

Use properties of operations to generate equivalent expressions (6.EE.1-4)	
<b>Standard 6.EE.1:</b> Write and evaluate numerical expressions involving whole-number exponents	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>• Understand the meaning of exponents and exponential notation.</li> <li>• Write numerical expressions involving whole-number exponents.</li> <li>• Evaluate numerical expressions involving whole-number exponents.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">6.EE.2</a> , <a href="#">6.EE.3</a> , <a href="#">6.EE.4</a>	<a href="#">8.EE.1</a> , <a href="#">8.EE.2</a> , <a href="#">8.EE.3</a> , <a href="#">8.EE.4</a> , <a href="#">8.G.7</a> , Foundational for all numerical exponent work

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> <li>• Interpret the products of whole numbers (<a href="#">3.OA.2</a>)</li> <li>• Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols (<a href="#">5.OA.1</a>)</li> <li>• Write and interpret simple numerical expression (<a href="#">5.OA.2</a>)</li> <li>• Explain patterns in the number of zeros of the product when multiplying a number by powers of 10. Use whole-number exponents to denote powers of 10 (<a href="#">5.NBT.2</a>)</li> </ul>
Academic Vocabulary
Exponent, base, expression
Resources
<a href="https://www.uen.org/core/core.do?courseNum=5160#70047">Curriculum Resources</a> : <a href="https://www.uen.org/core/core.do?courseNum=5160#70047">https://www.uen.org/core/core.do?courseNum=5160#70047</a>

Use properties of operations to generate equivalent expressions (6.EE.1-4)	
<p><b>Standard 6.EE.2:</b> Write, read, and evaluate expressions in which letters represent numbers.</p> <p>a. Write expressions that record operations with numbers and with letters representing numbers. <i>For example, express the calculation "Subtract y from 5" as <math>5 - y</math> and express "Jane had \$105.00 in her bank account. One year later, she had x dollars more. Write an expression that shows her new balance" as <math>\\$105.00 + x</math>.</i></p> <p>b. Identify parts of an expression using mathematical terms (for example, sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity and a sum of two terms. <i>For example, describe the expression <math>2(8 + 7)</math> as a product of two factors; view <math>(8 + 7)</math> as both a single entity and a sum of two terms.</i></p> <p>c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, applying the Order of Operations when there are no parentheses to specify a particular order. <i>For example, use the formulas <math>V = s^3</math> and <math>A = 6s^2</math> to find the volume and surface area of a cube with sides of length <math>s = 1/2</math>.</i></p>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>• Translate verbal expressions into numerical expressions and numerical expressions into verbal expressions.</li> <li>• Identify parts of an expression (sum, term, product, factor, quotient, coefficient).</li> <li>• View one or more parts of an expression to flexibly recognize the structure of the expression (see examples from b).</li> <li>• Evaluate expressions at specific values of their variables.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">6.EE.1</a> , <a href="#">6.EE.3</a> , <a href="#">6.EE.4</a> , <a href="#">6.EE.5</a> , <a href="#">6.EE.6</a>	<a href="#">7.MP.7</a> , <a href="#">7.EE.1</a> , <a href="#">7.EE.2</a> , <a href="#">8.EE.2</a> , <a href="#">8.EE.7</a> , <a href="#">I.F.IF.2</a> , <a href="#">I.A.SSE.1</a> , <a href="#">II.A.SSE.1</a> , <a href="#">III.A.SSE.1</a>

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> <li>• Use addition and subtraction to solve word problems with unknowns in all positions. Use equations with a symbol for the unknown number to represent the problem (<a href="#">1.OA.1</a>, <a href="#">2.OA.1</a>)</li> <li>• Determine the unknown whole number in an addition or subtraction equation (<a href="#">1.OA.8</a>) or multiplication or division equation (<a href="#">3.OA.4</a>) relating three whole numbers.</li> <li>• Represent multi-step word problems using equations with a letter standing for the unknown quantity (<a href="#">3.OA.8</a>, <a href="#">4.OA.3</a>)</li> <li>• Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols (<a href="#">5.OA.1</a>)</li> <li>• Write and interpret simple numerical expressions (<a href="#">5.OA.2</a>)</li> </ul>
Academic Vocabulary
expression, evaluate, variable, term, coefficient, sum, difference, product, factor, quotient, constant, term
Resources
<a href="https://www.uen.org/core/core.do?courseNum=5160#70047">Curriculum Resources</a> : <a href="https://www.uen.org/core/core.do?courseNum=5160#70047">https://www.uen.org/core/core.do?courseNum=5160#70047</a>

