**Rigor** = *Conceptual understanding* + *procedural skill and fluency* + *application*

Shift #3: Rigor requires a balance of the three discrete components of math instruction: conceptual understanding, procedural skills and fluency, and application. This is not simply a pedagogical option, but is required by the Standards. The majority of the Standards specifically call for conceptual understanding, fluency, or application, but not every standard will necessarily fit neatly into just one of these three discrete components. For example, certain standards can be said to require procedural skill and conceptual understanding.

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| **Grade** | **Standard** | **Procedural Skill and Conceptual Understanding Standards Examples** |
| 3 | 3.G.2 | Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.* |
| 6 | 6.EE.1 | Write and evaluate numerical expressions involving whole-number exponents. *For example, multiply by powers of 10 and products of numbers using exponents (7•7•7 = 73).* |

*Conceptual understanding***:**The Standards call for conceptual understanding of key concepts, such as place value and ratios. Teachers support students’ ability to access concepts from a number of perspectives so that students are able to see math as more than a set of mnemonics or discrete procedures. Conceptual understanding standards often use the terms “understand” and “recognize.”

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| **Grade** | **Standard** | **Deep Conceptual Understanding Standards Examples** |
| 3 | 3.NBT.1 | Use place value understanding to round whole numbers to the nearest 10 or 100. |
| 6 | 6.NS.5 | Understand that positive and negative numbers describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explain the meaning of 0 in each situation. |

*Procedural skill and fluency:* The Standards call for speed and accuracy in calculation. Teachers structure class time and/or homework time for students to practice core functions such as single-digit multiplication so that students have access to more complex concepts and procedures. Fluency standards clearly state “fluently” in the standards.

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| **Grade** | **Standard** | **Required Fluency** |
| K | K.OA.5 | Add/subtract up to 5 |
| 1 | 1.OA.6 | Add/subtract up to 10 |
| 2 | 2.OA.2  2.NBT.5 | Add/subtract up to 20 (know single-digit sums from memory)  Add/subtract up to 100 |
| 3 | 3.OA.7  3.NBT.2 | Multiply/divide up to 100 (know single-digit products from memory)  Add/subtract up to 1000 |
| 4 | 4.NBT.4 | Add/subtract up to 1,000,000 |
| 5 | 5.NBT.5 | Multi-digit multiplication |
| 6 | 6.NS.2,3 | Multi-digit division  Multi-digit decimal operations |

*Application:* The Standards call for students to use math flexibly for applications. Teachers provide opportunities for students to apply math in context. Teachers in content areas outside of math, particularly science, ensure that students are using math to access and make meaning of content. Application standards typically state “apply” or “solve.”

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| **Grade** | **Standard** | **Application Grade 3 and 6 Standards Examples** |
| 3 | 3.MD.1 | Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes or hours (e.g., by representing the problem on a number line diagram or clock). |
| 6 | 6.SP.4 | Display numerical data in plots on a number line, including dot or line plots, histograms, and box (box and whisker) plots. |