672)
Restricted stock forfeitures and cancellations	(179,828)	(2)		2			
Repurchases of common stock			(55,017)				(55,017)
Stock-based compensation expense				10,022			10,022

Balance at December 31, 2016	147,556,804	1,475	(518,030)	4,868,230	(3,418,340)	(53,295)	880,040
Net loss					(103,187)		(103,187)
Other comprehensive income, net of tax						6,773	6,773
Issuance of common stock for employee purchase plan	176,749	2		2,130			2,132
Issuance of common stock for vesting of restricted stock units	175,555	2		(2)			
Issuance of common stock for exercise of stock options	39,200			512			512
Stock withheld to cover tax withholdings requirements upon vesting of restricted stock units				(1,450)			(1,450)
Restricted stock forfeitures and cancellations	(36,842)						
Stock-based compensation expense				10,373			10,373
Balance at December 31, 2017	147,911,466	1,479	(518,030)	4,879,793	(3,521,527)	(46,522)	795,193
Net loss					(94,155)		(94,155)
Other comprehensive income, net of tax						1,338	1,338
Effects of adoption of new revenue accounting standard					52,711		52,711
Issuance of common stock for employee purchase plan	175,428	2		1,611			1,613
Issuance of common stock for	346,255	3		(3)			

vesting of restricted stock units							
Stock withheld to cover tax withholdings requirements upon vesting of restricted stock units				(1,190)			(1,190)
Restricted stock forfeitures and cancellations	(268,295)	(3)		3			
Stock-based compensation expense				12,960			12,960
Balance at December 31, 2018	148,164,854	$ 1,481	$ (518,030)	$ 4,893,174	$ (3,562,971)	$ (45,184)	$ 768,470

The accompanying notes are an integral part of these consolidated financial statements.

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Houghton Mifflin Harcourt Company

Notes to Consolidated Financial Statements

(in thousands of dollars, except share and per share information)

1. Basis of Presentation

Houghton Mifflin Harcourt Company (HMH, Houghton Mifflin Harcourt, we, us, our, or the Company) is a g learning company, committed to delivering integrated solutions that engage learners, empower educators and improve student outcomes. As a leading provider of Kindergarten through 12th grade (K-12) core curriculum, supplemental and intervention solutions and professional learning services, HMH partners with educators and school districts to uncover solutions that unlock students potential and extend teachers capabilities. HMH serves more than 50 million students and 3 million educators in 150 countries, while its award-winning children s books, novels, non-fiction, and reference titles are enjoyed by readers throughout the world.

The K-12 market is our primary market, and in the United States, we are a leading provider of educational content by market share. Some of our core educational offerings include *HMH Science Dimensions*, *Collections*, *GO Math!*, *Read 180* Universal, and *Journeys*. We believe our long-standing reputation and trusted brand enable us to capitalize on trends in the education market through our existing and developing channels.

Furthermore, for nearly two centuries, we have published renowned and awarded children s, fiction, nonfiction, culinary and reference titles enjoyed by readers throughout the world. Our distinguished author list includes ten Nobel Prize winners, forty-eight Pulitzer Prize winners, and fifteen National Book Award winners. We are home to popular characters and titles such as Curious George, Carmen Sandiego, *The Lord of the Rings, The Whole30,* The Best American Series, the Peterson Field Guides, CliffsNotes, and *The Polar Express,* and published distinguished authors such as Philip Roth, Temple Grandin, Tim O Brien, Amos Oz, Kwame Alexander, Lois Lowry, and Chris Van Allsburg.

We sell our products and services across multiple media and distribution channels. Leveraging our portfolio of content, including some of our best-known children s brands and titles, such as Carmen Sandiego and Curious George, we have created interactive digital content, mobile applications and educational games that can be used by families at home or on the go.

Our digital products portfolio, combined with our content development or distribution agreements with recognized technology leaders such as Apple, Google, Intel and Microsoft, enable us to bring our next-generation educational solutions and content to learners across virtually all platforms and devices. Additionally, we believe our technology and development capabilities allow us to enhance content engagement and effectiveness with embedded assessment, interactivity and personalized adaptable content as well as increased accessibility.

The consolidated financial statements of HMH include the accounts of all of our wholly-owned subsidiaries as of December 31, 2018 and 2017 and for the periods ended December 31, 2018, 2017 and 2016.

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP). Our accompanying consolidated financial statements

include the results of operations of the Company and our wholly-owned subsidiaries. All material intercompany accounts and transactions are eliminated in consolidation.

We expect our net cash provided by operations combined with our cash and cash equivalents and borrowing availability under our revolving credit facility to provide sufficient liquidity to fund our current obligations, capital spending, debt service requirements and working capital requirements over at least the next twelve months.

The ability of the Company to fund planned operations is based on assumptions which involve significant judgment and estimates of future revenues, capital spend and other operating costs.

Houghton Mifflin Harcourt Company

Notes to Consolidated Financial Statements

(in thousands of dollars, except share and per share information)

Seasonality and Comparability

Our net sales, operating profit or loss and net cash provided by or used in operations are impacted by the inherent seasonality of the academic calendar, which results in a cash flow usage in the first half of the year and a cash flow generation in the second half of the year. Consequently, the performance of our businesses may not be comparable quarter to consecutive quarter and should be considered on the basis of results for the whole year or by comparing results in a quarter with results in the same quarter for the previous year.

Approximately 85% of our net sales for the year ended December 31, 2018 were derived from our Education segment, which is a markedly seasonal business. Schools conduct the majority of their purchases in the second and third quarters of the calendar year in preparation for the beginning of the school year. Thus, for the years ended December 31, 2018, 2017 and 2016, approximately 67% of our consolidated net sales were realized in the second and third quarters. Sales of K-12 instructional materials and customized testing products are also cyclical with some years offering more sales opportunities than others in light of the state adoption calendar. The amount of funding available at the state level for educational materials also has a significant effect on year-to-year net sales. Although the loss of a single customer would not have a material adverse effect on our business, schedules of school adoptions and market acceptance of our products can materially affect year-to-year net sales performance.

2. Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires the use of estimates, assumptions and judgments by management that affect the reported amounts of assets, liabilities, revenues, expenses, and related disclosure of contingent assets and liabilities in the amounts reported in the financial statements and accompanying notes. On an ongoing basis, we evaluate our estimates and assumptions including, but not limited to, book returns, deferred revenue and related standalone selling price estimates, allowance for bad debts, recoverability of advances to authors, valuation of inventory, financial instruments valuation, income taxes, pensions and other postretirement benefits obligations, contingencies, litigation, depreciation and amortization periods, and the recoverability of long-term assets such as property, plant, and equipment, capitalized pre-publication costs, other identified intangibles and goodwill. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from those estimates.

Adoption of New Revenue Recognition Accounting Standard

On January 1, 2018, we adopted the new revenue standard utilizing the modified retrospective method. As a result, we changed our accounting policy for revenue recognition as detailed below. We recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the opening balance of accumulated deficit. Using the modified retrospective approach, we applied the standard only to contracts that were not completed at the date of initial application. The comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods as we believe it is still comparable.

There was a significant impact relating to the requirement to capitalize incremental costs to acquire new contracts, which consist of sales commissions. During previous periods, these costs were expensed as incurred. Further, there is an impact to our accounting for software license revenue. Under the previous

Houghton Mifflin Harcourt Company

Notes to Consolidated Financial Statements

(in thousands of dollars, except share and per share information)

guidance, when vendor specific objective evidence (VSOE) was not established for undelivered maintenance services, software licenses were recognized ratably over the life of the service period due to the separation criteria of the software license and related maintenance services not being met. The requirement for establishing VSOE does not exist under the new standard, thus software licenses are no longer recognized over the maintenance term, but rather as the software licenses are delivered as fair value can be established to allow for separate recognition.

The cumulative effect of the changes made to our consolidated balance sheets at January 1, 2018 were as follows:

	December 31, 2017	Adjustments due to Adoption	January 1, 2018
Assets			
Accounts receivable, net	$ 192,569	$ (1,092)	$ 191,477
Contract assets (1)		1,092	1,092
Deferred commissions		24,040	24,040
Liabilities			
Deferred revenue (current and long-term)	$ 683,808	$ (28,671)	$ 655,137
Stockholders equity			
Accumulated deficit (2)	$ (3,521,527)	$ 52,711	$ (3,468,816)

(1) Contract assets are included in prepaid expenses and other assets on our consolidated balance sheets.
(2) The adoption resulted in the write off of a portion of a deferred tax asset for deferred revenue. However, due to our valuation allowance position, there is no net tax effect on accumulated deficit as the valuation allowance will also be reversed commensurate to the reduction in the deferred tax asset.

Impact of New Revenue Recognition Accounting Standard on Financial Statement Line Items

In accordance with the new revenue standard requirements, the disclosure of the impact of adoption on our consolidated balance sheets, statements of operations and cash flows were as follows:

	December 31, 2018		
	As Reported	Balances Without Adoption	Effect of Change Higher / (Lower)

Assets						
Accounts receivable, net	$	203,574	$	203,648	$	(74)
Contract assets		74				74
Deferred commissions		22,635				22,635
Liabilities						
Deferred revenue (current and long-term)	$	647,444	$	693,678	$	(46,234)
Stockholders equity						
Accumulated deficit	$	(3,562,971)	$	(3,625,345)	$	(62,374)

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Houghton Mifflin Harcourt Company

Notes to Consolidated Financial Statements

(in thousands of dollars, except share and per share information)

	Year Ended December 31, 2018		
	As Reported	Balances Without Adoption	Effect of Change Higher / (Lower)
Net sales	$ 1,322,417	$ 1,304,854	$ 17,563
Selling and administrative	649,295	647,891	1,404
Operating loss	(90,525)	(106,684)	16,159
Loss from continuing operations	(131,860)	(148,019)	16,159
Income from discontinued operations, net of tax	43,302	43,302	
Net loss	(94,155)	(110,314)	16,159

The adoption resulted in offsetting shifts in cash flows through net loss within cash flows from operating activities for deferred commissions, which are included within other assets, and deferred revenue consistent with the effects on our consolidated statements of operations as noted in the table above. The adoption had no impact on our overall cash flows from operating, investing or financing activities.

