

Elementary 1-6 Math Mentor Text:

The text describes adding layers of cubes and counting them as scaffolding to realize how volume is determined. Question asks student to come up with formula for volume of rectangular prism. *(I don't have the actual text so I made up the specifics.)*

Part 1	
Mentor text	Math mentor text on volume of 3D shapes
Content Obj	<u>Students will be able to</u> determine the formula for finding the area of a 3-dimensional shape.
Vocabulary	
Vocab Tier 1:	<i>(general, social, known in L1)</i> square, box, left, right, up, down
Vocab Tier 2:	<i>(general academic language across curriculum [compare & contrast, analyze, etc.], irregular tense [break/broke], multiple meanings, transitions, idioms, cognates)</i> length, width, height, side/volume/area/stack (polysemous), examine, describe (Spanish cognate: "describir")
Vocab Tier 3:	<i>(content specific)</i> cube, prism, triangle, rectangle, polygon, polyhedron, 2-dimensional versus 3-dimensional
Key Academic Language Features – state the feature and give example(s)	
Sentence:	<i>(language forms & conventions – grammar, punct, tense, passive voice, symbols ~ identify feature and give examples)</i> <ul style="list-style-type: none"> • Number equivalent words: two=2, three=3 • Mathematic symbols: length ("L"), width ("w"), height ("h")
Discourse:	<i>(linguistic complexity → qty and variety of oral & written text [expository, derogatory, etc.], embedded definitions, text features, simple/compound/complex sentences, transitional words, req'd schema)</i> <ul style="list-style-type: none"> • Expository text – just text, no other features • Embedded definition – "Stack the <u>cubes</u>. Notice that the cube has four sides and a top and a bottom." • Transition words/phrases (first, then, finally) • Required schema – familiarity with basic polygons: triangle, square, rectangle, pentagon, hexagon, octagon (stop sign), and polyhedrons: square prism (cube)
Language Objectives – What & How	
Vocabulary (listening & speaking)	<u>Students will be able to</u> orally, working in groups, describe how to find the formula of a 3-dimensional shape by using visual supports.
Reading Comp (decode vocab)	<u>Students will be able to</u> analyze the mentor text, working in a triad, to explain how to find the formula of a 3-dimensional shape by using visual supports.
Written Discourse (take ideas and put in own writing)	<u>Students will be able to</u> compose a statement (differentiated for ELD level), working in a group, describing how to find the formula of a 3-dimensional shape by using visual and graphic supports.

Part 2 – Vocab & Oracy Lesson	
<p>Vocab Strategies (2 req'd)</p> <p><i>Is it enough to walk through the 7-steps with just one word as an example?</i></p>	<p><i>7-step, word splash, semantic map</i></p> <p><u>Pre-lesson strategy</u> – Use 7-Step Strategy to preview the following vocabulary: cube, square, polygon, polyhedron, 2-dimensional versus 3-dimensional</p> <ol style="list-style-type: none"> 1. Teacher will say and show the word and students will repeat it three times (ex: “polygon”) 2. Teacher will use and show the word in a sentence (“A square is a polygon.”) 3. Teacher will read the dictionary definition 4. Teacher will provide a definition using student-friendly vocabulary, holding up shapes while doing so. (“A polygon is a 2-dimensional shape with three or more sides.”) 5. Teacher will identify that “poly” (Greek root word) means “many”. 6. Students will do a group activity related to the word. Students will sort various shapes into two groups and identify each pile using the correct vocabulary words: polygon, polyhedron, 2-dimensional and 3-dimensional 7. Teacher assigns oral and written activities (see Parts 3 & 4 of this response. <i>Is it okay to say this or do I need to briefly name them?</i>) <p><u>Post-lesson strategy</u> – Use a classifying activity to review vocabulary. In pairs, students will identify items in the classroom (“realia”) as either “polygons” or “polyhedrons” and as either 2-dimensional or 3-dimensional polygons.</p>
<p>Connects to language obj</p> <p><i>* This lesson teaches vocab, but doesn't give them what they need yet to meet the objective of finding the formula of a cube. Is that expected?</i></p>	<p>These strategies connect to the vocabulary language objective (<i>Students will be able to orally, within their group, describe how to find the formula of a 3-dimensional shape by using visual supports</i>) by activating students schema and giving them a chance to use academic language in <u>eventually</u> (<i>*can I say this?</i>) discovering the formula for finding the area of a 3-dimensional shape.</p>
<p>Strategies 1st vocabulary lesson at all ELD levels</p> <p><i>They didn't ask for any last time, but be ready anyway!</i></p>	<p>Level 1 (entering) – repeat vocabulary while correctly pointing to each shape</p> <p>Level 2 (emerging) – take turns holding up a shape and asking each other, “Is this a 2-dimensional shape or it is a 3 dimensional shape?”</p> <p>Level 3 (developing) – take turns orally completing the following sentence frame: “This <u> (polygon) </u> is a <u> (2 or 3-dimensional shape) </u>.”</p>

