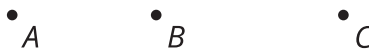


Dilations on a Square Grid

Let's dilate figures on a square grid.

10.1 Estimating a Scale Factor

Point C is the dilation of point B with center of dilation A and scale factor s .

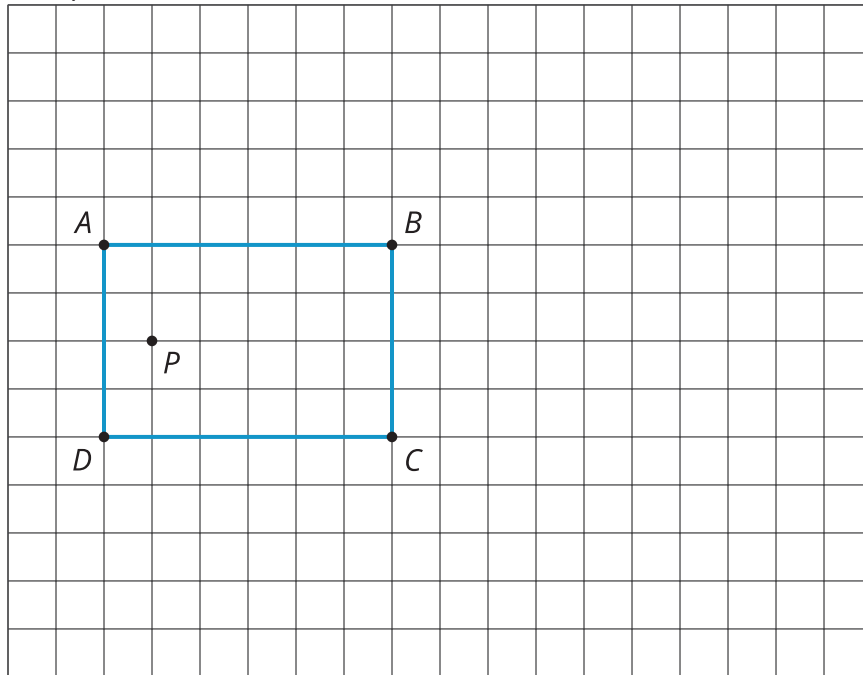


Estimate s . Be prepared to explain your reasoning.

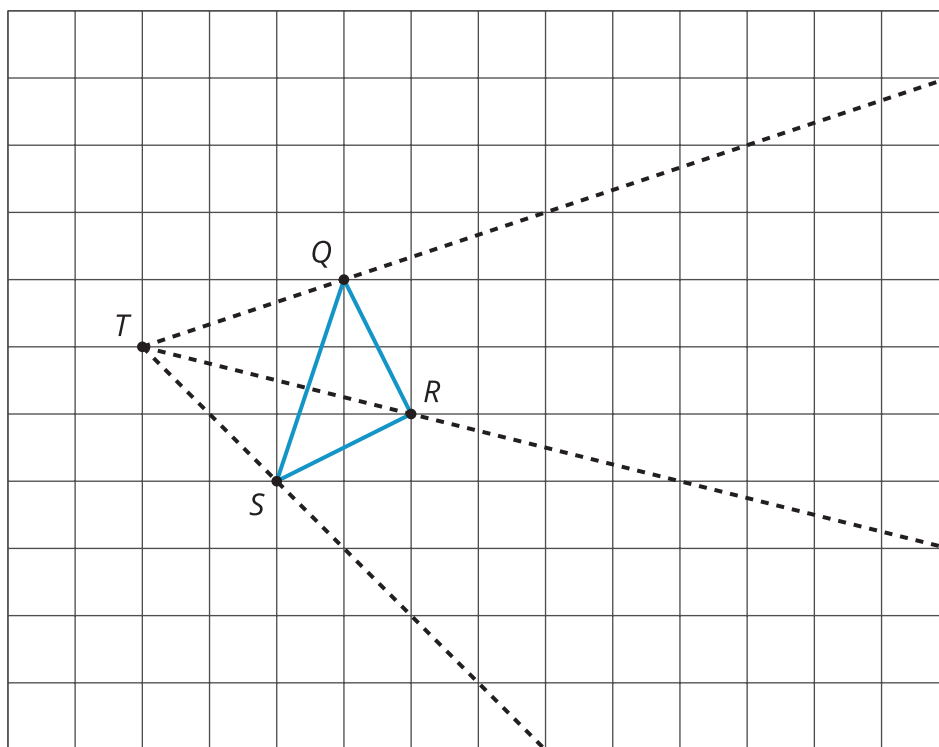
10.2

Dilations on a Grid

1. Draw the image of quadrilateral $ABCD$ after a dilation with center P and scale factor 2.



2. Draw the image of triangle QRS after a dilation with center T and scale factor 2.
3. Draw the image of triangle QRS after a dilation with center T and scale factor $\frac{1}{2}$.