	Year Ended December 31, 2018		
	As Reported	Balances Without Adoption	Effect of Change Higher / (Lower)
Cash flows from operating activities			
Net loss	$ (94,155)	$ (110,314)	$ 16,159
Adjustments to reconcile net loss to net cash provided by operating activities			
Other assets	3,908	2,504	1,404
Deferred revenue	(7,692)	9,871	(17,563)
Net cash provided by operating activities continuing operations	104,084	104,084	
Net cash provided by operating activities discontinued operations	10,831	10,831	
Net cash provided by operating activities	114,915	114,915	

Revenue Recognition

Revenue is recognized when a customer obtains control of promised goods or services, in an amount that reflects the consideration which we expect to receive in exchange for those goods or services. To determine revenue recognition

for arrangements that we determine are within the scope of the new revenue recognition accounting standard, we perform the following five steps: (i) identify the contract with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) we satisfy a performance obligation. We only apply the five-step model to contracts when it is probable that we will collect the consideration we are entitled to in exchange for the goods or services we transfer to the customer. At contract inception, we assess the goods or services promised within each contract and determine those that are performance obligations and assess whether each promised good or service is distinct. We then recognize as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

Revenue is measured as the amount of consideration we expect to receive in exchange for transferring products or services to a customer. To the extent the transaction price includes variable consideration, which generally reflects estimated future product returns, we estimate the amount of variable consideration that

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Houghton Mifflin Harcourt Company

Notes to Consolidated Financial Statements

(in thousands of dollars, except share and per share information)

should be included in the transaction price utilizing the expected value method to which we expect to be entitled. Variable consideration is included in the transaction price if, in our judgment, it is probable that a significant future reversal of cumulative revenue under the contract will not occur. Estimates of variable consideration and the determination of whether to include estimated amounts in the transaction price are based largely on all information (historical, current and forecasted) that is reasonably available. Sales, value add, and other taxes collected on behalf of third parties are excluded from revenue.

We estimate the collectability of contracts upon execution. For contracts with rights of return, the transaction price is adjusted to reflect the estimated returns for the arrangement on these sales and is made at the time of sale based on historical experience by product line or customer. The transaction prices allocated are adjusted to reflect expected returns and are based on historical return rates and sales patterns. Shipping and handling fees charged to customers are included in net sales.

When determining the transaction price of a contract, an adjustment is made if payment from a customer occurs either significantly before or significantly after performance, resulting in a significant financing component. We do not assess whether a significant financing component exists if the period between when we perform our obligations under the contract and when the customer pays is one year or less. Significant financing components income is included in interest income.

Contracts are often modified to account for changes in contract specifications and requirements. Contract modifications exist when the modification either creates new, or changes the existing, enforceable rights and obligations. Generally, contract modifications are for products or services that are not distinct from the existing contract due to the inability to use, consume or sell the products or services on their own to generate economic benefits and are accounted for as if they were part of that existing contract. The effect of such a contract modification on the transaction price and measure of progress for the performance obligation to which it relates is recognized as an adjustment to revenue (either as an increase in or a reduction of revenue) on a cumulative catch-up basis.

Physical product revenue is generally recognized when the customer obtains control of our product, which occurs at a point in time, and may be upon shipment or upon delivery based on the contractual shipping terms of a contract. Revenues from static digital content commence upon delivery to the customer of the digital entitlement that is required to access and download the content and is typically recognized at a point in time. Revenues from subscription software licenses, related hosting services and product support are recognized evenly over the license term as we believe this best represents the pattern of transfer to the customer. The perpetual software licenses provide the customer with a functional license to our products and their related revenues are recognized when the customer receives entitlement to the software. For the technical services provided to customers in connection with the software license, including hosting services related to perpetual licenses, we recognize revenue upon delivery of the services. As the invoices are based on each day of service, this is directly linked to the transfer of benefit to the customer.

If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. We enter into certain contracts that have multiple performance obligations, one or more of which may be delivered subsequent to the delivery of other performance obligations. These performance obligations may include print and digital media, professional development services, training, software licenses, access to hosted content, and various services related to the software including, but not limited to hosting, maintenance and support, and implementation. We allocate the transaction price based on the estimated relative standalone selling prices of the promised products or services underlying each performance obligation. We determine standalone selling prices based on the price at which the performance obligation is sold separately. If the standalone selling price is not observable through past transactions, we estimate the standalone selling price taking into account available information such as

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market conditions and internally approved standard pricing discounts related to the performance obligations. Generally, our performance obligations include print and digital textbooks and instructional materials, trade books, reference materials, formative assessment materials and multimedia instructional programs; licenses to book rights and content; access to hosted content; and services including professional development, consulting and training. Our contracts may also contain software performance obligations including perpetual and subscription based licenses and software maintenance and support services.

Accounts Receivable

Accounts receivable include amounts billed and currently due from customers and are recorded net of allowances for doubtful accounts and reserves for returns. In the normal course of business, we extend credit to customers that satisfy predefined criteria. Allowances for doubtful accounts are established through the evaluation of accounts receivable aging and prior collection experience to estimate the ultimate collectability of these receivables.

Contract Assets

Contract assets include unbilled amounts where revenue is recognized over time as the services are delivered to the customer based on the extent of progress towards completion and revenue recognized exceeds the amount billed to the customer, and right of payment is not subject to the passage of time. Amounts may not exceed their net realizable value. Contract assets are included in prepaid expenses and other assets on our consolidated balance sheets.

Deferred Commissions

Our incremental direct costs of obtaining a contract, which consist of sales commissions, are deferred and amortized over the period of contract performance. Applying the practical expedient, we recognize sales commission expense when incurred if the amortization period of the assets that we otherwise would have recognized is one year or less. At December 31, 2018 and January 1, 2018, we had $22.6 million and $24.0 million of deferred commissions, respectively. We had $10.5 million of amortization expense related to deferred commissions during the year ended December 31, 2018. These costs are included in selling and administrative expenses.

Deferred Revenue

Our contract liabilities consist of advance payments and billings in excess of revenue recognized and are classified as deferred revenue on our consolidated balance sheets. Our contract assets and liabilities are accounted for and presented on a net basis as either a contract asset or contract liability at the end of each reporting period. We classify deferred revenue as current or noncurrent based on the timing of when we expect to recognize revenue. In order to determine revenue recognized in the period from contract liabilities, we first allocate revenue to the individual contract liability balance outstanding at the beginning of the period until the revenue exceeds that balance. If

additional advances are received on those contracts in subsequent periods, we assume all revenue recognized in the reporting period first applies to the beginning contract liability as opposed to a portion applying to the new advances for the period.

Advertising Costs and Sample Expenses

Advertising costs are charged to selling and administrative expenses as incurred. Advertising costs were $12.0 million, $12.4 million and $11.0 million for the years ended December 31, 2018, 2017 and 2016,

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respectively. Sample expenses are charged to selling and administrative expenses when the samples are shipped.

Cash and Cash Equivalents

Cash and cash equivalents consist primarily of cash in banks and highly liquid investment securities that have maturities of three months or less when purchased. The carrying amount of cash equivalents approximates fair value because of the short-term maturity of these investments.

Short-term Investments

Short-term investments typically consist of marketable securities with maturities between three and twelve months at the balance sheet date. We have classified all of our short-term investments as available-for-sale at December 31, 2018 and 2017. The investments are reported at fair value with any unrealized gains or losses excluded from earnings and reported as a separate component of stockholders equity as other comprehensive income (loss).

Accounts Receivable

Accounts receivable are recorded net of allowances for doubtful accounts and reserves for returns. In the normal course of business, we extend credit to customers that satisfy predefined criteria. We estimate the collectability of our receivables. Allowances for doubtful accounts are established through the evaluation of accounts receivable aging and prior collection experience to estimate the ultimate collectability of these receivables. Reserves for returns are based on historical return rates and sales patterns.

Inventories

Inventories are stated at the lower of weighted-average cost or net realizable value. The level of obsolete and excess inventory is estimated on a program or title level-basis by comparing the number of units in stock with past usage and the expected future demand. The expected future demand of a program or title is determined by the copyright year, the previous year s usage, the subsequent years sales forecast, and known forward-looking trends including our development cycle to replace the title or program and competing titles or programs.

Property, Plant, and Equipment

Property, plant, and equipment are stated at cost, or in the case of assets acquired in business combinations, at fair value as of the acquisition date, less accumulated depreciation. Equipment under capital lease is stated at fair value at inception of the lease, less accumulated depreciation. Maintenance and repair costs are charged to expense as incurred, and renewals and improvements that extend the useful life of the assets are capitalized. Costs associated with developing film and episodic series assets are deferred if such amounts are expected to be recovered through future

revenues. Film and episodic series costs are amortized on a pro rata basis of revenue earned and total revenue expected to be earned from the film or episodic series. Depreciation on property, plant, and equipment is calculated using the straight-line method over the estimated useful lives of the assets or, in the case of assets acquired in business combinations, over their remaining lives. Equipment held under capital leases and leasehold improvements are amortized using the

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straight-line method over the shorter of the lease term or estimated useful life of the asset. Estimated useful lives of property, plant, and equipment are as follows:

	Estimated Useful Life
Building and building equipment	10 to 35 years
Machinery and equipment	2 to 15 years
Capitalized software	3 to 5 years
Leasehold improvements	Lesser of useful life or lease term
Film and media	Revenue earned

Capitalized Internal-Use Software and Software Development Costs

Capitalized internal-use and external-use software are included in property, plant and equipment on the consolidated balance sheets.

