

## Lesson 4 Practice Problems

1. A rectangle with area 12 square units is dilated by a scale factor of  $k$ . Find the area of the image for each given value of  $k$ .

a.  $k = 2$

b.  $k = 5$

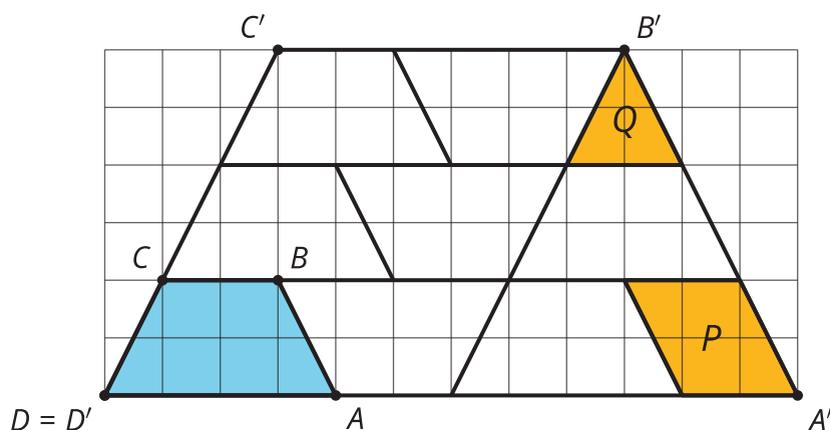
c.  $k = 1$

d.  $k = \frac{1}{4}$

e.  $k = 1.2$

2. The area of a circle of radius 1 is  $\pi$  units squared. Use scaling to explain why the area of a circle of radius  $r$  is  $\pi r^2$  units squared.

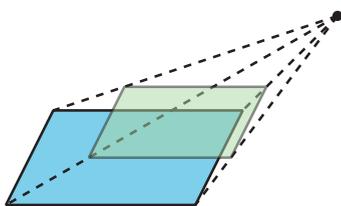
3. Trapezoid  $A'B'C'D$  was created by dilating trapezoid  $ABCD$  using  $D$  as the center of dilation.



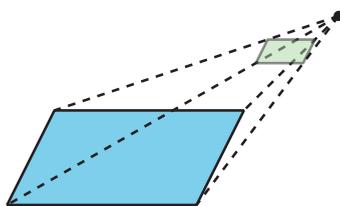
- What was the scale factor of the dilation?
- Based on the scale factor, how many copies of  $ABCD$ , including the original, should fit inside  $A'B'C'D$ ?
- How can you see your answer to these questions in the diagram?

4. Each image shows a quadrilateral in a plane. The quadrilateral has been dilated using a center above the plane and a scale factor between 0 and 1. Estimate the scale factor that was used for each dilation.

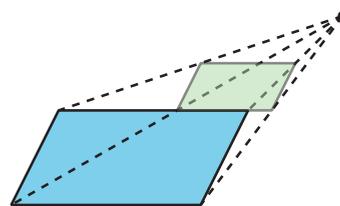
**Dilation A**



**Dilation B**



**Dilation C**



(From Unit 5, Lesson 3.)

5. Select the solid whose cross sections are dilations of some two-dimensional shape using a point directly above the shape as a center and scale factors ranging from 0 to 1.

- A. cone
- B. cube
- C. cylinder
- D. triangular prism

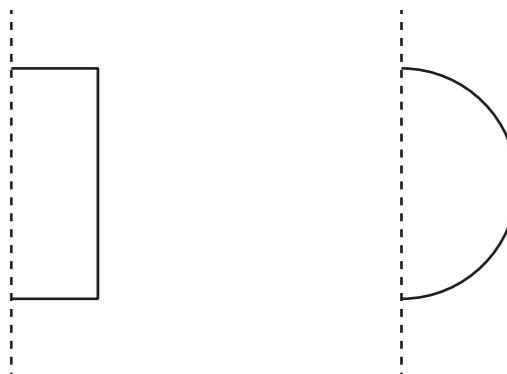
(From Unit 5, Lesson 3.)

6. Select **all** figures for which at least one cross section is a circle.

- A. triangular pyramid
- B. square pyramid
- C. rectangular prism
- D. cube
- E. cone
- F. cylinder
- G. sphere

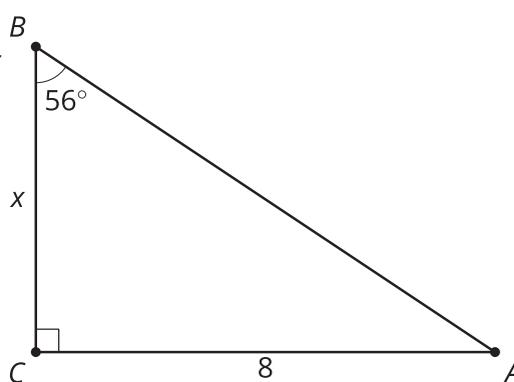
(From Unit 5, Lesson 2.)

7. If the two-dimensional figures are rotated around the vertical axes of rotation shown, what solids are formed?



(From Unit 5, Lesson 1.)

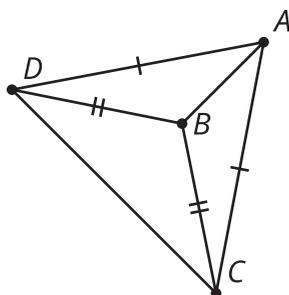
8. Tyler and Jada wish to find the value of  $x$ , the length of side  $BC$  in this triangle. Tyler decides to set up the equation  $\tan(56) = \frac{8}{x}$ . Jada says she prefers an equation that has  $x$  in the numerator. What is an equation she could use instead?



(From Unit 4, Lesson 8.)

9. Triangles  $ACD$  and  $BCD$  are isosceles. Angle  $DBC$  has a measure of 110 degrees and angle  $BDA$  has a measure of 22 degrees. Find the measure of angle  $BAC$ .

$$\overline{AD} \cong \overline{AC} \text{ and } \overline{BD} \cong \overline{BC}$$



(From Unit 2, Lesson 6.)