

## Lesson 6 Practice Problems

1. It takes 2 ounces of paint to completely cover all 6 sides of a rectangular prism box which holds 15 cups of sugar. Double the dimensions of the box. Approximately how much paint would the new box need? How much sugar would it hold?
  
  
  
  
  
  
  
  
  
  
2. A solid with volume 12 cubic units is dilated by a scale factor of  $k$ . Find the volume of the image for each given value of  $k$ .
  - a.  $k = \frac{1}{4}$
  
  
  
  
  - b.  $k = 0.4$
  
  
  
  
  - c.  $k = 1$
  
  
  
  
  - d.  $k = 1.2$
  
  
  
  
  - e.  $k = \frac{5}{3}$

3. A solid's volume is 10 cubic inches. The solid is dilated by a scale factor of 3.5. Kiran says, "I calculated the volume of the image as 35 cubic inches, but I don't think that's right."

a. What might Kiran have done wrong?

b. What is the volume of the image?

4. A parallelogram has an area of 10 square feet.

a. Complete the table that shows the relationship between the dilated area ( $x$ ) and the scale factor ( $y$ ).

dilated area in square feet	scale factor
0	
40	
160	
360	
640	

b. Plot the points in the table on coordinate axes and connect them to create a smooth curve.

(From Unit 5, Lesson 5.)

5. A figure has an area of 4 square units. The equation  $y = \sqrt{\frac{x}{4}}$  represents the scale factor of  $y$  by which the solid must be dilated to obtain an image with area  $x$  square units. Select **all** points which are on the graph representing this equation.

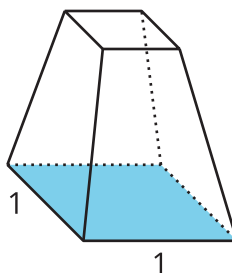
- A. (0, 0)
- B.  $(1, \frac{1}{2})$
- C. (1, 1)
- D. (4, 1)
- E. (8, 2)

(From Unit 5, Lesson 5.)

6. Tyler is designing a banner that will welcome people to a festival. The design for the banner has an area of 1.5 square feet. The actual banner will be a dilation of the design by a factor of 5. What will the area of the actual banner be?

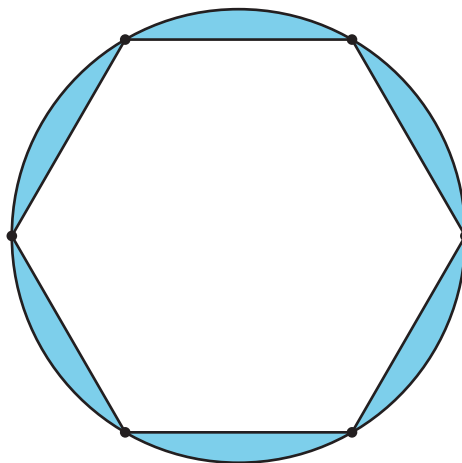
(From Unit 5, Lesson 4.)

7. The horizontal cross sections of this figure are dilations of the bottom rectangle using a point above the rectangle as a center and scale factors from  $\frac{1}{2}$  to 1. Sketch an example of a cross section that is created from using a scale factor of  $\frac{3}{4}$ . Label the dimensions of the cross section that you sketch.



(From Unit 5, Lesson 3.)

8. *Technology required.* A regular hexagon is inscribed in a circle of radius 1 inch. What is the area of the shaded region?



(From Unit 4, Lesson 10.)

9. Two distinct lines,  $\ell$  and  $m$ , are each perpendicular to the same line  $n$ . Explain why  $\ell$  and  $m$  are parallel lines.

(From Unit 1, Lesson 6.)