We capitalize certain costs related to obtaining or developing computer software for internal use including external customer-facing websites. Costs incurred during the application development stage, including external direct costs of materials and services, and payroll and payroll related costs for employees who are directly associated with the internal-use software project, are capitalized and amortized on a straight-line basis over the expected useful life of the related software. The application development stage includes design of chosen path, software configuration and integration, coding, hardware installation and testing. Costs incurred during the preliminary project stage, as well as maintenance, training and upgrades that do not result in additional functionality subsequent to general release are expensed as incurred.

Certain computer software development costs for software that is to be sold or marketed are capitalized in the consolidated balance sheets. Capitalization of computer software development costs begins upon the establishment of technological feasibility. We define the establishment of technological feasibility as a working model. Amortization of capitalized computer software development costs is provided on a product-by-product basis using the straight-line method, beginning upon commercial release of the product, and continuing over the remaining estimated economic life of the product. The carrying amounts of computer software development costs are annually compared to net realizable value and impairment charges are recorded, as appropriate, when amounts expected to be realized are lower.

We review internal-use software and software development costs for impairment. For the years ended December 31, 2018, 2017 and 2016, there was no impairment of software developments costs.

Pre-publication Costs

We capitalize the art, prepress, manuscript and other costs incurred in the creation of the master copy of a book or other media (the pre-publication costs). Pre-publication costs are primarily amortized from the year of sale over five years using the sum-of-the-years-digits method, which is an accelerated method for calculating an asset s amortization. Under this method, the amortization expense recorded for a pre-publication cost asset is approximately 33% (year 1), 27% (year 2), 20% (year 3), 13% (year 4) and 7% (year 5). This policy is used throughout the Company, except for the Trade Publishing young readers and general interest books, which generally expenses such costs as incurred. Additionally, pre-publication costs recorded in connection with the acquisition of the EdTech business are amortized over 7 years on a projected sales pattern. The amortization methods and periods chosen best reflects the pattern of expected sales generated from individual titles or programs. We periodically evaluate the remaining lives and recoverability of capitalized pre-publication costs, which are often dependent upon program acceptance by state adoption authorities.

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Amortization expense related to pre-publication costs for the years ended December 31, 2018, 2017 and 2016 were $109.3 million, $119.9 million and $121.9 million, respectively.

For the year ended December 31, 2017, an impairment charge for pre-publication costs of $4.0 million was recorded as certain products will no longer be sold in the marketplace. For the years ended December 31, 2018 and 2016, there was no impairment of pre-publication costs.

Goodwill and Indefinite-lived Intangible Assets

Goodwill is the excess of the purchase price paid over the fair value of the net assets of the business acquired. Other intangible assets principally consist of branded trademarks and trade names, acquired publishing rights and customer relationships. Goodwill and indefinite-lived intangible assets (certain tradenames) are not amortized, but are reviewed at least annually for impairment or earlier, if an indication of impairment exists. Goodwill is allocated entirely to our Education reporting unit. Determining the fair value of a reporting unit is judgmental in nature, and involves the use of significant estimates and assumptions. These estimates and assumptions may include revenue growth rates and operating margins used to calculate projected future cash flows, risk-adjusted discount rates, future economic and market conditions, the determination of appropriate market comparables as well as the fair value of individual assets and liabilities.

We have the option of first assessing qualitative factors to determine whether it is necessary to perform the current two-step impairment test for goodwill or we can perform the two-step impairment test without performing the qualitative assessment. In performing the qualitative (Step 0) assessment, events and circumstances specific to the reporting unit and to the entity as a whole, such as macroeconomic conditions, industry and market considerations, overall financial performance and cost factors are considered when evaluating whether it is more likely than not that the fair value of the reporting unit is less than its carrying amount.

Recoverability of goodwill can also be evaluated using a two-step process. In the first step, the fair value of a reporting unit is compared to its carrying value. If the fair value of a reporting unit exceeds the carrying value of the net assets assigned to a reporting unit, goodwill is considered not impaired and no further testing is required. If the carrying value of the net assets assigned to a reporting unit exceeds the fair value of a reporting unit, the second step of the impairment test is performed in order to determine the implied fair value of a reporting unit s goodwill. Determining the implied fair value of goodwill requires valuation of a reporting unit s tangible and intangible assets and liabilities in a manner similar to the allocation of purchase price in a business combination. If the carrying value of a reporting unit s goodwill exceeds its implied fair value, goodwill is deemed impaired and is written down to the extent of the difference. We estimate total fair value of the Education reporting unit by using various valuation techniques including an evaluation of our market capitalization and peer company multiples. With regard to indefinite-lived intangible assets, which includes the Houghton Mifflin Harcourt tradename at December 31, 2018 and 2017, the recoverability is evaluated using a one-step process whereby we determine the fair value by asset and then

compare it to its carrying value to determine if the asset is impaired. We estimate the fair value based by preparing a relief-from-royalty discounted cash flow analysis using forwarding looking revenue projections. The significant assumptions used in discounted cash flow analysis include: future net sales, a long-term growth rate, a royalty rate and a discount rate used to present value future cash flows and the terminal value of the Education reporting unit. The discount rate is based on the weighted-average cost of capital method at the date of the evaluation.

We completed our annual goodwill impairment tests as of October 1, 2018 and 2017. In 2018 and 2017, we used income and market valuation approaches to determine the fair value of the Education reporting unit. The fair value of the Education reporting unit substantially exceeded its carrying value as of the evaluation dates. No goodwill was deemed to be impaired for the years ended December 31, 2018, 2017 and 2016, respectively.

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We completed our annual indefinite-lived intangible assets impairment tests as of October 1, 2018 and 2017. No indefinite-lived intangible assets were deemed to be impaired for the years ended December 31, 2018 and 2017. We recorded non-cash impairment charges of $130.2 million for the year ended December 31, 2016. The impairment charges related to four specific tradenames within the Education segment in 2016 and primarily resulted from the strategic decision to market our products under the Houghton Mifflin Harcourt and HMH name rather than legacy imprints along with certain declining sales projections.

Publishing Rights

A publishing right is an acquired right that allows us to publish and republish existing and future works as well as create new works based on previously published materials. We determine the fair market value of the publishing rights arising from business combinations by discounting the after-tax cash flows projected to be derived from the publishing rights and titles to their net present value using a rate of return that accounts for the time value of money and the appropriate degree of risk. The useful life of the publishing rights is based on the lives of the various copyrights involved. We calculate amortization using the percentage of the projected operating income before taxes derived from the titles in the current year as a percentage of the total estimated operating income before taxes over the remaining useful life. Acquired publication rights, as well as customer-related intangibles with definitive lives, are primarily amortized on an accelerated basis over periods ranging from 3 to 20 years.

Impairment of Other Long-lived Assets

We review our other long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be fully recoverable. If the future undiscounted cash flows are less than their book value, impairment exists. The impairment is measured as the difference between the book value and the fair value of the underlying asset. Fair value is normally determined using an undiscounted cash flow model.

Severance

We accrue postemployment benefits if the obligation is attributable to services already rendered, rights to those benefits accumulate, payment of benefits is probable, and amount of benefit is reasonably estimated. Postemployment benefits include severance benefits.

Subsequent to recording such accrued severance liabilities, changes in market or other conditions may result in changes to assumptions upon which the original liabilities were recorded that could result in an adjustment to the liabilities.

Royalty Advances

Royalty advances to authors are capitalized and represent amounts paid in advance of the sale of an author s product and are recovered as earned. As advances are recorded, a partial reserve may be recorded immediately based primarily upon historical sales experience. Additionally, advances are evaluated periodically to determine if they are expected to be recovered on a title-by-title basis, with consideration given to the other titles in the author s portfolio also earning against the outstanding advance. Any portion of a royalty advance that is not expected to be recovered is fully reserved. Cash payments for royalty advances are included within cash flows from operating activities, under the caption Royalties payable and author advances, net, in our consolidated statements of cash flows.

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Income Taxes

We record income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax basis, and operating loss and tax credit carryforwards. Our consolidated financial statements contain certain deferred tax assets which have arisen primarily as a result of interest expense limitations, as well as other temporary differences between financial and tax accounting. We establish a valuation allowance if the likelihood of realization of the deferred tax assets is reduced based on an evaluation of objective verifiable evidence. Significant management judgment is required in determining our provision for income taxes, our deferred tax assets and liabilities and any valuation allowance recorded against those deferred tax assets. We evaluate the weight of all available evidence to determine whether it is more likely than not that some portion or all of the deferred income tax assets will not be realized.

We also evaluate any uncertain tax positions and only recognize the tax benefit from an uncertain tax position if it is more likely than not that the tax position will be sustained on examination by the taxing authorities, based on the technical merits of the position. The tax benefits recognized in the financial statements from such positions are then measured based on the largest benefit that has a greater than 50 percent likelihood of being realized upon settlement. We record a liability for unrecognized tax benefits resulting from uncertain tax positions taken or expected to be taken in a tax return. Any change in judgment related to the expected ultimate resolution of uncertain tax positions is recognized in earnings in the period in which such change occurs. Interest and penalties, if any, related to unrecognized tax benefits are recorded in income tax expense.

