Dilations Quiz

Multiple Choice
*Identify the choice that best completes the statement or answers the question.*

Name the word that matches the definition given.

1. Figures that have the same size and the same shape
    a. congruent figures
    b. corresponding angles
    c. corresponding sides
    d. transformation
    e. image
    f. translation
2. Figures that have the same shape but not necessarily the same size.
    a. center of rotation
    b. angle of rotation
    c. similar figures
    d. congruent figures
    e. center of dilation
    f. scale factor
3. A transformation in which a figure is made larger or smaller with respect to a fixed point called the center of dilation.
    a. center of rotation
    b. angle of rotation
    c. similar figures
    d. dilation
    e. scale factor
    f. all of the above

Find the coordinates of the image after the transformation.

4. Dilate with a scale factor of 3.
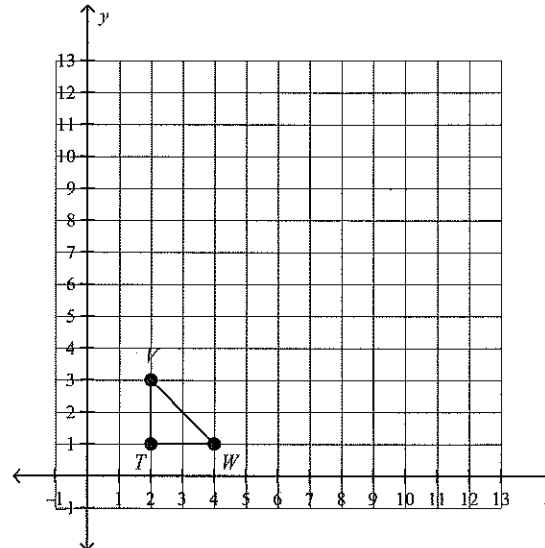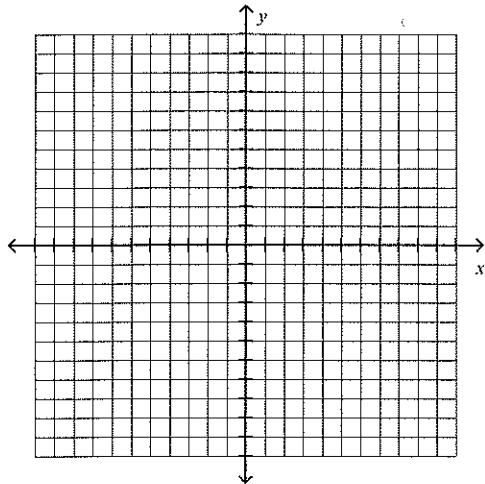

a. $T'(\frac{2}{3}, \frac{1}{3})$, $V'(\frac{2}{3}, 1)$, $W'(\frac{4}{3}, \frac{1}{3})$
b. $T'(2, 1)$, $V'(2, 3)$, $W'(4,1)$
c. $T'(6, 1)$, $V'(6, 3)$, $W'(12, 1)$
d. $T'(6, 3)$, $V'(6, 9)$, $W'(12, 3)$

Short Answer

The vertices of a polygon are given. Draw the polygon. Then find the coordinates of the vertices of the image after a dilation having the given scale factor, and draw the image.
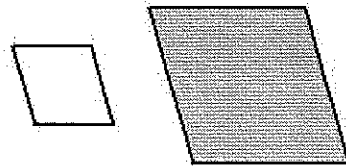
1. $D(2, 2), E(-3, 3), F(-2, -2)$; $k = 3$

2. Draw $\triangle PQR$ with vertices $P(1, 2), Q(-4, 0),$ and $R(2, -6)$. Then find the coordinates of the vertices of the image after a dilation having a scale factor of 0.5, and draw the image.
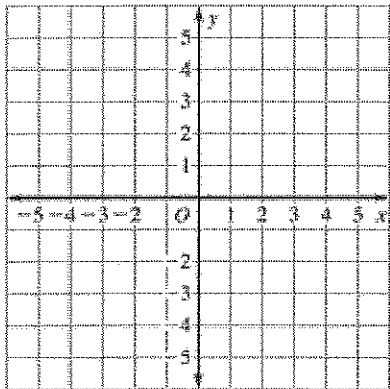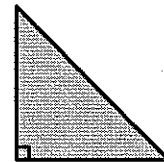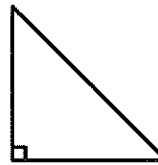
For #3 and #4, tell whether the shaded figure is a dilation of the nonshaded figure. (yes or no)

3.

