

Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.	
Content Domain: Operations and Algebraic Thinking	
Target A [m]: Use the four operations with whole numbers to solve problems. (DOK 1, 2) Tasks for this target will require students to use the four operations to solve straightforward, one-step or multi-step contextual word problems, including problems where the remainder must be interpreted.	
Standards: 4.OA.A, 4.OA.A.1, 4.OA.A.2, 4.OA.A.3	4.OA.A Use the four operations with whole numbers to solve problems. 4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. 4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. 4.OA.A.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies, including rounding.
Related Below-Grade and Above-Grade Standards for Purposes of Planning for Vertical Scaling: 3.OA.A, 3.OA.A.1, 3.OA.A.2, 3.OA.A.3, 3.OA.A.4, 3.OA.C, 3.OA.C.7, 3.OA.D, 3.OA.D.8 5.OA.A, 5.OA.A.1, 5.OA.A.2, 5.NBT.B, 5.NBT.B.5, 5.NBT.B.6	Related Grade 3 Standards 3.OA.A Represent and solve problems involving multiplication and division. 3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. 3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. 3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 3.OA.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

	<p>3.OA.C Multiply and divide within 100.</p> <p>3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.</p> <p>3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic.</p> <p>3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies, including rounding.</p> <p>Related Grade 5 Standards</p> <p>5.OA.A Write and interpret numerical expressions.</p> <p>5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.</p> <p>5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.</p> <p>5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.</p> <p>5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.</p> <p>5.NBT.B.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p>
DOK Levels:	1, 2
Achievement Level Descriptors:	
<p>RANGE Achievement Level Descriptor (Range ALD) Target A: Use the four operations with whole numbers to solve problems.</p>	<p>Level 1 Students should be able to use the four operations (add, subtract, multiply, and divide) to solve one-step problems involving equal groups and arrays.</p>
	<p>Level 2 Students should be able to use the four operations to solve one-step problems involving an unknown number. They should be able to realize that it is appropriate to multiply or divide in order to solve familiar multiplicative comparison problems.</p>
	<p>Level 3 Students should be able to use the four operations (add, subtract, multiply, and divide) to solve one-step problems involving</p>

	equal groups and arrays, including problems where the remainder must be interpreted. They should be able to find an unknown number and represent problems using equations with a symbol representing the unknown quantity.
	Level 4 Students should be able to assess the reasonableness of answers using mental computation and estimation strategies, including rounding.
Evidence Required:	<ol style="list-style-type: none"> 1. The student solves contextual problems involving multiplicative comparisons, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 2. The student solves straightforward, contextual problems using the four operations.
Allowable Response Types:	Equation/Numeric
Allowable Stimulus Materials:	multiplication equations, verbal statements of multiplicative comparison, contextual problems involving multiplicative comparison, one-step contextual word problems, measurements limited to: kilometers (km), meters (m), centimeters (cm), kilograms (kg), grams (g), pounds (lb), ounces (oz), liters (L), milliliters (mL), hours (hr), minutes (min), seconds (s), money (whole number \$ or ¢ only), yards (yd), feet (ft), inches (in), gallons (gal), quarts (qt), pints (pt), cups
Construct-Relevant Vocabulary:	Remainder, sum, difference, quotient, product, equation, times as much, times as many, equation
Allowable Tools:	None
Target-Specific Attributes:	Numbers used in this target must be whole numbers. In describing a multiplicative comparison, the language “times as much” or “times as many” is preferable to “times more than.”
Non-Targeted Constructs:	
Accessibility Guidance:	<p>Item writers should consider the following Language and Visual Element/Design guidelines¹ when developing items.</p> <p>Language Key Considerations:</p> <ul style="list-style-type: none"> • Use simple, clear, and easy-to-understand language needed to assess the construct or aid in the understanding of the context • Avoid sentences with multiple clauses • Use vocabulary that is at or below grade level • Avoid ambiguous or obscure words, idioms, jargon, unusual names and references <p>Visual Elements/Design Key Considerations:</p> <ul style="list-style-type: none"> • Include visual elements only if the graphic is needed to assess the construct or it aids in the understanding of the

¹ For more information, refer to the General Accessibility Guidelines at:

<http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/05/TaskItemSpecifications/Guidelines/AccessibilityandAccommodations/GeneralAccessibilityGuidelines.pdf>

	<p>context</p> <ul style="list-style-type: none"> • Use the simplest graphic possible with the greatest degree of contrast, and include clear, concise labels where necessary • Avoid crowding of details and graphics <p>Items are selected for a student's test according to the blueprint, which selects items based on Claims and targets, not task models. As such, careful consideration is given to making sure fully accessible items are available to cover the content of every Claim and target, even if some item formats are not fully accessible using current technology.²</p>
Development Notes:	<p>Interpreting multiplication equations as multiplicative comparisons and representing verbal statements of multiplicative comparisons as multiplication equations (4.OA.1) will be assessed in Claim 4.</p> <p>Items asking students to solve a word problem by using an equation with an unknown number to represent the problem (4.OA.A.2) will be covered in Claim 4.</p> <p>Items asking students to solve multi-step word problems, interpret a remainder, and/or assess reasonableness of answers (4.OA.A.3) will be covered in Claim 2.</p> <p>Interpreting remainders in context by having students explain or justify why a quotient was rounded to the next whole or why the solution has a fraction remainder (4.OA.A.3) may be assessed in Claim 3.</p>