We had accounted for the tax effects of The Tax Cuts and Jobs Act, enacted on December 22, 2017, on a provisional basis and have subsequently finalized our accounting analysis based on guidance, interpretations available at December 31, 2018. Adjustments made in the fourth quarter of 2018 upon finalization of our accounting analysis were not material to our financial statements. See Note 8 to the consolidated financial statements for further detail.

Stock-Based Compensation

Certain employees and directors have been granted stock options, restricted stock and restricted stock units in our common stock. Stock-based compensation expense reflects the fair value of stock-based awards measured at the grant date and recognized over the relevant service period. We estimate the fair value of each stock-based award on the measurement date using the current market price based on the target value of the award for restricted stock and restricted stock units, the Monte Carlo simulation for market-based restricted stock units and the Black-Scholes valuation model for stock options. We recognize stock-based compensation expense over the awards requisite service period on a straight-line basis for time based stock options, restricted stock and restricted stock units and on a graded basis for restricted stock and restricted stock units that are contingent on the achievement of performance conditions.

Comprehensive Loss

Comprehensive loss is defined as changes in the equity of an enterprise except those resulting from stockholder transactions. The amounts shown on the consolidated statements of stockholders equity and comprehensive loss relate to the cumulative effect of changes in pension and postretirement liabilities, foreign currency translation gain and loss adjustments, unrealized gains and losses on short-term investments and gains and losses on derivative instruments.

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Foreign Currency Translation

The functional currency for each of our subsidiaries is the currency of the primary economic environment in which the subsidiary operates, generally defined as the currency in which the entity generates and expends cash. Foreign currency denominated assets and liabilities are translated into United States dollars at current rates as of the balance sheet date and the revenue, costs and expenses are translated at the average rates established during each reporting period. Cumulative translation gains or losses are recorded in equity as an element of accumulated other comprehensive income.

Financial Instruments

Derivative financial instruments are employed to manage risks associated with interest rate exposures and are not used for trading or speculative purposes. We recognize all derivative instruments in our consolidated balance sheets at fair value. Changes in the fair value of derivatives are recognized periodically either in earnings or in stockholders equity as a component of accumulated other comprehensive loss, depending on whether the derivative financial instrument qualifies for hedge accounting and, if so, whether it qualifies as a fair value hedge or a cash flow hedge. Gains and losses on derivatives designated as hedges, to the extent they are effective, are recorded in other comprehensive loss, and subsequently reclassified to earnings to offset the impact of the hedged items when they occur. Changes in the fair value of derivatives not qualifying as hedges are reported in earnings. During 2018, 2017 and 2016, our interest rate swaps were designated as hedges and qualify for hedge accounting. Accordingly, we recorded an unrealized gain of $3.5 million and $4.9 million, and an unrealized loss of $2.5 million in our statements of comprehensive loss to account for the changes in fair value of these derivatives during the periods ended December 31, 2018, 2017 and 2016, respectively. The corresponding $2.4 million hedge asset is included within long-term other assets in our consolidated balance sheet as of December 31, 2018. The corresponding $1.2 million and $6.1 million hedge liability is included within long-term other liabilities in our consolidated balance sheet as of December 31, 2017 and 2016, respectively. Our foreign exchange forward contracts did not qualify for hedge accounting because we did not contemporaneously document our hedging strategy upon entering into the hedging arrangements.

Treasury Stock

We account for treasury stock under the cost method. When shares are reissued or retired from treasury stock they are accounted for at an average price. Upon retirement the excess over par value is charged against capital in excess of par value.

Net Loss per Share

Basic net loss per share attributable to common stockholders is computed by dividing net loss attributable to common stockholders by the weighted-average common shares outstanding during the period. Except where the result would

be anti-dilutive, net loss per share is computed using the treasury stock method for the exercise of stock options. For periods in which the Company has reported net losses, diluted net loss per share attributable to common stockholders is the same as basic net loss per share attributable to common stockholders, since dilutive common shares are not assumed to have been issued if their effect is anti-dilutive. Diluted net loss per share attributable to common stockholders is the same as basic net loss per share attributable to common stockholders for the years ended December 31, 2018, 2017 and 2016.

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Recent Accounting Standards

Recent accounting pronouncements, not included below, are not expected to have a material impact on our consolidated financial position and results of operations.

Recently Issued Accounting Standards

In January 2017, the Financial Accounting Standards Board (FASB) issued updated guidance to simplify the test for goodwill impairment by the elimination of Step 2 in the determination on whether goodwill should be considered impaired. The annual assessments are still required to be completed. The guidance will be effective in 2020, with early adoption permitted. We do not expect that the adoption of this guidance will have a material impact on our consolidated financial statements.

In February 2016, the FASB issued guidance that primarily requires lessees to recognize most leases on their balance sheets but record expenses on their income statements in a manner similar to current accounting. For lessors, the guidance modifies the classification criteria and the accounting for sales-type and direct financing leases. The guidance will be effective for us on January 1, 2019. We will apply the guidance at the adoption date and recognize right of use assets and lease liabilities in the period of adoption. We will adopt using the transition method, which will not require adjustments to comparative periods nor require modified disclosures in those comparative periods. The new guidance provides a number of optional practical expedients in transition. We will elect the package of practical expedients, which among other things, allows the carryforward of the historical lease classification. Further, upon implementation of the new guidance, we will elect the practical expedients to combine lease and non-lease components, and to not recognize right-of-use assets and lease liabilities for short-term leases. We have identified appropriate changes to our accounting policies, information technology systems, business processes, and related internal controls to support recognition and disclosure requirements under the new guidance. We are currently in the process of evaluating the impact of this guidance on our consolidated financial statements and footnote disclosures, but we believe the adoption of this guidance will have a material impact on our consolidated balance sheets due to the recognition of the lease rights and obligations related to our office space leases as assets and liabilities. The impact on our results of operations and cash flows is not expected to be material.

Recently Adopted Accounting Standards

In May 2014, the FASB issued new guidance related to revenue recognition. This new accounting standard replaced most current U.S. GAAP guidance on this topic and eliminated most industry-specific guidance. The new revenue recognition standard provides a unified model to determine when and how revenue is recognized. The core principle is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration for which the entity expects to be entitled in exchange for those goods or services. Entities may adopt the new standard either retrospectively to all periods presented in the financial statements (the full

retrospective method) or as a cumulative-effect adjustment as of the date of adoption (modified retrospective method) in the year of adoption without applying to comparative periods financial statements. We adopted the guidance on January 1, 2018 applying the modified retrospective method.

The new standard superseded substantially all existing revenue recognition guidance. It impacts the revenue recognition for a significant number of our contracts, in addition to our business processes and our information technology systems. As a result, we established a cross-functional coordinated team to implement the new revenue recognition standard. We have implemented changes to our systems, processes and internal controls to meet the standard s reporting and disclosure requirements.

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Refer to Adoption of New Revenue Recognition Accounting Standard in this Note 2 for a detailed description of the impact of the adoption of the revenue standard.

In March 2017, the FASB issued guidance to improve the presentation of net periodic pension cost and net periodic post-retirement benefit cost. The changes to the guidance required employers to report the service cost component in the same line item as other compensation costs arising from services rendered by employees during the reporting period. The other components of net benefit costs have been presented in the income statement separately from the service cost and outside of a subtotal of income from operations. The guidance became effective January 1, 2018 and the adoption of the guidance did not have a material impact on our consolidated financial statements.

In November 2016, the FASB issued guidance on restricted cash, which required amounts generally described as restricted cash and restricted cash equivalents be included with cash and cash equivalents when reconciling the total beginning and ending amounts for the periods shown on the statement of cash flows. The guidance became effective January 1, 2018 using a retrospective transition method to each period presented. The adoption of the guidance did not have a material impact on our consolidated financial statements.

In August 2016, the FASB issued a guidance update to classifications of certain cash receipts and cash payments on the Statement of Cash Flows with the objective of reducing the existing diversity in practice. This updated guidance addresses the following eight specific cash flow issues: debt prepayment or debt extinguishment costs; settlement of zero-coupon debt instruments or other debt instruments with coupon interest rates that are insignificant in relation to the effective interest rate of the borrowing; contingent consideration payments made after a business combination; proceeds from the settlement of insurance claims; proceeds from the settlement of corporate-owned life insurance policies (including bank-owned life insurance policies); distributions received from equity method investees; beneficial interests in securitization transactions; and separately identifiable cash flows and application of the predominance principle. The guidance became effective January 1, 2018 and the adoption of the guidance did not have a material impact on our consolidated financial statements.

In March 2016, the FASB issued guidance that changes the accounting for certain aspects of share-based payments to employees. The guidance requires the recognition of the income tax effects of awards in the income statement when the awards vest or are settled, thus eliminating additional paid-in capital pools. The guidance also allows for the employer to repurchase more of an employee s shares for tax withholding purposes without triggering liability accounting. In addition, the guidance allows for a policy election to account for forfeitures as they occur rather than on an estimated basis. The guidance became effective January 1, 2017. The adoption of the guidance resulted in the recognition of approximately $12.3 million (tax effected) of previously unrecorded additional paid-in capital net operating losses as of January 1, 2017. The additional net operating losses were offset by an increase to the valuation allowance, accordingly no income tax benefit was recognized as a result of the adoption.

