

<p><b>Claim 1:</b> Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.</p>	
<p>Content Domain: <b>Operations and Algebraic Thinking</b></p>	
<p><b>Target A [a]:</b> Write and interpret numerical expressions. (DOK 1, 2)</p> <p>Tasks for this target will require students to write expressions to express a calculation and evaluate and interpret expressions. Some of these tasks should incorporate the work of using the associative and distributive properties in writing and evaluating expressions, but expressions will not contain nested grouping symbols.</p>	
<p>Standards:  5.OA.A, 5.OA.A.1, 5.OA.A.2</p>	<p><b>5.OA.A Write and interpret numerical expressions.</b></p> <p><b>5.OA.A.1</b> Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.</p> <p><b>5.OA.A.2</b> Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as <math>18932 + 921</math>, without having to calculate the indicated sum or product.</i></p>
<p>Related Below-Grade and Above-Grade Standards for Purposes of Planning for Vertical Scaling:  4.OA.A, 4.OA.A.2  6.EE.A, 6.EE.A.1, 6.EE.A.2, 6.EE.A.3</p>	<p><b>Grade 4 Standards</b></p> <p><b>4.OA.A Use the four operations with whole numbers to solve problems.</b></p> <p><b>4.OA.A.2</b> 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><b>Grade 6 Standards</b></p> <p><b>6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions.</b></p> <p><b>6.EE.A.1</b> Write and evaluate numerical expressions involving whole-number exponents.</p> <p><b>6.EE.A.2</b> Write, read, and evaluate expressions in which letters stand for numbers.</p> <p><b>6.EE.A.3</b> Apply the properties of operations to generate equivalent expressions. <i>For example, apply the distributive property to the expression <math>3(2 + x)</math> to produce the equivalent expression <math>6 + 3x</math>; apply the distributive property to the expression <math>24x + 18y</math> to produce the equivalent expression <math>6(4x + 3y)</math>; apply properties of operations to <math>y + y + y</math> to produce the equivalent expression <math>3y</math>.</i></p>
<p>DOK Level(s):</p>	<p>1, 2</p>

<b>Achievement Level Descriptors:</b>	
<b>RANGE Achievement Level Descriptor (Range ALD)</b> Target A: Write and interpret numerical expressions.	<b>Level 1</b> Students should be able to evaluate numerical expressions that have either parentheses, brackets, or braces.
	<b>Level 2</b> Students should be able to write and evaluate numerical expressions having two non-nested sets of parentheses, brackets, or braces.
	<b>Level 3</b> Students should be able to write, evaluate, and interpret numerical expressions having any number of non-nested sets of parentheses, brackets, or braces.
	<b>Level 4</b> No Descriptor
Evidence Required:	1. The student writes or identifies a numerical expression that records a calculation represented with words.  2. The student interprets numerical expressions in words without evaluating them.  3. The student evaluates numerical expressions with grouping symbols.
Allowable Response Types:	Multiple Choice, single correct response; Equation/Numeric
Allowable Stimulus Materials:	numerical and verbal expressions
Construct-Relevant Vocabulary:	sum, quotient, factor, dividend, divisor
Allowable Tools:	None
Target-Specific Attributes:	Verbal and numeric expressions may contain only non-nested grouping symbols. No negative numbers allowed.