4.

5. Explain how you know if a dilation is an enlargement or a reduction based upon the scale factor.

6. Tell whether a polygon and its image are *congruent* or *similar* after a dilation.
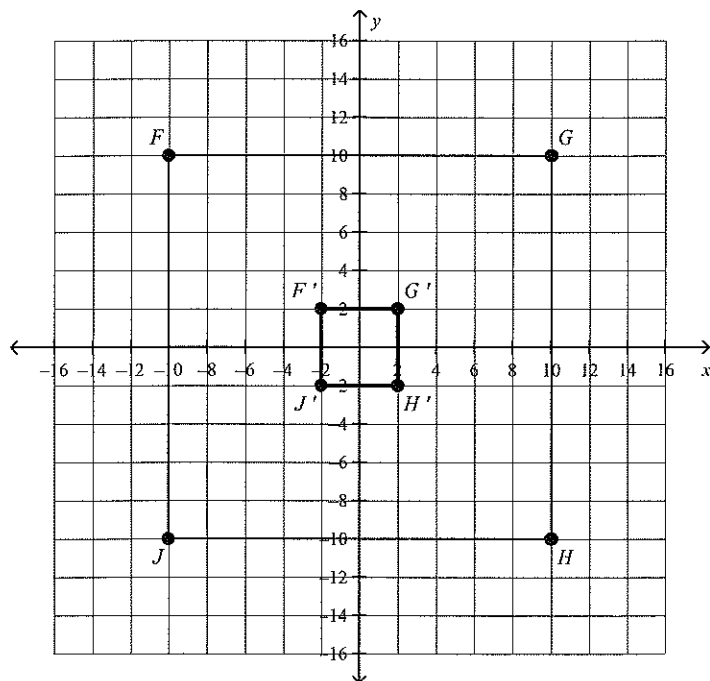
The vertices of a polygon are given. Draw the polygon and its image after a dilation with the given scale factor. Identify the type of dilation.

7. $T(-3, 1)$, $V(2, 1)$, $W(2, -1)$, $X(-3, -1)$; $k = 2$
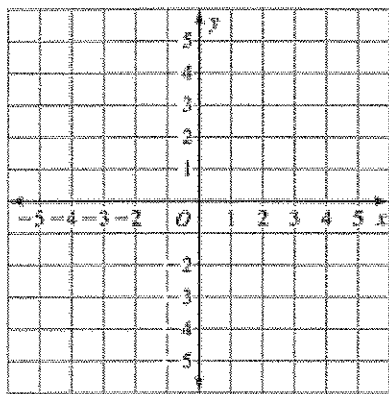
Identify the type of dilation and find the scale factor.

8.

9. A polygon lies entirely in Quadrant III. In which quadrant will the image lie after a dilation with a scale factor of 2?

10. Given $\overline{AB}$ with endpoints $A\,(15, 9)$ and $B\left(-6, 3\right)$, let $\overline{A'B'}$ with endpoints $A'\left(5, 3\right)$ and $B'\left(-2, 1\right)$ be the image of $\overline{AB}$ after a dilation. What is the scale factor of the dilation?

Short Answer

1. Triangle ABC has coordinates A (–4, 4), B (4, 8), and C (4, 0).

    a. Find the coordinates of the vertices of triangle $A'B'C'$ after a dilation using a scale factor of 0.75.

    b. Using the image and coordinates you created from the dilation in part a, find the coordinates of the vertices of triangle $A''B''C''$ after a dilation of triangle $A'B'C'$ using a scale factor of 4.

    c. Use the scale factors given in parts (a) and (b) to find the scale factor you could use to dilate triangle ABC to its final image ($A''B''C''$) in one step. *Explain*.

Extra Credit

1. An art teacher is preparing for the next art class. She is cutting triangles and placing them on the table for her class. The small triangle is similar to the large triangle. Describe a sequence of transformations in which the larger triangle is the image of the smaller triangle.