Use properties of operations to generate equivalent expressions (6.EE.1-4)	
<b>Standard 6.EE.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>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>• Understand that the properties used with numbers also apply to expressions with variables.</li> <li>• Apply the properties of operations with expressions involving variables to generate equivalent expressions.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">6.EE.2</a> , <a href="#">6.EE.4</a> , <a href="#">6.EE.5</a> , <a href="#">6.EE.6</a> , <a href="#">6.NS.4</a>	<a href="#">7.MP.7</a> , <a href="#">7.EE.1</a> , <a href="#">7.EE.2</a> , <a href="#">8.EE.1</a> , <a href="#">8.EE.7</a> , <a href="#">8.NS.3</a> , <a href="#">I.F.IF.2</a> , <a href="#">I.A.SSE.1</a> , <a href="#">II.A.SSE.1</a> , <a href="#">II.A.SSE.2</a> , <a href="#">II.A.SSE.3</a> , <a href="#">III.A.SSE.1</a> , <a href="#">III.A.SSE.2</a> , <a href="#">III.A.APR.4</a> , <a href="#">III.A.APR.6</a>

### Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> <li>• Apply properties of operations as strategies to add and subtract, commutative and associative (<a href="#">1.OA.3</a>)</li> <li>• Apply properties of operations as strategies to multiply and divide, commutative, associative, and distributive (<a href="#">3.OA.5</a>)</li> <li>• Interpret numerical expressions without evaluating them (<a href="#">5.OA.2</a>)</li> </ul>
Academic Vocabulary
Distributive property, expression, variable
Resources
<a href="https://www.uen.org/core/core.do?courseNum=5160#70047">Curriculum Resources</a> : <a href="https://www.uen.org/core/core.do?courseNum=5160#70047">https://www.uen.org/core/core.do?courseNum=5160#70047</a>

Use properties of operations to generate equivalent expressions (6.EE.1-4)	
<b>Standard 6.EE.4:</b> Identify when two expressions are equivalent. <i>For example, the expressions <math>y + y + y</math> and <math>3y</math> are equivalent because they name the same number, regardless of which number <math>y</math> represents.</i>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>Identify when two expressions are equivalent.</li> <li>Reason that two expressions are equivalent by combining like terms.</li> <li>Understand how to manipulate an expression to identify a different, yet equivalent form.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">6.EE.2</a> , <a href="#">6.EE.3</a> , <a href="#">6.EE.5</a> , <a href="#">6.EE.6</a>	<a href="#">7.MP.7</a> , <a href="#">7.EE.1</a> , <a href="#">7.EE.2</a> , <a href="#">8.NS.3</a> , <a href="#">8.EE.1</a> , <a href="#">8.EE.7</a> , <a href="#">I.F.IF.2</a> , <a href="#">I.A.SSE.1</a> , <a href="#">II.A.SSE.1</a> , <a href="#">II.A.SSE.2</a> , <a href="#">II.A.SSE.3</a> , <a href="#">III.A.SSE.1</a> , <a href="#">III.A.SSE.2</a> , <a href="#">III.A.APR.4</a> , <a href="#">III.A.APR.6</a>

## Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> <li>Apply properties of operations as strategies to add and subtract, commutative and associative (<a href="#">1.OA.3</a>)</li> <li>Apply properties of operations as strategies to multiply and divide, commutative, associative, and distributive (<a href="#">3.OA.5</a>)</li> <li>Interpret numerical expressions without evaluating them (<a href="#">5.OA.2</a>)</li> </ul>
Academic Vocabulary
expression, variable
Resources
<a href="https://www.uen.org/core/core.do?courseNum=5160#70047">Curriculum Resources</a> : <a href="https://www.uen.org/core/core.do?courseNum=5160#70047">https://www.uen.org/core/core.do?courseNum=5160#70047</a>