3. Discontinued Operations

On October 1, 2018, we completed the previously announced sale of all the assets, including intellectual property, used primarily in our Riverside clinical and standardized testing business (Riverside Business) for cash consideration received of $140.0 million and the purchaser s assumption of all liabilities relating to the Riverside Business subject to specified exceptions. Net proceeds from the sale after the payment of transaction costs were approximately $135.0 million with a post-tax book gain on sale of approximately $30.5 million. The gain was recorded in the fourth quarter of 2018 as the transaction closed on October 1, 2018. The tax gain on the sale was offset by current year losses. The results of the Riverside Business were

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previously reported in our Education segment. In connection with the sale of the Riverside Business, we entered into a Transition Services Agreement (TSA) with the purchaser whereby we will perform certain support functions for a period of up to 18 months from the disposition date in the fourth quarter of 2018.

Upon the signing of the asset purchase agreement on September 12, 2018, the Riverside Business qualified as a discontinued operation, and goodwill originally included in the Education reportable segment was transferred to the Riverside Business. The amount of transferred goodwill was $67.0 million and was determined using the relative fair value method. The relative fair value was determined based on the purchase price of the Riverside Business compared to the Education reportable segment fair value. The Education reportable segment fair value was based primarily on the market value of the overall Company at the date that the Riverside Business qualified as a discontinued operation. The allocation also required the assessment for impairment for each of the Riverside Business and Education reportable segment s goodwill and indefinite-lived intangible assets carrying values. No impairment was deemed to exist.

Selected financial information of the Riverside Business included in discontinued operations is as follows:

	For the Year Ended December 31,		
	2018	**2017**	**2016**
Net sales	$ 56,562	$ 80,482	$ 80,707
Costs	37,714	54,718	55,304
Amortization	4,954	7,630	8,752
Impairment charge for intangible assets			9,000
Earnings from discontinued operations before taxes	13,894	18,134	7,651
Income tax expense (benefit)	1,061	984	(13,936)
Earnings from discontinued operations, net of tax	$ 12,833	$ 17,150	$ 21,587

The assets and liabilities of the Riverside Business have been classified as assets of discontinued operations and liabilities of discontinued operations on our consolidated balance sheets. The major categories of assets and liabilities of the Riverside Business included in assets of discontinued operations and liabilities of discontinued operations are as follows:

	December 31, 2017
Accounts receivable, net	$ 8,511
Inventories	3,950
Prepaid expenses and other assets	28
Property, plant, and equipment, net	5,247
Pre-publication costs, net	10,900
Goodwill	67,000
Other intangible assets, net	28,125
Total assets of discontinued operations	$ 123,761
Accounts payable	$ 692
Royalties payable	6,194
Salaries, wages, and commissions payable	2,133
Deferred revenue	10,398
Other liabilities	5,289
Total liabilities of discontinued operations	$ 24,706

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4. Balance Sheet Information

Short-term Investments

The following table shows the gross unrealized losses and market value of our available-for-sale securities with unrealized losses that are not deemed to be other-than-temporary, aggregated by investment category:

	December 31, 2018			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Short-term investments:				
U.S. Government and agency securities	$ 49,824	$ 31	$ (22)	$ 49,833

	December 31, 2017			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Short-term investments:				
U.S. Government and agency securities	$ 86,467	$ 25	$ (43)	$ 86,449

The contractual maturities of our short-term investments are one year or less.

Account Receivable

Accounts receivable at December 31, 2018 and 2017 consisted of the following:

	2018	2017
Accounts receivable	$ 224,306	$ 215,657
Allowance for bad debt	(2,173)	(2,508)
Reserve for book returns	(18,559)	(20,580)
	$ 203,574	$ 192,569

As of December 31, 2018, no individual customer comprised more than 10% of our accounts receivable, net balance. As of December 31, 2017, there was one individual customer that comprised approximately 10% of our accounts receivable, net balance. We believe that our accounts receivable credit risk exposure is limited and we have not experienced significant write-downs in our accounts receivable balances.

Inventories

Inventories at December 31, 2018 and 2017 consisted of the following:

	2018	**2017**
Finished goods	$ 162,890	$ 141,925
Raw materials	21,319	8,769
Inventories	$ 184,209	$ 150,694

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Property, Plant, and Equipment

Balances of major classes of assets and accumulated depreciation and amortization at December 31, 2018 and 2017 were as follows:

	2018	2017
Land and land improvements	$ 4,923	$ 4,923
Building and building equipment	9,415	9,867
Machinery and equipment	11,630	31,234
Capitalized software	563,314	522,826
Leasehold improvements	22,171	22,784
Film and media	14,920	8,056
	626,373	599,690
Less: Accumulated depreciation and amortization	(500,448)	(451,031)
Property, plant, and equipment, net	$ 125,925	$ 148,659

For the years ended December 31, 2018, 2017 and 2016, depreciation and amortization expense related to property, plant, and equipment were $81.2 million, $71.0 million and $74.5 million, respectively.

Property, plant, and equipment at December 31, 2018 and 2017 included approximately $0.7 million and $6.9 million, respectively, acquired under capital lease agreements, of which the majority is included in machinery and equipment. The future minimum lease payments required under non-cancelable capital leases as of December 31, 2018 are $0.2 million in 2019, 2020 and 2021.

Included within property, plant, and equipment on our consolidated balance sheets are film and media assets. Our film and media assets are comprised of the cost to develop our animated series Carmen Sandiego. These assets will be amortized proportionally to the revenues recognized relative to the total estimated revenue consistent with the guidance over episodic television series development. In the fourth quarter of 2018, we recorded amortization expense of $6.1 million against this asset upon recognition of revenue, and is included within cost of sales, excluding publishing rights and pre-publication amortization, in the statement of operations. No amortization expense was previously recorded.

Substantially all property, plant, and equipment are pledged as collateral under our term loan and revolving credit facility.

Contract Assets, Contract Liabilities and Deferred Commissions

Contract assets consist of unbilled amounts at the reporting date and are transferred to accounts receivable when the rights become unconditional. Contract assets are included in prepaid expenses and other assets on our consolidated balance sheets. Contract liabilities consist of deferred revenue (current and long-term). The following table presents changes in contract assets and contract liabilities during the year ended December 31, 2018:

	December 31, 2018	January 1, 2018	$ Change	% Change
Contract assets	$ 74	$ 1,092	$ (1,018)	NM
Contract liabilities (deferred revenue)	647,444	655,137	(7,693)	(1.2)%

NM = not meaningful

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The $6.7 million increase in our net contract liabilities from January 1, 2018 to December 31, 2018 was primarily due to a $7.7 million decrease in our contract liabilities, primarily due to the satisfaction of performance obligations related to physical and digital products during the period.

During the year ended December 31, 2018, we recognized the following net sales as a result of changes in the contract asset and contract liabilities balances:

	Year Ended December 31, 2018
Net sales recognized in the period from:	
Amounts included in contract liabilities at the beginning of the period	$ 220,769

As of December 31, 2018, the aggregate amount of the transaction price allocated to the remaining performance obligations was $694.1 million, and we will recognize approximately 80% over the next 1 to 3 years to net sales.

Prior to the adoption of the new revenue standard, we expensed incremental commissions paid to sales representatives for obtaining product sales as well as service contracts. We expect that the costs are recoverable, and under the new standard, we capitalize these incremental costs of obtaining customer contracts unless the capitalization and amortization of such costs are not expected to have a material impact on the financial statements. We did not record any impairment against contract assets during the year ended December 31, 2018. Applying the practical expedient, we recognize sales commission expense when incurred if the amortization period of the assets that we otherwise would have recognized is one year or less. We had deferred commissions in the amount of $22.6 million at December 31, 2018 and amortized $10.5 million during the year ended December 31, 2018. The amortization is included in selling and administrative expenses.

5. Goodwill and Other Intangible Assets

Goodwill and other intangible assets consisted of the following:

	December 31, 2018			December 31, 2017		
	Cost	Accumulated Amortization	Total	Cost	Accumulated Amortization	Total

Goodwill	$ 716,073	$	$ 716,073	$ 716,073	$	$ 716,073
Trademarks and tradenames: indefinite-lived	$ 161,000	$	$ 161,000	$ 161,000	$	$ 161,000
Trademarks and tradenames: definite-lived	164,130	(28,087)	136,043	164,130	(17,226)	146,904
Publishing rights	1,180,000	(1,112,869)	67,131	1,180,000	(1,078,156)	101,844
Customer related and other	444,640	(287,922)	156,718	444,640	(271,850)	172,790
Other intangible assets, net	$ 1,949,770	$ (1,428,878)	$ 520,892	$ 1,949,770	$ (1,367,232)	$ 582,538

There were no changes in the carrying amount of goodwill related to continuing operations for the year ended December 31, 2018. Goodwill related to continuing operations decreased $67.0 million compared to previously reported amounts. The decrease arises from the allocation of goodwill to the Riverside Business (i.e., discontinued operations) from the Education reportable segment goodwill amount. Refer to Note 3.

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In accordance with the provisions of the accounting standard for goodwill and other intangible assets, goodwill and certain indefinite-lived tradenames are not amortized but rather are assessed for impairment on an annual basis. In connection with this assessment, we recorded an impairment charge of approximately $130.2 million for certain of our indefinite-lived intangible assets, which has been reflected as of the measurement date of October 1, 2016, which are now definite-lived. There was no impairment charge recorded in the years ended December 31, 2018 and 2017. There was no goodwill impairment for the years ended December 31, 2018, 2017 and 2016, respectively.

During 2017, we acquired the remaining intellectual property rights to certain educational content and recorded an intangible asset of $2.0 million.

