

<b>Grade: 8<sup>th</sup> Grade</b>	<b>Subject: Math 8</b>
<b>Materials:</b> Computer Notebook and paper	<b>Technology Needed:</b> Computer/iPad (NOTE: Could be easily adapted to be taught in class.
<b>Instructional Strategies:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Direct instruction</li> <li><input checked="" type="checkbox"/> Guided practice</li> <li><input type="checkbox"/> Socratic Seminar</li> <li><input type="checkbox"/> Learning Centers</li> <li><input checked="" type="checkbox"/> Lecture</li> <li><input checked="" type="checkbox"/> Technology integration</li> <li><input type="checkbox"/> Other (list)</li> </ul> <ul style="list-style-type: none"> <li><input type="checkbox"/> Peer teaching/collaboration/cooperative learning</li> <li><input type="checkbox"/> Visuals/Graphic organizers</li> <li><input type="checkbox"/> PBL</li> <li><input type="checkbox"/> Discussion/Debate</li> <li><input type="checkbox"/> Modeling</li> </ul>	<b>Guided Practices and Concrete Application:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Large group activity</li> <li><input type="checkbox"/> Independent activity</li> <li><input type="checkbox"/> Pairing/collaboration</li> <li><input type="checkbox"/> Simulations/Scenarios</li> <li><input type="checkbox"/> Other (list)</li> </ul> <ul style="list-style-type: none"> <li><input type="checkbox"/> Hands-on</li> <li><input checked="" type="checkbox"/> Technology integration</li> <li><input checked="" type="checkbox"/> Imitation/Repeat/Mimic</li> </ul> <p>Explain:</p> <p>I will give examples and explain concepts. Then, they will complete predetermined problems on their own. When I do an example, they are expected to follow along and so the same steps I do.</p>
<b>Standard(s)</b> <p>8.EE.1</p> <p>8.EE.2</p>	<b>Differentiation</b> <p><b>Below Proficiency:</b></p> <p>Worksheets will have additional steps and explanations built into them. In addition, the lesson itself will provide what property or steps were taken.</p> <p><b>Above Proficiency:</b></p> <p>These students will have a worksheet that is slightly different than their peers. Mostly, the questions will be the same, but some will be more challenging.</p>
<b>Objective(s)</b> <p>The learner will be able to apply properties of exponents to evaluate exponents.</p> <p><b>Bloom's Taxonomy Cognitive Level:</b></p> <p>Apply, analyze, evaluation, knowledge</p>	<p><b>Approaching/Emerging Proficiency:</b></p> <p>I will incorporate parts of both above and below proficiency into these student's content. If they get hints/steps given they will have fewer than those below proficiency but more than those above.</p> <p><b>Modalities/Learning Preferences:</b></p> <p>Visual and Kinesthetic</p>
<b>Classroom Management- (grouping(s), movement/transitions, etc.)</b>	<b>Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)</b>

<p>Since this is a flipped lesson, no groupings in the physical classroom are necessary. However, the transitions are built in: I will teach and then they are to do the assigned problems as they go. They will be grouped by their proficiency.</p>	<p>Students are expected to pay attention when playing the flipped lesson. In addition, they are expected to also do all of the problems assigned to them for practice, and submit give problems to me.</p>
<p><b>Minutes</b></p>	<p><b>Procedures</b></p>
<p><b>0</b></p>	<p><b>Set-up/Prep:</b></p> <p>Students just need to open their device to the link I have given them.</p>
<p><b>2</b></p>	<p><b>Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate question etc.)</b></p> <p><b>“Bell ringer”-Evaluate the following:</b></p> <p><math>2^3 \cdot 2^6 =</math></p> <p>“This can be evaluated using the product of powers property. To do so, we simply take the exponents of 3 and add them together to get 9. Thus, we have <math>2^9 = 512</math>”</p>
<p><b>12 minutes</b></p>	<p><b>Explain: (concepts, procedures, vocabulary, etc.)</b></p> <p><b>Example 1:</b></p> <p>Power to a power property</p> <p><math>(x^5)^8 = x^{5 \cdot 8} = x^{40}</math></p> <p>“Whenever we have an exponent inside parentheses and another exponent directly outside the parentheses we simply multiply the two exponents together. In this case 8 and 5 to get 40.”</p> <p><b>Example 2:</b></p> <p>Power to a power property continued.</p> <p><math>((-4/7)^8)^6 = (-4/7)^{48}</math></p> <p><b>Example 3: Product to a power property</b></p> <p><math>(4xy)^3 =</math></p> <p>“This is the same thing we worked on yesterday. However, now we have a variable and an integer being taken to a power at the same time. Thus, we simply distribute the exponent to both the integer and the variables get. <math>4^3 x^3 y^3 = 64x^3y^3</math>.”</p>

	<p><b>Example 4:</b></p> <p>Product to a power continued...</p> <p><math>(\frac{2}{3x})^5</math></p> <p><math>(\frac{2}{3})^5 x^5 = \frac{32}{243} x^5</math></p> <p>“Do numbers 1-6 in your packet.</p> <p>I will then go over numbers 1-6 and show the proper work for each of these here</p>
15	<p><b>Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)</b></p> <p>Here, is the time they have to do their hw problems for the day. Given their level of proficiency determines difficulty of problems. Those below proficiency will have additional steps given to help them solve problem: Those above proficiency may have additional questions and will not have extra steps/hints. Those approach proficiency will have a hybrid between those below and above proficiency. Note: The number of problems given to each student will be the same. Some may just have more accommodations.</p>
na	<p><b>Review (wrap up and transition to next activity):</b></p> <p>na</p>
<p><b>Formative Assessment: (linked to objectives)</b></p> <p><b>Progress monitoring throughout lesson- clarifying questions, check-in strategies, etc.</b></p> <p>The problems I assign to them from their worksheet during instruction serve as a check in strategies. Because this lesson is being delivered remotely and prerecorded I also offer a chance for students to send me any and all questions they have via email or screen recording.</p>	<p><b>Summative Assessment (linked back to objectives)</b></p> <p><b>End of lesson:</b></p> <p>The hw they do and submit to me serves as a form of assessment. In addition, the unit/chapter test also is a summative assessment.</p> <p><b>If applicable- overall unit, chapter, concept, etc.:</b></p>

Exponents and their properties.

**Consideration for Back-up Plan:**

If it was insufficient to teach a flipped pre-recorded lesson, I could also do a screen recording or live video feed as I taught. Something like zoom or big blue button.

**Reflection (What went well? What did the students learn? How do you know? What changes would you make?):**

One thing I noticed after listening to my lecture a second time was that I did not do a very good job of incorporating definitions and vocab we covered on day 1 into my lesson on day 2. Thus, a need to make a better effort to instill these terms and definitions into the student's minds.