Math Moments!

Math in a 5th grade Classroom!

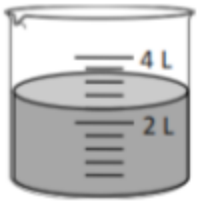
Students bring together their past learning of area, capacity, measurement units, two and three dimensional shapes when working with volume and area in this 5th grade year. Volume is explored through the hands-on use of cubic units eventually leading to the formula for volume of a right rectangular prism. Area of a rectangular figure with fractional side lengths is also explored. This learning fills a gap between grade 4's work with two-dimensional figures and grade 6's work with volume and area.

5th Grade

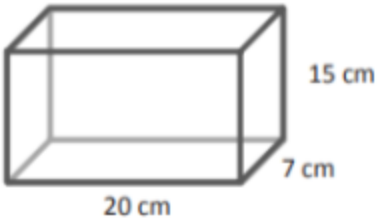
Math Concept: Volume and Area

Volume

Juliet wants to know if the chicken broth in this beaker will fit into this rectangular food storage container. Explain how you would figure it out without pouring the contents in. If it will fit, how much more broth could the storage container hold? If it will not fit, how much broth will be left over? (Remember: 1 cm^3 = 1 mL.)



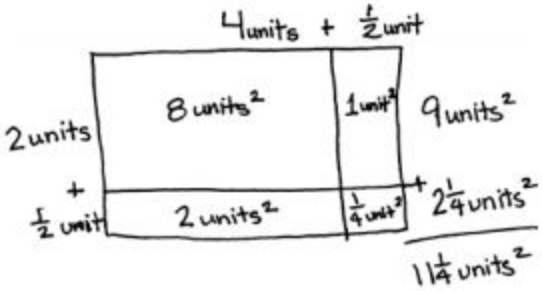
Beaker



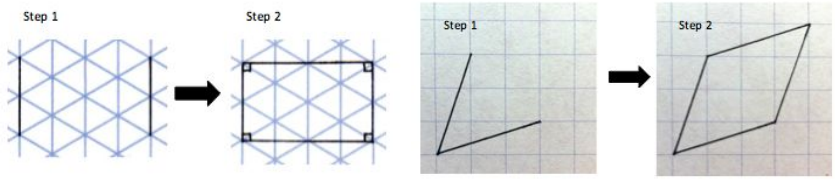
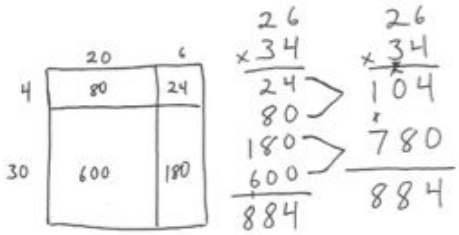
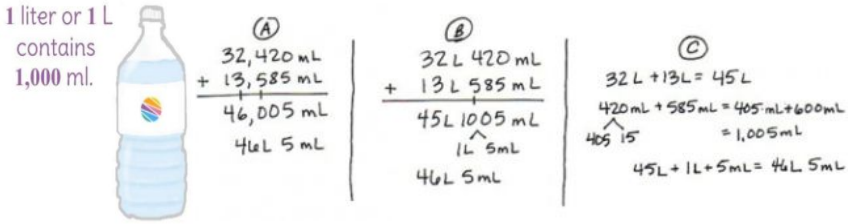
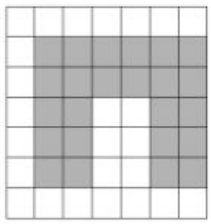
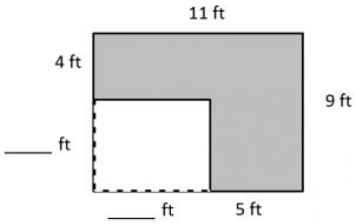
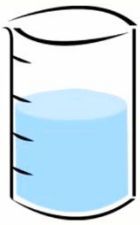
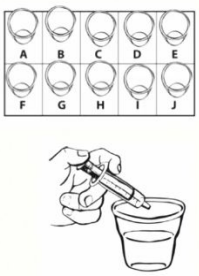
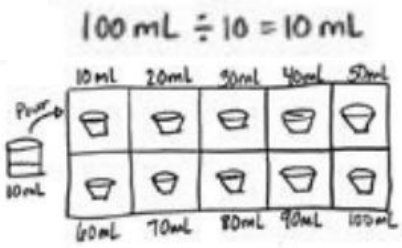
Storage Container