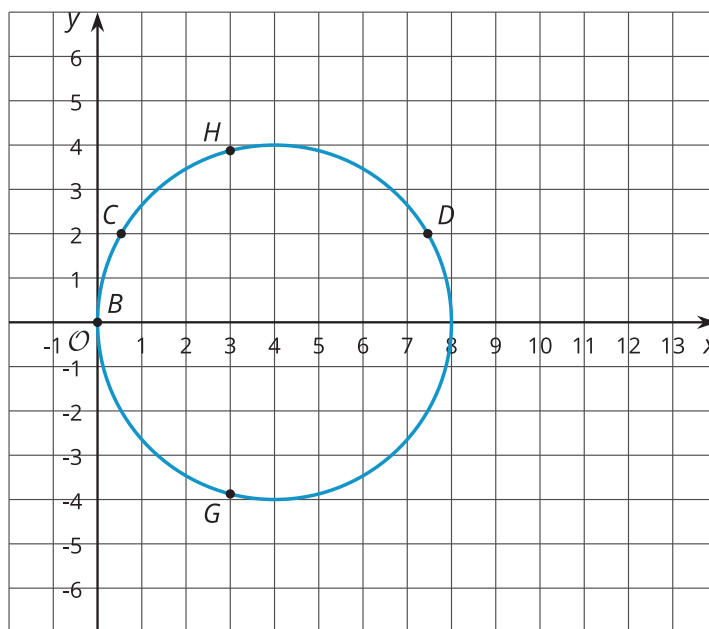
Card Sort: Matching Dilations on a Coordinate Plane

Your teacher will give you a set of cards containing descriptions of dilations and graphs. Match each number card showing a figure in the coordinate plane with a letter card describing the image after the given dilation. Record your matches and be prepared to explain your reasoning.

One of the number cards will not have a match. For this card, you will need to draw an image.

Are you ready for more?

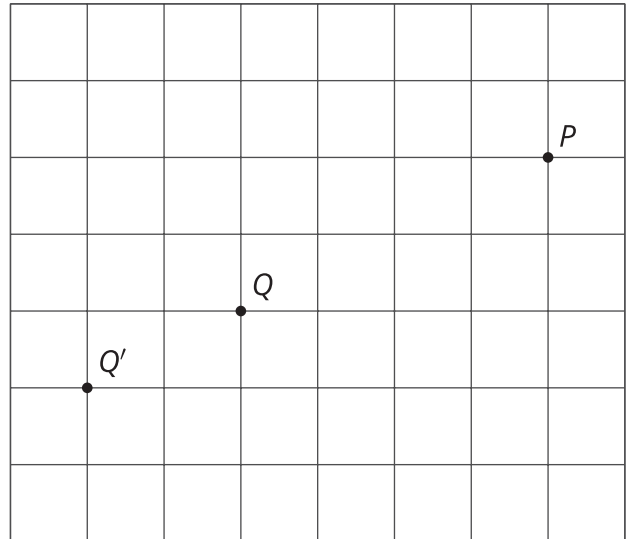
The image of a circle under dilation is a circle when the center of the dilation is the center of the circle. What happens if the center of dilation is a point on the circle? Using center of dilation $(0, 0)$ and scale factor 1.5, dilate the circle shown on the diagram. This diagram shows some points to try dilating.



Lesson 10 Summary

Square grids can be useful for showing dilations, especially when the center of dilation and the point(s) being dilated lie at grid points. Rather than using a ruler to measure the distance between the points, we can count grid units.

For example, the dilation of point Q with center of dilation P and scale factor $\frac{3}{2}$ will be 6 grid squares to the left and 3 grid squares down from P , since Q is 4 grid squares to the left and 2 grid squares down from P . The dilated image is marked as Q' .



Sometimes the square grid comes with coordinates, giving us a convenient way to name points. Sometimes the coordinates of the image can be found just using arithmetic, without having to measure.

For example, to perform a dilation with center of dilation at $(0, 0)$ and scale factor 2 on the triangle with coordinates $(-1, -2)$, $(3, 1)$, and $(2, -1)$, we can just double the coordinates to get $(-2, -4)$, $(6, 2)$, and $(4, -2)$.

