

Content: Expressions and Equations		Grade Level: 8	
<b>Standard: 8.EE.1</b> Know and apply the properties of integer exponents to generate equivalent <b>numerical</b> expressions. For example, $3^2 \cdot 3^{-5} = 3^{-3} = \frac{1}{3^3} = \frac{1}{27}$ .			
<b>I can:</b> use laws of exponents to simplify numerical expressions. <ul style="list-style-type: none"> <li>• Zero Exponent Property <math>a^0 = 1, (a \neq 0)</math></li> <li>• Product of Powers Property <math>a^b \cdot a^c = a^{(b+c)}, a \neq 0</math></li> <li>• Quotient of Powers Property <math>\frac{a^b}{a^c} = a^{b-c}, a \neq 0</math></li> <li>• Negative Exponent Property <math>a^{-b} = \frac{1}{a^b}, a \neq 0</math></li> <li>• Power of a Power Property <math>(a^b)^c = a^{bc}</math></li> </ul>			
Score 4.0	<b>In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.</b> <b>For example:</b> <ul style="list-style-type: none"> <li>• problems involving variables &amp; coefficients</li> <li>• problems that require critical thinking to generalize the properties</li> </ul>		<b>Sample Activities</b> <ul style="list-style-type: none"> <li>• Find two numbers that satisfy the equation <math>\frac{7^x}{7^y} = 7^3</math> and explain your reasoning.</li> <li>• <math>\frac{12s^{-1} \cdot 4^{-2} \cdot r^3}{s^2 \cdot r^5}</math></li> </ul>
	3.5	In addition to achieving level 3.0 content, students have partial success with level 4.0 content.	
Score 3.0	<b>The student:</b> <ul style="list-style-type: none"> <li>• knows and applies <b>all five</b> properties of integer exponents to generate equivalent <b>numerical</b> expressions.</li> <li>• applies more than one property of exponents to simplify multi-step expressions.</li> <li>• solves word problems involving properties of exponents.</li> </ul> <b>The student exhibits no major errors or omissions.</b>		<ul style="list-style-type: none"> <li>• <math>\frac{5^3 \cdot 5^4}{5^2}</math></li> <li>• <math>\frac{(7^3)^2}{7^8}</math></li> <li>• <math>\frac{(8^2)^4}{8^8}</math></li> </ul>
	2.5	Knows and applies <b>all five</b> properties of integer exponents in problems involving <b>only one</b> property at a time.	
Score 2.0	<b>There are no major errors or omissions regarding the simpler details and processes as the student:</b> <ul style="list-style-type: none"> <li>• knows and applies <b>some</b> properties of integer exponents to generate equivalent <b>numerical</b> expressions.</li> <li>• applies one property of exponents to simplify single step expressions.</li> </ul> <b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b>		<ul style="list-style-type: none"> <li>• <math>5^0</math></li> <li>• <math>3^{-4}</math></li> <li>• <math>8^2 \cdot 8^4</math></li> <li>• <math>\frac{12^3}{12^1}</math></li> <li>• <math>(6^3)^3</math></li> </ul>
	1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
Score 1.0	<b>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</b>		
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.		
Score 0.0	<b>Even with help, no understanding or skill demonstrated.</b>		