During 2016, certain tradenames were deemed to be definite-lived and, accordingly, are being amortized over their estimated useful lives. This was due to our strategic decision to gradually migrate away from specific imprints, primarily the Holt McDougal and various supplemental brands, and in favor of marketing our products under the Houghton Mifflin Harcourt and HMH names. As a result of this change in estimate from indefinite-lived to definite-lived intangible assets, we recorded amortization expense of $8.1 million, $8.1 million and $2.0 million during 2018, 2017 and 2016, respectively, related to these tradenames. During 2016, $109.4 million of previously indefinite-lived intangible assets were transferred to definite-lived intangible assets and $130.2 million of indefinite-lived intangible assets were impaired. Amortization expense for publishing rights and customer related and other intangibles were $61.6 million, $75.5 million and $87.7 million for the years ended December 31, 2018, 2017 and 2016, respectively.

Estimated aggregate amortization expense expected for each of the next five years related to intangibles subject to amortization is as follows:

	Trademarks and Tradenames	Publishing Rights	Other Intangible Assets
2019	$ 10,862	$ 26,557	$ 13,444
2020	10,862	20,056	9,594
2021	10,862	11,642	9,320
2022	10,862	7,569	9,119
2023	10,862	1,307	8,939
Thereafter	81,733		106,302
	$ 136,043	$ 67,131	$ 156,718

6. Debt

Our debt consisted of the following:

	December 31, 2018	December 31, 2017
$800,000 term loan due May 29, 2021 interest payable quarterly (net of discount and issuance costs)	$ 763,649	$ 768,194
Less: Current portion of long-term debt	8,000	8,000
Total long-term debt, net of discount and issuance costs	$ 755,649	$ 760,194
Revolving credit facility	$	$

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Long-term debt repayments due in each of the next five years and thereafter is as follows:

Year	
2019	8,000
2020	8,000
2021	756,000
	$ 772,000

Term Loan Facility

On May 29, 2015, we entered into an amended and restated $800.0 million term loan credit facility (the term loan facility). The term loan facility matures on May 29, 2021 and the interest rate is based on LIBOR plus 3.0% or an alternative base rate plus applicable margins. LIBOR is subject to a floor of 1.0% with the length of the LIBOR contracts ranging up to six months at the option of the Company.

The term loan facility is required to be repaid in quarterly installments of $2.0 million, and may be prepaid, in whole or in part, at any time, without premium.

The term loan facility was issued at a discount equal to 0.5% of the outstanding borrowing commitment. As of December 31, 2018, the interest rate of the term loan facility was 5.5%.

The term loan facility does not require us to comply with financial maintenance covenants. We are currently required to meet certain incurrence based financial covenants as defined under our term loan facility. The term loan facility is subject to usual and customary conditions, representations, warranties and covenants, including restrictions on additional indebtedness, liens, investments, mergers, acquisitions, asset dispositions, dividends to stockholders, repurchase or redemption of our stock, transactions with affiliates and other matters. The term loan facility is subject to customary events of default. If an event of default occurs and is continuing, the administrative agent may, or at the request of certain required lenders shall, accelerate the obligations outstanding under the term loan facility.

We are subject to an excess cash flow provision under our term loan facility which is predicated upon our leverage ratio and cash flow. There was no payment required under the excess cash flow provision in 2018 and 2017.

Interest Rate Hedging

On August 17, 2015, we entered into interest rate derivative contracts with various financial institutions having an aggregate notional amount of $400.0 million to convert floating rate debt into fixed rate debt and had $400.0 million outstanding as of December 31, 2018. We assessed at inception, and re-assess on an ongoing basis, whether the interest rate derivative contracts are highly effective in offsetting changes in the fair value of the hedged variable rate debt.

These interest rate swaps were designated as cash flow hedges and qualify for hedge accounting under the accounting guidance related to derivatives and hedging. Accordingly, we recorded an unrealized gain of $3.5 million and $4.9 million, and an unrealized loss of $2.5 million in our statements of comprehensive loss to account for the changes in fair value of these derivatives during the periods ended December 31, 2018, 2017 and 2016, respectively. The corresponding $2.4 million hedge asset is included within long-term other assets and $1.2 million hedge liability is included within long-term other liabilities in our consolidated balance sheet as of December 31, 2018 and 2017, respectively. The interest rate derivative contracts mature on July 22, 2020.

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Revolving Credit Facility

On July 22, 2015, we entered into an amended and restated revolving credit facility (the revolving credit facility). The revolving credit facility provides borrowing availability in an amount equal to the lesser of either $250.0 million or a borrowing base that is computed monthly or weekly and comprised of the Borrowers and the Guarantors (as such terms are defined below) eligible inventory and receivables. The revolving credit facility includes a letter of credit subfacility of $50.0 million, a swingline subfacility of $20.0 million and the option to expand the facility by up to $100.0 million in the aggregate under certain specified conditions. The revolving credit facility may be prepaid, in whole or in part, at any time, without premium.

The revolving credit facility requires the Company to maintain a minimum fixed charge coverage ratio of 1.0 to 1.0 on a trailing four-quarter basis only during certain periods commencing when excess availability under the revolving credit facility is less than certain limits prescribed by the terms of the revolving credit facility. The revolving credit facility is subject to usual and customary conditions, representations, warranties and covenants, including restrictions on additional indebtedness, liens, investments, mergers, acquisitions, asset dispositions, dividends to stockholders, repurchase or redemption of our stock, transactions with affiliates and other matters. The revolving credit facility is subject to customary events of default. As of December 31, 2018, no amounts are outstanding on the revolving credit facility.

As of December 31, 2018, the minimum fixed charge coverage ratio covenant under our revolving credit facility was not applicable, due to our level of borrowing availability. The minimum fixed charge coverage ratio, which is only tested in limited situations, is 1.0 to 1.0 through the end of the facility.

Guarantees

Under both the revolving credit facility and the term loan facility, Houghton Mifflin Harcourt Publishers Inc., HMH Publishers LLC and Houghton Mifflin Harcourt Publishing Company are the borrowers (collectively, the Borrowers), and Citibank, N.A. acts as both the administrative agent and the collateral agent.

The obligations under the revolving credit facility and the term loan facility are guaranteed by the Company and each of its direct and indirect for-profit domestic subsidiaries (other than the Borrowers) (collectively, the Guarantors) and are secured by all capital stock and other equity interests of the Borrowers and the Guarantors and substantially all of the other tangible and intangible assets of the Borrowers and the Guarantors, including, without limitation, receivables, inventory, equipment, contract rights, securities, patents, trademarks, other intellectual property, cash, bank accounts and securities accounts and owned real estate. The revolving credit facility is secured by first priority liens on receivables, inventory, deposit accounts, securities accounts, instruments, chattel paper and other assets related to the foregoing (the Revolving First Lien Collateral), and second priority liens on the collateral which secures the term loan facility on a first priority basis. The term loan facility is secured by first priority liens on the capital

stock and other equity interests of the Borrowers and the Guarantors, equipment, owned real estate, trademarks and other intellectual property, general intangibles that are not Revolving First Lien Collateral and other assets related to the foregoing, and second priority liens on the Revolving First Lien Collateral.

7. Restructuring, Severance and Other Charges
2017 Restructuring Plan

On an ongoing basis, we assess opportunities for improved operational effectiveness and efficiency and better alignment of expenses with net sales, while preserving our ability to make the investments in content

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and our people that we believe are important to our long-term success. As a result of these assessments, we have undertaken a restructuring initiative in order to enhance our growth potential and better position us for long-term success. This initiative is described below.

Beginning at the end of 2016, we worked with a third party consultant to review our operating model and organizational design in order to improve our operational efficiency, better focus on the needs of our customers and right-size our cost structure to create long-term shareholder value.

In March 2017, we committed to certain operational efficiency and cost-reduction actions we planned to take in order to accomplish these objectives (2017 Restructuring Plan). These actions included making organizational design changes across layers of the Company below the executive team and other right-sizing initiatives expected to result in reductions in force, consolidating and/or subletting certain office space under real estate leases as well as other potential operational efficiency and cost-reduction initiatives. We completed the organizational design change actions in 2017 and the remaining actions in 2018.

Implementation of actions under the 2017 Restructuring Plan resulted in total charges of approximately $42.8 million, of which approximately $32.6 million of these charges are estimated to result in cash outlays. We have recorded cash-related costs of $4.7 million and $27.9 million for the years ended December 31, 2018 and 2017, respectively, of which a portion of these expenses totaling approximately $16.2 million were related to severance and termination benefits for the year ended December 31, 2017. The remaining amount of approximately $4.7 million and $11.7 million related to implementation of the plan and real estate consolidation costs for the years ended December 31, 2018 and 2017, respectively. These costs are included in the restructuring line item within our consolidated statements of operations.

The following tables provide a summary of our total costs associated with the 2017 Restructuring Plan, included in the restructuring line item within our consolidated statements of operations, for the years ended December 31, 2018, 2017 and 2016, respectively, by major type of cost:

Type of Cost	Year Ended December 31, 2018	Year Ended December 31, 2017	Year Ended December 31, 2016	Total Amount Incurred to Date
Restructuring charges: (1)				
Severance and termination benefits	$	$ 16,206	$	$ 16,206
Office space consolidation (2)	4,657	4,979		9,636
Implementation and impairment (3)		16,590		16,990

	$	4,657	$	37,775	$		$	42,832

(1) All restructuring charges are included within Corporate and Other.

(2) During the year ended December 31, 2017, we recorded a non-cash charge for a write-off of property, plant, and equipment of approximately $0.7 million and $4.2 million of accruals related to vacating certain office space in two of our locations.

