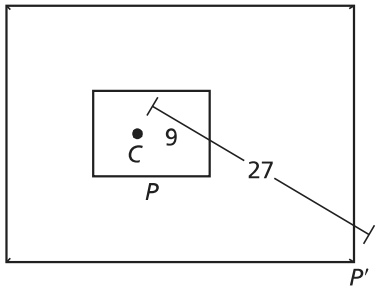
Name _____ Date _____

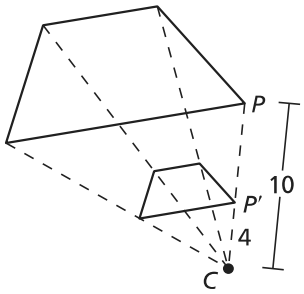
4.5 Practice A

In Exercises 1 and 2, find the scale factor of the dilation. Then tell whether the dilation is a *reduction* or an *enlargement*.

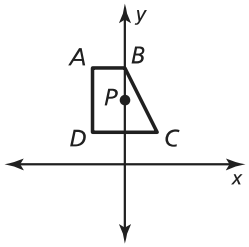
1.



2.



In Exercises 3–5, copy the diagram. Then use a compass and straightedge to construct a dilation of quadrilateral *ABCD* with the given center and scale factor *k*.



3. Center B, $k = 3$

4. Center P, $k = \frac{1}{2}$

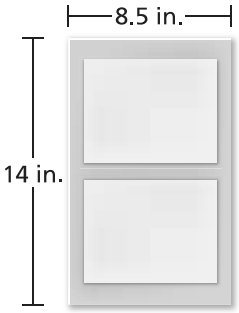
5. Center C, $k = 75\%$

In Exercises 6 and 7, graph the polygon and its image after a dilation centered at *C* with scale factor *k*.

6. $P(1, 2), Q(2, 2), R(4, -2), S(-1, -3); C(0, 0), k = 2$

7. $A(-4, 4), B(-2, 6), C(1, -1), D(-2, -4); C(0, 0), k = -75\%$

8. A standard piece of paper is 8.5 inches by 11 inches. A piece of legal-size paper is 8.5 inches by 14 inches. By what scale factor k would you need to dilate the standard paper so that you could fit two pages on a single piece of legal paper?



9. The old film-style cameras created photos that were best printed at 3.5 inches by 5 inches. Today's new digital cameras create photos that are best printed at 4 inches by 6 inches. Neither size picture will scale perfectly to fit in an 11-inch by 14-inch frame. Which type of camera will you minimize the loss of the edges of your picture?

10. Your friend claims that if you dilate a rectangle by a certain scale factor, then the area of the object also increases or decreases by the same amount. Is your friend correct? Explain your reasoning.

11. Would it make sense to state "A dilation has a scale factor of 1?" Explain your reasoning.

Name _____ Date _____

4.5 Puzzle Time

What Side Of A House Gets The Most Rain?

Circle the letter of each correct answer in the boxes below. The circled letters will spell out the answer to the riddle.

Complete the sentence or solve the problem.

1. A _____ is a transformation in which a figure is enlarged or reduced with respect to a fixed point C, called the center of dilation, and a scale factor k, which is the ratio of the lengths of the corresponding sides of the image and the preimage.
2. When the scale factor $k > 1$, a dilation is a(n) _____.
3. When $0 < k < 1$, a dilation is a(n) _____.
4. When a transformation changes the shape or size of a figure, the transformation is _____.
5. You want to reduce a picture that is 10 inches by 12 inches to a picture that is 2.5 inches by 3 inches. What is the scale factor k?
6. A magnifying glass shows the image of an object that is 10 times the object's actual size. Determine the length of the image of the object if the actual length of the object is 8 millimeters.
7. A magnifying glass shows the image of an object that is 6 times the object's actual size. Determine the actual length of the object if the image is 120 millimeters.

Find the coordinates of the vertices after a dilation centered at the origin with scale factor $k = -\frac{1}{3}$.

8. $A(3, 6)$
9. $B(3, 3)$
10. $C(9, 0)$

R	**T**	**K**	**L**	**Q**	**H**	**E**	**M**	**A**	**O**
$(-3, -6)$	80 mm	$(-9, 0)$	40	expansion	dilation	$(-1, -1)$	alteration	shrink	reduction
G	**I**	**U**	**T**	**P**	**S**	**I**	**N**	**D**	**E**
8	4	$(-3, 0)$	20 mm	$(1, 1)$	enlargement	$\frac{1}{4}$	rigid	$(-1, -2)$	nonrigid