<p><i>Since this activity is mostly using manipulatives anyway, it's hard to differentiate. Will I get into trouble using it?</i></p>	<p>Level 4 (expanding) – explain vocabulary and ask questions about the various shapes Level 5 (bridging) – discuss vocabulary and emphasize the difference between 2-dimensional and 3-dimensional shapes</p>
<p>Part 3 – Reading Comprehension Lesson</p>	
<p>Reading Strategy (1 req'd)</p>	<p><i>KWL, word splash, metacognitive reading comp strategies – infer, question, summarize, etc.</i> Visualizing & Fluency Activity: Teacher will read aloud one or two sentences of the text at a time to model fluency, repeating each section again. Teacher will also think out loud about the shape that is being built, cube-by-cube, in the text. In triads, students will use these same skills while reading the text.</p>
<p>Connects to language obj</p>	<p>This reading strategy connects to the language objective (<i>students will be able to analyze the mentor text, working in a triad, to explain how to find the formula of a 3-dimensional shape by using visual supports</i>) by activating previously learned comprehension activities and allowing them to slow down and monitor what they do and do not understand.</p>
<p>Connects to vocab obj</p>	<p>This reading strategy connects to the vocabulary objective (<i>students will be able to orally, within their group, describe how to find the formula of a 3-dimensional shape by using visual supports</i>) by equipping the students to comprehend the text with the necessary understanding of the mathematics vocabulary.</p>
<p>Strategies for 2 levels (<i>they asked for levels 2, 4</i>) <i>(Can I essentially repeat a vocab strategy I used before but for a different ELD in this section?)</i></p>	<p>In triads: <u>Level 1 (entering)</u> – take turns holding up a shape and asking each other, “Is this a 2-dimensional shape or it is a 3 dimensional shape?” Supply index cards with the answer choices written on it. <u>Level 2 (emerging)</u> – take turns orally completing the following sentence frame using vocabulary written on index cards: “This ___(<i>polygon/polyhedron</i>)___ is a ___(2 or 3-dimensional shape)___.” <u>Level 3 (developing)</u> – orally summarize the text and underline vocabulary words <u>Level 4 (expanding)</u> – orally summarize text and fill in gaps of understanding. <u>Level 5 (bridging)</u> – orally describe what the shape would look like if another layer was added.</p>
<p>Part 4 – Written Discourse Lesson</p>	
<p>Written Strategy (1 req'd)</p>	<p><i>Story map, outline, rubric/check-list, make word wall w/ vocab</i> In groups, make a poster of the solution with the formula, showing work and labeling the diagram with key vocabulary</p>

Connects to language obj	This strategy connects to the language objective (<i>students will be able to analyze the mentor text, working in a triad, to explain how to find the formula of a 3-dimensional shape by using visual supports</i>) by allowing student to display his/her understanding of how to find volume.
Connects to vocab obj	<u>This strategy connects to the vocabulary objective</u> (<i>students will be able to orally, within their group, describe how to find the formula of a 3-dimensional shape by using visual supports</i>) by allowing student to label his/her diagram with the correct vocabulary.
Connects to reading comp obj	This strategy connects to the reading comprehension strategy (<i>students will be able to analyze the mentor text, working in a triad, to explain how to find the formula of a 3-dimensional shape by using visual supports</i>) by allowing the student to come to find the correct solution using the text.
Strategies for 3 levels (<i>they asked for levels 1, 3, 5</i>)	<p>In group posters:</p> <p><u>Level 1 – Entering</u> – draw a cube, write formula, show work and label diagram with a given title.</p> <p><u>Level 2 (emerging)</u> – complete previous steps and label the diagram with the vocabulary.</p> <p><u>Level 3 – Developing</u> – complete previous steps and show work with a numbered list of steps</p> <p><u>Level 4 (expanding)</u> – complete previous steps and prove with another example</p> <p><u>Level 5 – Bridging</u> – complete previous steps and write paragraph of why the formula works and prove with another labeled example.</p>
Part 5 - Assessment	
<p><i>They asked for 2 things last time:</i></p> <p>1. <i>Provide assessments for each strategy – vocab (2), reading, writing</i></p> <p>2. <i>Differentiate assessment for 1 of these strategies for 2 levels of your choice.</i></p>	<p><u>Vocab Strategy #1</u> – Informally observe students using the correct vocabulary while sorting the shapes.</p> <p><u>Vocab Strategy #2</u> – Have an instructional conversation with students pointing out objects in the classroom. Record whether or not student uses the correct vocabulary.</p> <p><u>Reading Strategy:</u> Show a picture of new 3-dimensional shape and ask student to describe how to find the area based on their understanding of the text.</p> <p><u>Writing Strategy:</u> Verify the formula is correct and use a rubric to assess poster to ensure it meets all of the requirements.</p> <p><i>Differentiated for Writing Strategy:</i></p> <p><u>Level 1</u> – modify rubric, ensure formula is correct</p> <p><u>Level 5</u> – verify additional example is correct</p> <p><i>I'm having trouble differentiating for ELD 5 since it's essentially the same as the main writing assessment. Is this okay?</i></p>