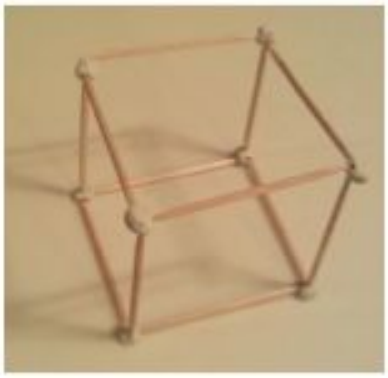
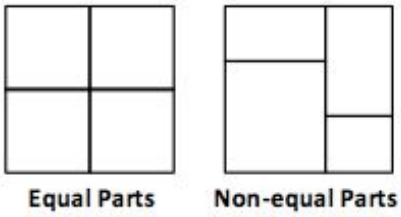
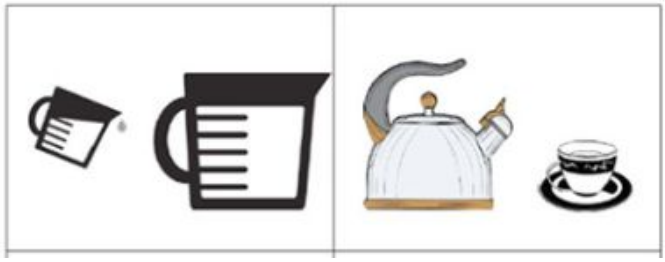
Area

To find the area, Andrea tiled a rectangle and sketched her answer. Sketch Andrea's rectangle, and find the area. Rectangle is 4 ½ units x 2 ½ units.



$$4\tfrac{1}{2} \times 2\tfrac{1}{2} = (4+\tfrac{1}{2}) \times (2+\tfrac{1}{2})$$
$$= (2\times4)+(2\times\tfrac{1}{2})+(\tfrac{1}{2}\times4)+(\tfrac{1}{2}\times\tfrac{1}{2})$$
$$= 8 + 1 + 2 + \tfrac{1}{4}$$
$$= 11\tfrac{1}{4}$$

Grade	Overview	Sample Problem and Answer
4th Grade	Students compare and analyze two-dimenstional figures according to their properties and use grid paper to construct two-dimensional figures given a set of criteria. Students move to a more abstract approach when learning area by using the formula for the area of a rectangle as length times width. Along with this learning is the idea of mixed units and how students can use place value as a guide to assist in these converstions.	  
3rd Grade	Students learn to conceptualize area as the amount of two-dimensional space in a bounded region using tiling or formulas. Compared to the work in area, volume introduces more complexity by adding a third dimension, which not only challenges a student's spatial structuring but also in the materials used to measure volume. These materials may be solid or fluid which require either "packing" with cubic units or "filling" a shape with liquid to find the volume.	*Find the area of a composite shape:*   *Students decompose a liter into smaller units*   

2nd Grade	Students develop the ability known as spatial structuring. Students focus solely on the square and build its three-dimensional counterpart, the cube. After first creating a square and naming its attributes, students are tasked with building a cube with only a picture to guide them. From this, students see a sqaure as a face of the cube.	
1st Grade	Understanding area requires seeing how to decompose shapes into parts and how to move and recombine the parts to make simpler shapes. Such experiences provide only initial development of area concepts, but these key foundations are important for later learning.	 
Kindergarten	Area is the understanding of the amount of two-dimensional space that is contained within a boundary. Covering rectilinear shapes with squares helps to create a foundation for understanding area. Similary, kindergartners might compare the capacities of containers informally by pouring (water, sand, etc.) from one to the other.	**Area:**  **Volume:** 

Resource:www.greatminds.org