² For more information about student accessibility resources and policies, refer to http://www.smarterbalanced.org/wordpress/wp-content/uploads/2014/08/SmarterBalanced_Guidelines.pdf

<p>Task Model 1a</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 1</p> <p>4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.</p> <p>Evidence Required: 1. The student solves contextual problems involving multiplicative comparisons, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to solve a contextual problem involving multiplicative comparison.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> Numbers should fit in the parameters of up to 4-digit by 1-digit, or 2-digit by 2-digit multiplication problems, and up to 4-digit divided by 1-digit division problems. All quantities should be whole numbers. Problems may involve measurements, limited to non-conversion items, using <ul style="list-style-type: none"> kilometers (km), meters (m), centimeters (cm); kilograms (kg), grams (g); pounds (lb), ounces (oz); liters (L), milliliters (mL); hours (hr), minutes (min), seconds (s); money (whole number \$ or ¢ only); yards (yd), feet (ft), inches (in); or gallons (gal), quarts (qt), pints (pt), or cups. Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> Using multiplication facts in the context Using non-math facts in the context <p>TM1a Stimulus: The student is presented with a contextual problem involving multiplicative comparison with an unknown product.</p> <p>Example Stem: A cat has 4 times as many toys as a puppy. The puppy has 12 toys. How many toys does the cat have?</p> <p>Enter your answer in the response box.</p> <p>Rubric: (1 point) The student solves for an unknown and enters the correct number (e.g., 48).</p> <p>Response Type: Equation/Numeric</p>
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<p>Task Model 1b-c</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 2</p> <p>4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.</p> <p>Evidence Required: 1. The student solves contextual problems involving multiplicative comparisons, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</p> <p>Tools: None</p> <p>Version 3 update: Replaced example stem in TM1c to update context.</p>	<p>Prompt Features: The student is prompted to solve a contextual problem involving multiplicative comparison.</p> <p>Stimulus Guidelines: Same as for TM1a.</p> <p>TM1b Stimulus: The student is presented with a contextual problem involving multiplicative comparison with an unknown factor. The unknown is a quantity of objects or measurement quantity.</p> <p>Example Stem: A cat has 2 times as many toys as a puppy. The cat has 10 toys. How many toys does the puppy have?</p> <p>Enter your answer in the response box.</p> <p>TM1c Stimulus: The student is presented with a contextual problem involving multiplicative comparison that solves for an unknown factor. The unknown is the multiplier that describes how many times more one quantity is than the other.</p> <p>Example Stem: Josh and Aaron are collecting shells at the beach. Josh collects 9 shells and Aaron collects 36 shells. How many times more shells does Aaron collect than Josh?</p> <p>Enter your answer in the response box.</p> <p>Rubric: (1 point) The student solves for an unknown and enters the correct number (e.g., 5; 4).</p> <p>Response Type: Equation/Numeric</p>
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<p>Task Model 2</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 2</p> <p>4.OA.A Use the four operations with whole numbers to solve problems.</p> <p>Evidence Required: 2. The student solves straightforward, contextual problems using the four operations.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted solve straightforward word problems using the four operations.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> Numbers should fit in the parameters of up to 4-digit by 1-digit, or 2-digit by 2-digit, multiplication problems. All quantities should be whole numbers. Problems may involve measurements, limited to non-conversion items, using <ul style="list-style-type: none"> kilometers (km), meters (m), centimeters (cm); kilograms (kg), grams (g); pounds (lb), ounces (oz); liters (L), milliliters (mL); hours (hr), minutes (min), seconds (s); money (whole number \$ or ¢ only); yards (yd), feet (ft), inches (in); or gallons (gal), quarts (qt), pints (pt), or cups. Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> Using numbers less than 100 Using numbers greater than 100, but less than 1,000 Using numbers greater than 1,000, but less than 1,000,000 (for addition and subtraction only) <p>TM2</p> <p>Stimulus: The student is presented with a contextual problem using any of the four operations.</p> <p>Example Stem 1: Tanya ran 400 meters on Tuesday. She ran 800 meters on Wednesday. What is the total number of meters Tanya ran these two days?</p> <p>Example Stem 2: A container holds 750 milliliters of water. Jess drank 90 milliliters of the water. How many milliliters of water remain in the container?</p> <p>Rubric: (1 point) The student correctly solves the word problem (e.g., 1200; 660).</p> <p>Response Type: Equation/Numeric</p>
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