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| **Common Core State Standards**  **Grade 5 Unit 1: Factors, Numerical Expressions, and Volume** |
| **Algebraic Reasoning**  **Represent and analyze quantitative relationships in a variety of ways.**  AR.1.2.4 Describe how a change in one variable relates to a change in a second variable in context. For example: If a recipe requires two cups of flour for eight servings, the flour must be doubled for 16 servings or increased by one-half for 12 servings.  **Use operations, properties and algebraic symbols to determine equivalence and solve problems.**  AR1.3.5 Replace variables or symbols in algebraic expressions with given values and evaluate or simplify the expression, e.g., If □ =5, find the value of 4 x □ +7.  AR1.3.6 Model, write and solve one-step equations by using appropriate concrete materials that model equivalence, e.g., If 4 x  = 36, then  equals 9.  ARFFLD Use algebraic properties (associative, commutative, distributive, and make decisions about efficient computational strategies to solve a variety of problems.  **Numerical and Proportional Reasoning**  **Understand that a variety of numerical representations can be used to describe quantitative relationships.**  NR2.1.5 Classify numbers as prime, composite or perfect squares and identify factor pairs using rectangular arrays.  **Use numbers and their properties to compute flexibly and fluently and to reasonably estimate measures and quantities.**  NR2.2.14 Write and solve multistep problems for all four operations involving multi-digit whole numbers and money amounts and explain how answers were determined, orally and in writing  NRFFLD2.2.21 Recall and fluent use of the multiplication and division facts 1 through 12 in context.  **Measurement and Data**  **Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.**  5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.  a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.  b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.  5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft., and improvised units.  5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.  a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same  as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-  number products as volumes, e.g., to represent the associative property of multiplication.  b. Apply the formulas *V* = *l* × *w* × *h* and *V* = *b* × *h* for rectangular prisms to find volumes of right rectangular prisms with whole number edge  lengths in the context of solving real world and mathematical problems.  **Operations and Algebraic Thinking**  **Write and interpret numerical expressions.**  5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.  5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 + 7).Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921,without having to calculate the indicated sum or product.* |