Non-Targeted Constructs:	None
Accessibility Guidance:	Item writers should consider the following Language and Visual Element/Design guidelines <sup>1</sup> when developing items.  Language Key Considerations: <ul style="list-style-type: none"> <li>• Use simple, clear, and easy-to-understand language needed to assess the construct or aid in the understanding of the context</li> <li>• Avoid sentences with multiple clauses</li> <li>• Use vocabulary that is at or below grade level</li> <li>• Avoid ambiguous or obscure words, idioms, jargon, unusual names and references</li> </ul> Visual Elements/Design Key Considerations: <ul style="list-style-type: none"> <li>• Include visual elements only if the graphic is needed to assess the construct or it aids in the understanding of the context</li> <li>• Use the simplest graphic possible with the greatest degree of contrast, and include clear, concise labels where necessary</li> <li>• Avoid crowding of details and graphics</li> </ul>

<sup>1</sup> 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>

	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. <sup>2</sup>
Development Notes:	None

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<sup>2</sup> For more information about student accessibility resources and policies, refer to [http://www.smarterbalanced.org/wordpress/wp-content/uploads/2014/08/SmarterBalanced\\_Guidelines.pdf](http://www.smarterbalanced.org/wordpress/wp-content/uploads/2014/08/SmarterBalanced_Guidelines.pdf)

<p><b>Task Model 1a</b></p> <p><b>Response Type:</b> <b>Multiple Choice,</b> <b>single correct</b> <b>response</b></p> <p><b>DOK Level 1</b></p> <p><b>5.OA.A.2</b> Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as <math>18932 + 921</math>, without having to calculate the indicated sum or product.</i></p> <p><b>Evidence Required:</b> 1. The student writes or identifies a numerical expression that records a calculation represented with words.</p> <p><b>Tools:</b> None</p> <p><b>Version 3 update:</b> Revised example stem TM1a from an equation/numeric to a multiple choice response type because the response type for this task model presented both authoring and scoring challenges during initial field-testing. Retired TM1b for the same reason as stated above.</p>	<p><b>Prompt Features:</b> The student is prompted to select a numerical expression, which includes up to one set of non-nested grouping symbols, that represents a calculation expressed with words.</p> <p><b>Stimulus Guidelines:</b></p> <ul style="list-style-type: none"> <li>• Expressions use whole numbers.</li> <li>• Expressions may include up to 4-digit dividends and 2-digit divisors for division.</li> <li>• Expressions may include single- or multi-digit numbers for addition, subtraction, and multiplication.</li> <li>• Item difficulty may be adjusted via this example method:       <ul style="list-style-type: none"> <li>◦ Expression does or does not contain grouping symbols. (Expression may include up to one set of grouping symbols.)</li> </ul> </li> </ul> <p><b>TM1a</b> <b>Stimulus:</b> The student is presented with a verbal expression that represents a calculation with up to one set of grouping symbols.</p> <p><b>Example Stem:</b> Which expression correctly shows “12 times the sum of 5 and 7”?</p> <p>A. <math>12 \times 5 + 7</math> B. <math>5 + 7 \times 12</math> C. <math>12 \times (5 + 7)</math> D. <math>5 + (7 \times 12)</math></p> <p><b>Rubric:</b> (1 point) The student selects the correct expression (e.g., C).</p> <p><b>Response Type:</b> Multiple Choice, single correct response</p>
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<p><b>Task Model 1c</b></p> <p><b>Response Type:</b> <b>Multiple Choice,</b> <b>single correct</b> <b>response</b></p> <p><b>DOK Level 1</b></p> <p><b>5.OA.A.2</b> Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as <math>18932 + 921</math>, without having to calculate the indicated sum or product.</i></p> <p><b>Evidence Required:</b> 1. The student writes or identifies a numerical expression that records a calculation represented with words.</p> <p><b>Tools:</b> None</p>	<p><b>Prompt Features:</b> The student is prompted to select a numerical expression, which includes two sets of non-nested grouping symbols, that represents a calculation expressed with words.</p> <p><b>Stimulus Guidelines:</b></p> <ul style="list-style-type: none"> <li>• Expressions may include up to 4-digit dividends and 2-digit divisors for division.