(3) During the year ended December 31, 2017, we recorded a non-cash impairment charge of approximately $9.1 million related to a certain long-lived asset included within property, plant, and equipment.

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Our restructuring liabilities are primarily comprised of accruals for severance and termination benefits and office space consolidation. The following is a rollforward of our liabilities associated with the 2017 Restructuring Plan:

	2018			
	Restructuring accruals at December 31, 2017	Charges	Cash payments	Restructuring accruals at December 31, 2018
Severance and termination benefits	$ 4,306	$	$ (3,936)	$ 370
Office space consolidation	3,663	4,657	(1,947)	6,373
	$ 7,969	$ 4,657	$ (5,883)	$ 6,743

	2017			
	Restructuring accruals at December 31, 2016	Charges	Cash payments	Restructuring accruals at December 31, 2017
Severance and termination benefits	$	$ 16,206	$ (11,900)	$ 4,306
Office space consolidation		4,256	(593)	3,663
Implementation		7,472	(7,472)	
	$	$ 27,934	$ (19,965)	$ 7,969

Severance and Other Charges

2018

Exclusive of the 2017 Restructuring Plan, during the year ended December 31, 2018, $5.7 million of severance payments were made to employees whose employment ended in 2018 and prior years and $1.0 million of net payments were made for office space no longer utilized by the Company as a result of prior savings initiatives. Further, we recorded an expense in the amount of $6.8 million to reflect costs for severance, which we expect to be paid over the next twelve months.

2017

Exclusive of the 2017 Restructuring Plan, during the year ended December 31, 2017, $6.4 million of severance payments were made to employees whose employment ended in 2017 and prior years and $3.1 million of net payments were made for office space no longer utilized by the Company as a result of prior savings initiatives. Further, we recorded an expense in the amount of $0.4 million to reflect costs for severance, which have been fully paid, along with a favorable $0.2 million adjustment for office space no longer occupied.

2016

During the year ended December 31, 2016, $7.4 million of severance payments were made to employees whose employment ended in 2016 and prior years and $3.9 million of net payments for office space no longer utilized by the Company. Further, we recorded an expense in the amount of $12.4 million to reflect additional costs for severance, which have been fully paid, along with a $3.3 million accrual for vacated space.

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A summary of the significant components of the severance/restructuring and other charges, which are not allocated to our segments and included in Corporate and Other, is as follows:

	2018			
	Severance/ other accruals at December 31, 2017	**Severance/ other expense**	**Cash payments**	**Severance/ other accruals at December 31, 2018**
Severance costs	$ 341	$ 6,821	$ (5,742)	$ 1,420
Other accruals	1,299		(1,029)	270
	$ 1,640	$ 6,821	$ (6,771)	$ 1,690

	2017			
	Severance/ other accruals at December 31, 2016	**Severance/ other expense**	**Cash payments**	**Severance/ other accruals at December 31, 2017**
Severance costs	$ 6,417	$ 353	$ (6,429)	$ 341
Other accruals	4,604	(176)	(3,129)	1,299
	$ 11,021	$ 177	$ (9,558)	$ 1,640

	2016			
	Severance/ other accruals at December 31, 2015	**Severance/ other expense**	**Cash payments**	**Severance/ other accruals at December 31, 2016**
Severance costs	$ 1,455	$ 12,350	$ (7,388)	$ 6,417
Other accruals	5,251	3,300	(3,947)	4,604

	$ 6,706	$ 15,650	$ (11,335)	$ 11,021

The current portion of the severance and other charges was $6.0 million and $6.9 million (inclusive of the 2017 Restructuring Plan) as of December 31, 2018 and 2017, respectively.

8. Income Taxes

Effects of the Tax Cuts and Jobs Act

New tax legislation, commonly referred to as the Tax Cuts and Jobs Act (the 2017 Tax Act), was enacted on December 22, 2017. Accounting for income taxes requires companies to recognize the effect of tax law changes in the period of enactment even though the effective date for most provisions of the 2017 Tax Act is for tax years beginning after December 31, 2017.

Given the significance of the legislation, the SEC staff issued Staff Accounting Bulletin No. 118 (SAB 118), which allows registrants to record provisional amounts during a one year measurement period similar to that used when accounting for business combinations. However, the measurement period is deemed to have ended earlier when the registrant has obtained, prepared and analyzed the information necessary to finalize its accounting. During the measurement period, impacts of the law are expected to be recorded at the time a reasonable estimate for all or a portion of the effects can be made, and provisional amounts can be recognized and adjusted as information becomes available, prepared or analyzed.

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SAB 118 summarizes a three-step process to be applied at each reporting period to account for and qualitatively disclose: (1) the effects of the change in tax law for which accounting is complete; (2) provisional amounts (or adjustments to provisional amounts) for the effects of the tax law where accounting is not complete, but that a reasonable estimate has been determined; and (3) a reasonable estimate cannot yet be made and therefore taxes are reflected in accordance with law prior to the enactment of the Tax Cuts and Jobs Act. We recorded provisional estimates and have subsequently finalized our accounting analysis based on guidance, interpretations and information available at December 31, 2018. Adjustments made in the fourth quarter of 2018 upon finalization of our accounting analysis were not material to our financial statements.

Other significant provisions of the Act that were effective for 2018 include: an exemption from U.S. tax on dividends of future foreign earnings, limitations on the current deductibility of net interest expense in excess of 30% of adjustable taxable income, an incremental tax (base erosions anti-abuse tax, or BEAT) on excessive amounts paid to foreign related parties, and a minimum tax on certain foreign earnings in excess of 10% of the foreign subsidiaries tangible assets (i.e., global intangible low-taxed income, or GILTI). Under FASB Staff Q&A, Topic 740 No. 5, we have elected to recognize the resulting tax on GILTI as a period expense in the period the tax is incurred.

The substantial impact of the enactment of the 2017 Tax Act is reflected in the tables below.

The components of loss before taxes by jurisdiction are as follows:

	For the Year Ended December 31, 2018	For the Year Ended December 31, 2017	For the Year Ended December 31, 2016
U.S.	$ (134,884)	$ (172,199)	$ (360,689)
Foreign	3,024	443	2,988
Loss before taxes	$ (131,860)	$ (171,756)	$ (357,701)

Total income taxes by jurisdiction are as follows:

	For the Year Ended December 31, 2018	For the Year Ended December 31, 2017	For the Year Ended December 31, 2016

Income tax expense (benefit)						
U.S.	$	3,701	$	(51,106)	$	(52,741)
Foreign		1,896		(313)		1,185
	$	5,597	$	(51,419)	$	(51,556)

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Significant components of the (benefit) expense for income taxes attributable to loss from continuing operations consist of the following:

	For the Year Ended December 31, 2018	For the Year Ended December 31, 2017	For the Year Ended December 31, 2016
Current			
Foreign	$ 1,562	$ (259)	$ 437
U.S. Federal	(63)	0	92
U.S. State and other	(1,042)	(1,914)	1,496
Total current	457	(2,173)	2,025
Deferred			
Foreign	334	(54)	748
U.S. Federal	2,329	(54,666)	(49,772)
U.S. State and other	2,477	5,474	(4,557)
Total deferred	5,140	(49,246)	(53,581)
Income tax (benefit) expense	$ 5,597	$ (51,419)	$ (51,556)

The reconciliation of the income tax rate computed at the statutory tax rate to the reported income tax expense (benefit) attributable to continuing operations is as follows:

	For the Year Ended December 31,2018	For the Year Ended December 31, 2017	For the Year Ended December 31, 2016
Statutory rate	21.0%	35.0%	35.0%
Permanent items	(2.6)	(3.5)	(0.8)
Release of uncertain tax positions		(0.2)	0.3
Foreign rate differential	(0.1)	(0.2)	0.2
State and local taxes	6.8	17.1	5.9

State and local net operating loss re-establishment			3.2
Increase in valuation allowance	(26.6)	(68.5)	(30.2)
Change in valuation allowance due to 2017 Tax Act		(43.9)	
Impact of federal rate change on deferred tax assets and liabilities due to 2017 Tax Act		85.7	
Tax credits	(2.7)	1.2	0.8
Adoption of 2016 Accounting Standard related to accounting changes for certain aspects of share-based payments to employees (1)		7.2	
Effective tax rate	(4.2)%	29.9%	14.4%

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The significant components of the net deferred tax assets and liabilities are shown in the following table:

	2018	2017
Tax assets related to		
Net operating loss and other carryforwards	$ 228,364	$ 229,595
Returns reserve/inventory expense	39,113	40,687
Pension benefits	8,294	6,977
Postretirement benefits	4,338	6,285
Deferred interest (2)	261,647	280,246
Deferred revenue	118,450	122,192
Stock-based compensation	5,415	3,992
Deferred compensation	5,830	5,872
Research and Development	6,038	335
Other, net	9,064	8,540
Valuation allowance	(562,392)	(571,653)
	$ 124,161	$ 133,068

	2018	2017
Tax liabilities related to		
Indefinite-lived intangible assets	(76,715)	(62,593)
Definite-lived intangible assets	(30,882)	(45,644)
Depreciation and amortization expense	(34,210)	(43,426)
Other, net	(6,170)	(81)
	(147,977)	(151,744)
Net deferred tax liabilities	$ (23,816)	$ (18,676)

(1) In March 2016, the FASB issued guidance that changes the accounting for certain aspects of shared-based payments to employees. The guidance requires the recognition of the income tax effects of awards in the income statement when the awards vest or are settled, thus eliminating additional paid-in capital pools. The guidance became effective January 1, 2017 which resulted in the recognition of $12.3 million of previously unrecorded additional paid-in capital net operating losses at that time. The additional net operating losses were offset by an

increase in the valuation allowance, accordingly no net income tax benefit was recognized as a result of the adoption.