Use properties of operations to generate equivalent expressions (6.EE.5-8)	
<b>Standard 6.EE.5:</b> Understand solving an equation or inequality as a process of answering the question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>• Understand that a solution is any value or values that make an equation or inequality true.</li> <li>• Use substitution to determine whether the given value makes the equation or inequality true.</li> <li>• Recognize that solutions to inequalities represent a range of possible values rather than a single solution.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">6.RP.3b</a> , <a href="#">6.EE.6</a> , <a href="#">6.EE.7</a> , <a href="#">6.EE.8</a>	<a href="#">7.MP.7</a> , <a href="#">7.RP.3</a> , <a href="#">7.EE.3</a> , <a href="#">7.EE.4</a> , <a href="#">8.EE.2</a> , <a href="#">8.EE.7</a> , <a href="#">8.EE.8</a> , <a href="#">8.G.6</a> , <a href="#">I.A.CED.1</a> , <a href="#">I.A.REI.1</a> , <a href="#">I.A.REI.3</a> , <a href="#">I.A.REI.10</a> , <a href="#">I.A.REI.12</a> , <a href="#">II.A.CED.1</a> , <a href="#">II.A.CED.4</a> , <a href="#">II.A.REI.4</a> , <a href="#">III.A.CED.1</a> , <a href="#">III.A.CED.4</a> , <a href="#">III.A.REI.2</a>

## Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> <li>• Understand the meaning of the equal sign (<a href="#">1.OA.7</a>)</li> <li>• Compare numbers recording the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> (<a href="#">1.NBT.3</a>, <a href="#">2.NBT.4</a>, <a href="#">4.NBT.2</a>)</li> </ul>
Academic Vocabulary
Equation, inequality, substitution
Resources
<a href="https://www.uen.org/core/core.do?courseNum=5160#70047">Curriculum Resources</a> : <a href="https://www.uen.org/core/core.do?courseNum=5160#70047">https://www.uen.org/core/core.do?courseNum=5160#70047</a>

Use properties of operations to generate equivalent expressions (6.EE.5-8)	
<b>Standard 6.EE.6:</b> Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>• Represent real-world scenarios with variable expressions, identifying what the variable represents.</li> <li>• Understand that a variable can represent a number or any number in a specified set of numbers</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">6.RP.3b</a> , <a href="#">6.EE.2</a> , <a href="#">6.EE.5</a> , <a href="#">6.EE.7</a> , <a href="#">6.EE.8</a>	<a href="#">7.MP.7</a> , <a href="#">7.RP.3</a> , <a href="#">7.EE.3</a> , <a href="#">7.EE.4</a> , <a href="#">8.EE.2</a> , <a href="#">8.EE.7</a> , <a href="#">8.EE.8</a> , <a href="#">8.G.6</a> , <a href="#">I.A.CED.1</a> , <a href="#">I.A.REI.1</a> , <a href="#">I.A.REI.3</a> , <a href="#">I.A.REI.10</a> , <a href="#">I.A.REI.12</a> , <a href="#">II.A.CED.1</a> , <a href="#">II.A.CED.4</a> , <a href="#">II.A.REI.4</a> , <a href="#">III.A.CED.1</a> , <a href="#">III.A.CED.4</a> , <a href="#">III.A.REI.2</a>

### Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> <li>• Use addition and subtraction to solve word problems with unknowns in all positions. Use equations with a symbol for the unknown number to represent the problem (<a href="#">1.OA.1</a>, <a href="#">2.OA.1</a>)</li> <li>• Represent multi-step word problems using equations with a letter standing for the unknown quantity (<a href="#">3.OA.8</a>, <a href="#">4.OA.3</a>)</li> <li>• Write and interpret simple numerical expressions (<a href="#">5.OA.2</a>)</li> </ul>
Academic Vocabulary
Variable, expression
Resources
<a href="https://www.uen.org/core/core.do?courseNum=5160#70047">Curriculum Resources</a> : <a href="https://www.uen.org/core/core.do?courseNum=5160#70047">https://www.uen.org/core/core.do?courseNum=5160#70047</a>

Use properties of operations to generate equivalent expressions (6.EE.5-8)	
<b>Standard 6.EE.7:</b> Solve real-world and mathematical problems by writing and solving equations of the form $x + a = b$ and $ax = b$ for cases in which $a$ , $b$ and $x$ are all non-negative rational numbers.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>• Solve equations that represent real-world and mathematical problems.</li> <li>• Write and solve equations of the form <math>x + a = b</math>.</li> <li>• Write and solve equations of the form <math>ax = b</math>.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">6.RP.3b</a> , <a href="#">6.EE.5</a> , <a href="#">6.EE.7</a> , <a href="#">6.EE.8</a> , <a href="#">6.NS.1</a>	<a href="#">7.MP.7</a> , <a href="#">7.RP.3</a> , <a href="#">7.EE.3</a> , <a href="#">7.EE.4</a> , <a href="#">8.EE.2</a> , <a href="#">8.EE.7</a> , <a href="#">8.EE.8</a> , <a href="#">8.G.6</a> , <a href="#">I.A.CED.1</a> , <a href="#">I.A.REI.1</a> , <a href="#">I.A.REI.3</a> , <a href="#">I.A.REI.10</a> , <a href="#">II.A.CED.1</a> , <a href="#">II.A.CED.4</a> , <a href="#">II.A.REI.4</a> , <a href="#">III.A.CED.1</a> , <a href="#">III.A.CED.4</a> , <a href="#">III.A.REI.2</a>

## Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> <li>• Add and subtract fractions and mixed numbers (<a href="#">4.NF.1</a>, <a href="#">4.NF.3</a>, <a href="#">5.NF.1</a>, <a href="#">5.NF.2</a>)</li> <li>• Multiply fractions and mixed numbers (<a href="#">4.NF.4</a>, <a href="#">5.NF.4</a>, <a href="#">5.NF.6</a>); Divide fractions (<a href="#">5.NF.7</a>, <a href="#">6.NS.1</a>)</li> <li>• Add, subtract, multiply, and divide decimals to hundredths (<a href="#">5.NBT.7</a>)</li> <li>• Write and interpret simple numerical expressions (<a href="#">5.OA.2</a>)</li> </ul>
Academic Vocabulary
Equation, rational
Resources
<a href="https://www.uen.org/core/core.do?courseNum=5160#70047">Curriculum Resources</a> : <a href="https://www.uen.org/core/core.do?courseNum=5160#70047">https://www.uen.org/core/core.do?courseNum=5160#70047</a>

Use properties of operations to generate equivalent expressions (6.EE.5-8)	
<b>Standard 6.EE.8:</b> Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>• Understand inequalities as a constraint or condition.</li> <li>• Write inequalities based on real-world and mathematical problems.</li> <li>• Recognize that inequalities of the form <math>x &gt; c</math> or <math>x &lt; c</math> have infinitely many solutions.</li> <li>• Represent solutions of inequalities on number line diagrams.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">6.RP.3b</a> , <a href="#">6.EE.5</a> , <a href="#">6.EE.7</a> , <a href="#">6.EE.8</a> , <a href="#">6.NS.6</a> , <a href="#">6.NS.7</a>	<a href="#">7.MP.7</a> , <a href="#">7.RP.3</a> , <a href="#">7.EE.3</a> , <a href="#">7.EE.4</a> , <a href="#">8.EE.2</a> , <a href="#">8.EE.7</a> , <a href="#">8.EE.8</a> , <a href="#">8.G.6</a> , <a href="#">I.A.CED.1</a> , <a href="#">I.A.REI.3</a> , <a href="#">I.A.REI.12</a> , <a href="#">II.A.CED.1</a> , <a href="#">II.A.REI.4</a> , <a href="#">III.A.CED.1</a>

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> <li>• Compare numbers recording the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> (<a href="#">1.NBT.3</a>, <a href="#">2.NBT.4</a>, <a href="#">4.NBT.2</a>)</li> <li>• Represent whole numbers (<a href="#">2.MD.6</a>), fractions (<a href="#">3.NF.2</a>), and decimals (<a href="#">4.NF.6</a>) on a number line.</li> </ul>
Academic Vocabulary
inequality
Resources
<a href="https://www.uen.org/core/core.do?courseNum=5160#70047">Curriculum Resources</a> : <a href="https://www.uen.org/core/core.do?courseNum=5160#70047">https://www.uen.org/core/core.do?courseNum=5160#70047</a>



Use properties of operations to generate equivalent expressions (6.EE.9)	
<p><b>Standard 6.EE.9:</b> Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. <i>For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation <math>d = 65t</math> to represent the relationship between distance and time.</i></p>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>Utilize graphs and tables to recognize that a change in the independent variable creates a change in the dependent variable.</li> <li>Write an equation to express the relationship of the quantities in terms of the dependent and independent variables.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">6.RP.1</a> , <a href="#">6.RP.2</a> , <a href="#">6.RP.3</a> , <a href="#">6.EE.2</a> , <a href="#">6.EE.5</a> , <a href="#">6.EE.6</a> , <a href="#">6.EE.7</a>	Foundational for every situation involving two quantities.

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> <li>Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself (<a href="#">4.OA.5</a>)</li> <li>Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane (<a href="#">5.OA.3</a>)</li> </ul>
Academic Vocabulary
Independent variable, dependent variable
Resources
<a href="https://www.uen.org/core/core.do?courseNum=5160#70047">Curriculum Resources</a> : <a href="https://www.uen.org/core/core.do?courseNum=5160#70047">https://www.uen.org/core/core.do?courseNum=5160#70047</a>