</li> <li>• Expressions may include single- or multi-digit numbers for addition, subtraction, and multiplication.</li> <li>• Item difficulty may be adjusted via these example methods:       <ul style="list-style-type: none"> <li>○ Expression contains one or two operations outside the grouping symbols.</li> <li>○ Expression contains whole numbers, fractions, or decimals.           <ul style="list-style-type: none"> <li>▪ Fractions must have a denominator of 2, 3, 4, 5, 6, 8, 10, 12, or 100.</li> <li>▪ Addition and subtraction of fractions may include mixed numbers and fractions without common denominators.</li> <li>▪ Division of fractions is limited to whole number by unit fraction or unit fraction by whole number.</li> <li>▪ Decimal numbers are limited to the hundredths place.</li> <li>▪ Multiplication of decimal numbers is limited to tenths by hundredths.</li> <li>▪ Division of decimal numbers is limited to the factors described for the multiplication of decimals above.</li> </ul> </li> </ul> </li> </ul> <p><b>TM1c</b> <b>Stimulus:</b> The student is presented with a verbal expression that represents a calculation with two non-nested sets of grouping symbols.</p> <p><b>Example Stem:</b> Which expression correctly shows the difference between the product of 7 and 9 and the sum of 12 and 5?</p> <p style="margin-left: 40px;">A. <math>7 \times (9 - 12) + 5</math>        B. <math>7 \times (9 + 12) + 5</math>        C. <math>(7 \times 9) - (12 + 5)</math>        D. <math>(7 + 9) + (12 + 5)</math></p> <p><b>Rubric:</b> (1 point) The student selects the correct expression (e.g., C).</p> <p><b>Response Type:</b> Multiple Choice, single correct response</p>
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<p><b>Task Model 2</b></p> <p><b>Response Type:</b> Multiple Choice, single correct response</p> <p><b>DOK Level 2</b></p> <p><b>5.OA.A.2</b> Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as <math>18932 + 921</math>, without having to calculate the indicated sum or product.</i></p> <p><b>Evidence Required:</b> 2. The student interprets numerical expressions in words without evaluating them.</p> <p><b>Tools:</b> None</p>	<p><b>Prompt Features:</b> The student is prompted to interpret a numerical expression without evaluating it.</p> <p><b>Stimulus Guidelines:</b></p> <ul style="list-style-type: none"> <li>• Expressions may include up to 4-digit dividends and 2-digit divisors for division.</li> <li>• Expressions may include single- or multi-digit numbers for addition, subtraction, and multiplication.</li> <li>• Item difficulty may be adjusted via these example methods:       <ul style="list-style-type: none"> <li>○ Expression contains zero, one, or two non-nested sets of grouping symbols.</li> <li>○ Expression contains one or two operations outside the grouping symbols.</li> <li>○ Expression contains whole numbers, fractions, or decimals.           <ul style="list-style-type: none"> <li>▪ Fractions must have a denominator of 2, 3, 4, 5, 6, 8, 10, 12, or 100.</li> <li>▪ Addition and subtraction of fractions may include mixed numbers and fractions without common denominators.</li> <li>▪ Division of fractions is limited to whole number by unit fraction or unit fraction by whole number.</li> <li>▪ Decimal numbers are limited to the hundredths place.</li> <li>▪ Multiplication of decimal numbers is limited to tenths by hundredths.</li> <li>▪ Division of decimal numbers is limited to the factors described for the multiplication of decimals above.</li> </ul> </li> </ul> </li> </ul> <p><b>TM2</b> <b>Stimulus:</b> The student is presented with a numerical expression.</p> <p><b>Example Stem:</b> Which statement describes the value of the expression <math>4 \times (18,932 + 921)</math>?</p> <p>A. The value is 921 more than the product of 4 and 18,932.</p> <p>B. The value is 18,932 more than the product of 4 and 921.</p> <p>C. The value is 4 times as large as the sum of 18,932 and 921.</p> <p>D. The value is 4 times as large as the product of 18,932 and 921.</p> <p><b>Rubric:</b> (1 point) The student selects the correct interpretation of the expression (e.g., C).</p> <p><b>Response Type:</b> Multiple Choice, single correct response</p>
