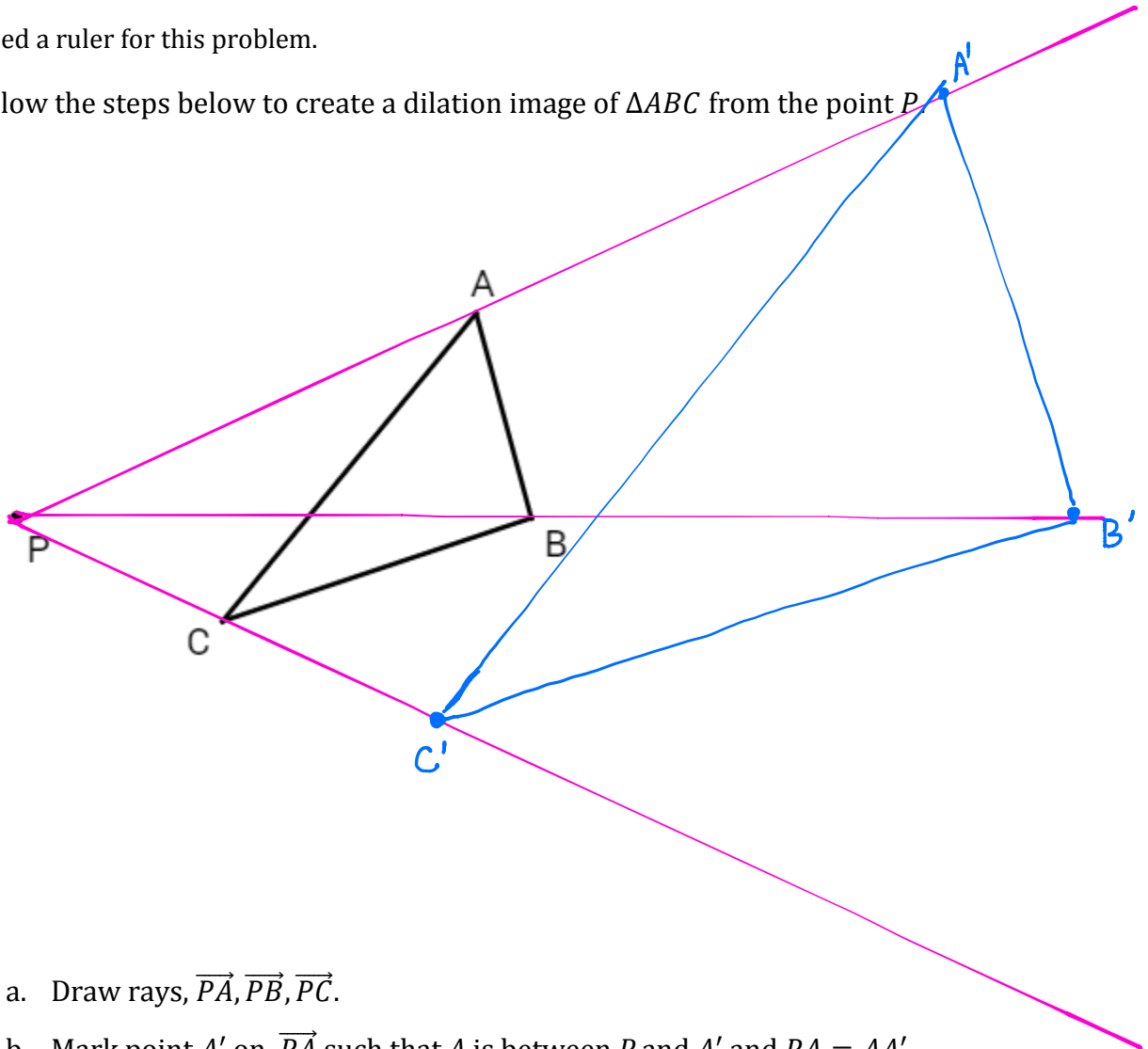


Problem #1: Dilations

You will need a ruler for this problem.

