Publisher's Response

We would like to thank EdReports for the work they do in supporting and promoting quality education through their evaluations of instructional materials aligned with the Common Core State Standards for Mathematics (CCSSM), and for their support for the adoption process.

The JUMP Math approach to instruction is based on a method called "guided discovery." In JUMP Math lessons, students are expected to derive concepts and solve problems themselves with guidance from teachers in structured, scaffolded lessons. All of our materials are written by a team of mathematicians and educators with extensive pedagogical experience who believe that deep understanding of mathematics can be achieved by all (or virtually all) students. Our program is mathematically rigorous, yet rooted in the idea that students who believe that effort can lead to success are willing to work harder. Our goal is to empower all teachers to master math instruction so that all students can succeed. A number of universities, including Columbia University, the University of Chicago, Lehman College, and the University of Calgary, are helping us test, refine, and promote our approach to curriculum design and teaching because they believe that the approach of our materials is supported by current research. Indeed, independent research, including randomized testing, has shown that students using JUMP Math progress at up to twice the rate of students using mainstream math programs. (See our Publisher's background information for details.)

Gateway 1

Our K–8 US Edition materials were custom developed in accordance with our approach over a period of six years to fully support the CCSSM, with close attention paid to the Progressions Documents for guidance on the scope and progression of the outlined concepts. This is reflected in our EdReports evaluations on Gateway 1: Focus and Coherence. As the reports indicate, JUMP Math materials:

1. are grade-level appropriate,
2. concentrate on the major clusters at each grade level,
3. use content of supporting clusters to enhance focus on major clusters,
4. can be completed within the school year,
5. promote coherence within and between grade levels, and
6. are consistent with the Progressions Documents.

Gateway 2

In Gateway 2, EdReports evaluates rigor and mathematical practices.

Rigor

EdReports divides mathematical rigor into three pillars: conceptual understanding, computational fluency, and applications. A final two points are awarded for balance, giving equal weight to the three aspects of rigor and treating them both together and separately. JUMP Math received full scores for

conceptual understanding and computational fluency. The reviewers, however, felt that there was not enough attention paid to applications in our lessons, which affected our score on both applications and balance. We believe that the reviewers came to this conclusion, in part, because the introductory materials in our Teacher Resources (TR) could be interpreted as indicating that our extension questions (which contain many of the applications in our resources) are optional. Because of this ambiguity in our TR introductory materials, EdReports reviewers discounted many of our more engaging application problems. We will be revising our TR introductory materials to ensure that it is clear that extension questions are not optional, but are in fact an integral part of our curriculum.

Applications appear in our materials in a variety of ways and places. Single-step problems are used most often when new material is being taught so that it can be practiced in isolation, while multi-step problems are more frequently included in later lessons. In addition to word or other application problems in the body of the lessons in the TR and in the Assessment & Practice (AP) Books, students are often given the opportunity to apply what they have learned in culminating lessons at the end of the unit. In addition, the TR includes activities in the body of the lesson and extension questions accompanying each lesson which often extend the material of the lesson to new contexts. Conceptual material from major clusters is often applied later on in supporting clusters in lessons in both the TR and the AP Books. Finally, from Grade 3 onward, problem-solving lessons teach problem-solving techniques and are accompanied by problem banks, which are excellent sources of multi-step applications. Some of the problem-solving lessons also include performance tasks, real-world applications of grade-level mathematics that cross multiple domains.

EdReports reviewers also found that our applications tended to be “routine.” This is partly due to not having considered extension questions as part of their evaluation. We believe it may also be because they did not consider applications within mathematics. Real-world problems are important for contextualizing mathematics. Abstract math problems deepen understanding of the applied mathematical concept and promote coherence across mathematics. Nevertheless, in addition to stressing the importance of extensions in our materials, we are in the process of adding more extension questions. While extensions will appear after the relevent material has been taught, some of these will be placed well after they have been taught so that it is not obvious to students what is needed to solve the problem. We will also be modifying our TR introductory materials to emphasize that extension questions may be used at any time after they are first introduced in the lesson plans.

Mathematical Practices

EdReports recognized that our materials annotate and incorporate mathematical practices (MP) throughout. However, they suggested that, where MPs were flagged, students did not always attend to the full meaning of the mathematical practice, and that the requirements of MP3 in particular were not fully developed.

We feel that, to some extent, this is a reflection of our philosophy that, like mathematical content, mathematical practices must be taught before they can be practiced independently. As a result, we have often flagged MPs in our lesson plans where they are being taught, and not necessarily where they are being used by students without guidance. In fact, mathematical practices are so central to the way mathematics is done that they can be and are used whenever students are working independently. Independent student work is labeled with MPs when a particular MP is likely to be needed or when the

design of the question suggests a mathematical practice (such as modeling). Some mathematical practices, such as perseverance to solve a problem, will be required by different students at different times and are built into our lessons through the use of incremental change.

Almost every whole-class lesson should be viewed as an opportunity to practice MP3, which is to "construct viable arguments and critique the reasoning of others." Our lesson plans present teacher-led discussions where viable arguments are constructed as a class. While our lessons are written with smooth, linear conversations, real classrooms do not work this way: questions do not always produce the "correct" answer immediately, and on the other hand, sometimes follow-up questions are unnecessary. The conversations are meant to show teachers the logical steps of an argument and to provide grade-appropriate language to help students develop and understand these arguments themselves. This is how students are taught to both construct and critique viable arguments. They are also given explicit, independent practice in AP Book exercises and extension questions in the TR.

To facilitate the use of our lesson plans as opportunities for constructing and critiquing viable arguments, we are adding a section to our TR introductory materials describing in further detail how to use the lesson plans to ensure a rich conversation. The new extension questions which will be added will pay close attention this and other MPs. We will also remove MP labels from activities and exercises that do not attend to the full meaning of the mathematical practice.

Next Steps

We have already begun revising our materials to address the EdReports reviewers' concerns in the following ways.

<u>TR Introductory Material</u>

- Our TR introductory materials will clarify the essential role that extension questions play in the delivery of JUMP Math lessons.
- A new section will explain how to use the lesson plans to develop and practice MP3.

<u>Extension Questions</u>

- New extension questions will be added to augment the existing applications in our materials.
- Some extensions will be placed further after the necessary material has been taught so that students must make the mathematical connections unaided.
- Extension questions requiring certain MPs, especially MP3, will be added.
- Mathematical practice labels will be removed from material that only partially addresses an MP.