(2) The deferred interest tax asset represents disallowed interest deductions under IRC Section 163(j) (Limitation on Deduction for interest on Certain Indebtedness) for the current and prior years. At December 31, 2018 and 2017, we had gross deferred interest deductions totaling $975.2 million and $1,042.1 million, respectively. The disallowed interest is able to be carried forward indefinitely and utilized in future years pursuant to IRC Section 163(j). A full valuation allowance has been provided against deferred tax assets, excluding $3.3 million of foreign deferred tax assets which are expected to be realized, net of deferred tax liabilities resulting from indefinite-lived intangibles.

The net deferred tax liability balance is stated at prevailing statutory income tax rates. Deferred tax assets and liabilities are reflected on our consolidated balance sheets as follows:

	2018	2017
Non-current deferred tax assets	$ 3,259	$ 3,593
Non-current deferred tax liabilities	(27,075)	(22,269)
	$ (23,816)	$ (18,676)

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A reconciliation of the gross amount of unrecognized tax benefits, excluding accrued interest and penalties, is as follows:

Balance at December 31, 2015	$ 16,311
Reductions based on tax positions related to the prior year	(855)
Additions based on tax positions related to the current year	52
Balance at December 31, 2016	15,508
Reductions based on tax positions related to the prior year	
Additions based on tax positions related to the current year	172
Balance at December 31, 2017	15,680
Reductions based on tax positions related to the prior year	
Additions based on tax positions related to the prior year	
Balance at December 31, 2018	$ 15,680

For the year ended December 31, 2017, the Company recorded $0.2 million of uncertain tax benefits due to its uncertainty around net operating losses that were generated in tax years ended December 31, 2014 and 2015. For the year ended December 31, 2016, the Company recognized $0.9 million of uncertain tax benefits (excluding interest and penalties) due to the expiration of the statute of limitations. We are currently open for audit under the statute of limitation for Federal, state and foreign jurisdictions for years 2012 to 2017. However, carryforward attributes from prior years may still be adjusted upon examination by tax authorities if they are used in a future period.

We report penalties and tax-related interest expense on unrecognized tax benefits as a component of the provision for income taxes in the accompanying consolidated statement of operations. At December 31, 2018 and 2017, accrued interest and penalties in the accompanying consolidated balance sheet and interest and penalties included in the provision for income taxes for the years ended December 31, 2018, 2017 and 2016 were immaterial.

As of December 31, 2018, we have approximately $611.3 million of Federal tax loss carryforwards, which will expire between 2034 and 2037. The Company has approximately $1,234.3 million of state tax loss carryforward, which will expire between 2019 and 2038. In addition, we have foreign tax credit carryforwards of $8.4 million and research and development credit carryforwards of $4.2 million, which will expire between 2032 and 2036. The Company s Irish net operating losses of $23.6 million are not subject to expiration. The Canadian losses ($1.8 million federal and $0.8 million provincial) will expire between 2033 and 2037. The Puerto Rico alternative minimum tax credit carryforwards of $2.7 million are not subject to expiration.

Under Section 382 of the Internal Revenue Code of 1986, as amended, substantial changes in the Company s ownership may limit the amount of net operating loss carryforwards that could be utilized annually in the future to offset taxable income. Specifically, this limitation may arise in the event of a cumulative change in ownership of the Company of more than 50% within a three-year period. Any such annual limitation may significantly reduce the utilization of net operating loss carryforwards before they expire. The Company performed an analysis through December 31, 2016, and determined any potential ownership change under Section 382 during the year would not have a material impact on the future utilization of U.S. net operating losses and tax credits. However, future transactions in the Company s common stock could trigger an ownership change for purposes of Section 382, which could limit the amount of net operating loss carryforwards and other attributes that could be utilized annually in the future to offset taxable income, if any. Any such limitation, whether as the result of sales of common stock by our existing

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stockholders or sales of common stock by the Company, could have a material adverse effect on results of operations in future years.

U.S. income taxes on the undistributed earnings of the Company s non-U.S. subsidiaries have not been provided for as the Company currently plans to indefinitely reinvest these amounts and has the ability to do so. There are no cumulative undistributed and untaxed foreign earnings at December 31, 2018 and 2017.

Based on our assessment of historical pre-tax losses and the fact that we did not anticipate sufficient future taxable income in the near term to assure utilization of certain deferred tax assets, the Company recorded a valuation allowance at December 31, 2018 and 2017 of $562.4 million and $571.7 million, respectively. We have decreased our valuation allowance by $9.3 million in 2018 with $35.1 million as a component of continuing operations and $0.5 million as a component of other comprehensive income.

9. Retirement and Postretirement Benefit Plans

Retirement Plan

We have a noncontributory, qualified defined benefit pension plan (the Retirement Plan), which covers certain employees. The Retirement Plan is a cash balance plan, which accrues benefits based on pay, length of service, and interest. The funding policy is to contribute amounts subject to minimum funding standards set forth by the Employee Retirement Income Security Act of 1974 and the Internal Revenue Code. The Retirement Plan s assets consist principally of common stocks, fixed income securities, investments in registered investment companies, and cash and cash equivalents. We also have a nonqualified defined benefit plan, or nonqualified plan, that previously covered employees who earned over the qualified pay limit as determined by the Internal Revenue Service. The nonqualified plan accrues benefits for the participants based on the cash balance plan calculation. The nonqualified plan is not funded. We use a December 31 date to measure the pension and postretirement liabilities. In 2007, both the qualified and nonqualified pension plans eliminated participation in the plans for new employees hired after October 31, 2007.

We recognize the funded status of defined benefit pension and other postretirement plans as an asset or liability in the balance sheet and are required to recognize actuarial gains and losses and prior service costs and credits in other comprehensive income and subsequently amortize those items in the statement of operations.

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The following table summarizes the Accumulated Benefit Obligations (ABO), the change in Projected Benefit Obligation (PBO), and the funded status of our plans as of and for the financial statement period ended December 31, 2018 and 2017:

	2018	2017
ABO at end of period	$ 162,096	$ 176,444
Change in PBO		
PBO at beginning of period	$ 176,444	$ 177,300
Interest cost on PBO	5,300	5,528
Actuarial (gain) loss	(9,061)	6,206
Benefits paid	(10,587)	(12,590)
PBO at end of period	$ 162,096	$ 176,444
Change in plan assets		
Fair market value at beginning of period	$ 152,311	$ 148,344
Actual return	(9,052)	16,477
Company contribution	104	80
Benefits paid	(10,587)	(12,590)
Fair market value at end of period	$ 132,776	$ 152,311
Unfunded status	$ (29,320)	$ (24,133)

Amounts recognized in the consolidated balance sheets at December 31, 2018 and 2017 consist of:

	2018	2017
Noncurrent liabilities	$ (29,320)	$ (24,133)

Additional year-end information for pension plans with ABO in excess of plan assets at December 31, 2018 and 2017 consist of:

	2018	2017

PBO	$ 162,096	$ 176,444
ABO	162,096	176,444
Fair value of plan assets	132,776	152,311

Weighted average assumptions used to determine the benefit obligations (both PBO and ABO) at December 31, 2018 and 2017 are:

	2018	**2017**
Discount rate	4.2%	3.6%
Increase in future compensation	N/A	N/A

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Net periodic pension (income) cost includes the following components:

	For the Year Ended December 31, 2018	For the Year Ended December 31, 2017	For the Year Ended December 31, 2016
Interest cost on projected benefit obligation	$ 5,300	$ 5,528	$ 5,224
Expected return on plan assets	(7,985)	(9,263)	(9,150)
Amortization of net loss	1,420	804	50
Net pension (income) expense recognized for the period	$ (1,265)	$ (2,931)	$ (3,876)

Significant actuarial assumptions used to determine net periodic pension cost at December 31, 2018, 2017 and 2016 are:

	2018	2017	2016
Discount rate	3.6%	4.0%	4.3%
Increase in future compensation	N/A	N/A	N/A
Expected long-term rate of return on assets	5.5%	6.3%	6.3%

Assumptions on Expected Long-Term Rate of Return as Investment Strategies

We employ a building block approach in determining the long-term rate of return for plan assets. Historical markets are studied and long-term relationships between equities and fixed income are preserved congruent with the widely accepted capital market principle that assets with higher volatility generate a greater return over the long run. Current market factors such as inflation and interest rates are evaluated before long-term capital market assumptions are determined. The long-term portfolio return is established via a building block approach and proper consideration of diversification and rebalancing. Peer data and historical returns are reviewed for reasonability and appropriateness. We regularly review the actual asset allocation and periodically rebalances investments to a targeted allocation when appropriate. The current targeted asset allocation is 34% with equity managers, 56% with fixed income managers, 6% with real-estate investment trust managers and 4% with hedge fund managers. For 2019, we will use a 5.50% long-term rate of return for the Retirement Plan. We will continue to evaluate the expected rate of return assumption,

at least annually, and will adjust as necessary.

Plan Assets

Plan assets for the U.S. tax qualified plans consist of a diversified portfolio of fixed income securities, equity securities, real estate, and cash equivalents. Plan assets do not include any of our securities. The U.S. pension plan assets are invested in a variety of funds within a Collective Trust (Trust). The Trust is a group trust designed to permit qualified trusts to comingle their assets for investment purposes on a tax-exempt basis.

Investment Policy and Investment Targets

The tax qualified plans consist of the U.S. pension plan and the U.K. pension sc