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<p><b>Task Model 3a</b></p> <p><b>Response Type:</b> Equation/Numeric</p> <p><b>DOK Level 1</b></p> <p><b>5.OA.A.1</b> Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.</p> <p><b>Evidence Required:</b> 3. The student evaluates numerical expressions with grouping symbols.</p> <p><b>Tools:</b> None</p>	<p><b>Prompt Features:</b> The student is prompted to evaluate numerical expressions that contain non-nested grouping symbols.</p> <p><b>Stimulus Guidelines:</b> The student is presented with a numerical expression that contains one or two non-nested sets of grouping symbols.</p> <ul style="list-style-type: none"> <li>• Expressions may include up to 4-digit dividends and 2-digit divisors for division.</li> <li>• Expressions may include single- or multi-digit numbers for addition, subtraction, and multiplication.</li> <li>• Item difficulty may be adjusted via these example methods:       <ul style="list-style-type: none"> <li>○ Expression contains one or two sets of grouping symbols.</li> <li>○ Expression contains one or two operations outside the grouping symbols.</li> <li>○ Expression contains whole numbers, fractions, or decimals.           <ul style="list-style-type: none"> <li>▪ Fractions must have a denominator of 2, 3, 4, 5, 6, 8, 10, 12, or 100.</li> <li>▪ Addition and subtraction of fractions may include mixed numbers and fractions without common denominators.</li> <li>▪ Division of fractions is limited to whole number by unit fraction or unit fraction by whole number.</li> <li>▪ Decimal numbers are limited to the hundredths place.</li> <li>▪ Multiplication of decimal numbers is limited to tenths by hundredths.</li> <li>▪ Division of decimal numbers is limited to the factors described for the multiplication of decimals above.</li> </ul> </li> </ul> </li> </ul> <p><b>TM3a</b> <b>Stimulus:</b> The student is presented with a numerical expression that contains one set of grouping symbols.</p> <p><b>Example Stem 1:</b> Enter the value of <math>7 + (5 \times 12)</math>.</p> <p><b>Example Stem 2:</b> Enter the value of <math>7 + (5 \times 12) - 4</math>.</p> <p><b>Rubric:</b> (1 point) The student enters the correct value (e.g., 67; 63).</p> <p><b>Response Type:</b> Equation/Numeric</p>
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<p><b>Task Model 3b</b></p> <p><b>Response Type:</b> Equation/Numeric</p> <p><b>DOK Level 1</b></p> <p><b>5.OA.A.1</b> Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.</p> <p><b>Evidence Required:</b> 3. The student evaluates numerical expressions with grouping symbols.</p> <p><b>Tools:</b> None</p>	<p><b>TM3b</b></p> <p><b>Stimulus:</b> The student is presented with a numerical expression that contains two non-nested sets of grouping symbols.</p> <p><b>Example Stem 1:</b> Enter the value of <math>(5 \times 12) + (27 \div 9)</math>.</p> <p><b>Example Stem 2:</b> Enter the exact value of <math>(6 \times \frac{2}{3}) + (\frac{2}{8} + \frac{3}{8})</math>.</p> <p><b>Example Stem 3:</b> Enter the exact value of <math>(2 \div 0.1) - (0.3 \times 0.4)</math>.</p> <p><b>Rubric:</b> (1 point) The student enters the correct value (e.g., 63; <math>4\frac{5}{8}</math> or equivalent; 19.88).</p> <p><b>Response Type:</b> Equation/Numeric</p>
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<p><b>Task Model 3c</b></p> <p><b>Response Type:</b> <b>Multiple choice, single correct response</b></p> <p><b>DOK Level 1</b></p> <p><b>5.OA.A.1</b> Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.</p> <p><b>Evidence Required:</b> 3. The student evaluates numerical expressions with grouping symbols.</p> <p><b>Tools:</b> None</p> <p><b>Version 3 update:</b> Added new TM3c.</p>	<p><b>TM3c</b></p> <p><b>Stimulus:</b> The student is presented with a numerical expression that does not contain non-nested sets of grouping symbols and is prompted to identify the correct placement of parentheses to equal a specific value.</p> <p><b>Example Stem:</b> Taryn must place parentheses around numbers in this expression in order to make it equal 2.</p> <p><math>30 \div 2 + 4 - 3</math></p> <p>Which expression equals 2?</p> <p>A. <math>30 \div (2 + 4 - 3)</math>        B. <math>30 \div (2 + 4) - 3</math>        C. <math>30 \div 2 + (4 - 3)</math>        D. <math>(30 \div 2) + 4 - 3</math></p> <p><b>Rubric:</b> (1 point) The student identifies the correct placement of parentheses (e.g., B).</p> <p><b>Response Type:</b> Multiple choice, single correct response</p>
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