**These four packets address essential 7th grade topics, the major work of the grade. Can your 8th grade students do the following?**

**Integer Addition and Subtraction** (IN2) relying heavily on manipulatives and visuals to help students make sense of the content before moving to rules and procedures (standards 7.NS.A).

- Use a manipulative and visuals to generate results for integer expressions in order to derive the rules for adding and subtracting integers. [1, 2, 3]
- Explain why the addition and subtraction rules for integers make sense using the manipulative and meaningful contexts. [3, 4]
- Apply the rules to expressions for which manipulatives and visuals are highly inefficient. [5]

**Integer Multiplication and Division** (IN3) addresses integer multiplication and division, and then moves on to the order of operations conventions (standards 6.NS.C, 7.NS.A).

- Use a manipulative and visuals to generate results for integer expressions in order to derive the rules for multiplying integers. Explain why these rules make sense using the manipulative and meaningful contexts. [6, 7]
- Explain why the division rules for integers make sense using patterns related to the inverse relationship between multiplication and division. [8]
- Apply the rules to expressions for which manipulatives and visuals are highly inefficient. [9]
- Understand why division by zero does not make sense (is undefined). [10]

**Proportional Reasoning Applications** (PR3) students use their learned representations and strategies to solve problems (standards 6.RP.A, 7.RP.A, 7.G.A, 7.EE.B, 8.F.B).

- Solve both routine and non-routine problems using proportional reasoning and tools like tables, double number lines, and tape diagrams. [11, 14]
- Understand what proportion equations are and use them to solve problems. [12]
- Make and interpret scale drawings, including both reductions and enlargements, and keep track of data in tables. [13]
- Use tables, graphs, and equations to solve best buy problems. [14]

**Expressions and Balance** (EE2) students explore expressions and equations with a manipulative (standards 6.EE.A, 6.EE.B, 7.EE.A, 7.EE.B).

- Use the distributive property to rewrite expressions. [15, 16]
- Simplify expressions using either a manipulative, drawings, or procedures. [17]
- Solve equations using either a manipulative, drawings, or procedures. [18]
- Solve word problems and non-routine problems using algebra. [18]