1. Follow the steps below to create a dilation image of $\triangle ABC$ from the point P .



- Draw rays, \overrightarrow{PA} , \overrightarrow{PB} , \overrightarrow{PC} .
 - Mark point A' on \overrightarrow{PA} such that A is between P and A' and $PA = AA'$.
 - Mark point B' on \overrightarrow{PB} such that B is between P and B' and $PB = BB'$.
 - Mark point C' on \overrightarrow{PC} such that C is between P and C' and $PC = CC'$.
 - Draw $\triangle A'B'C'$.
2. How are the triangles $\triangle ABC$ and $\triangle A'B'C'$ related to each other?

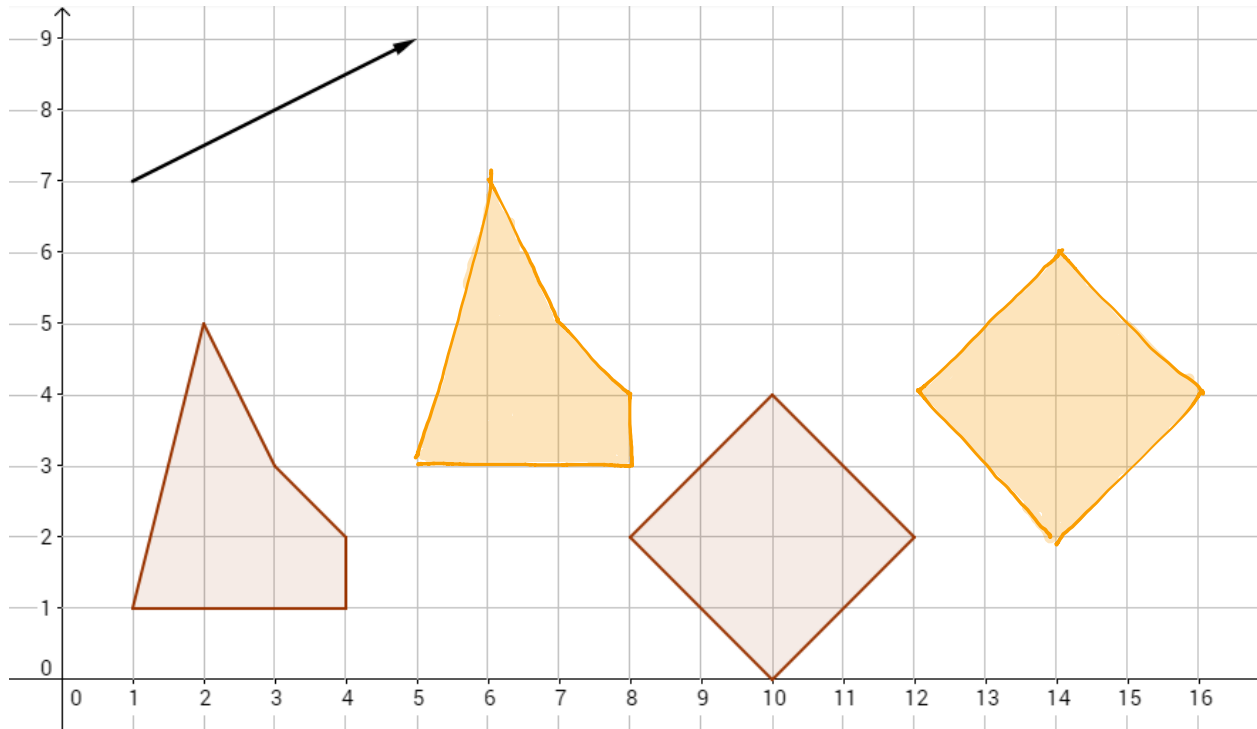
Triangles $\triangle ABC$ and $\triangle A'B'C'$ are similar to each other.

3. What is the scale factor of the dilation?

The scale factor is 2.

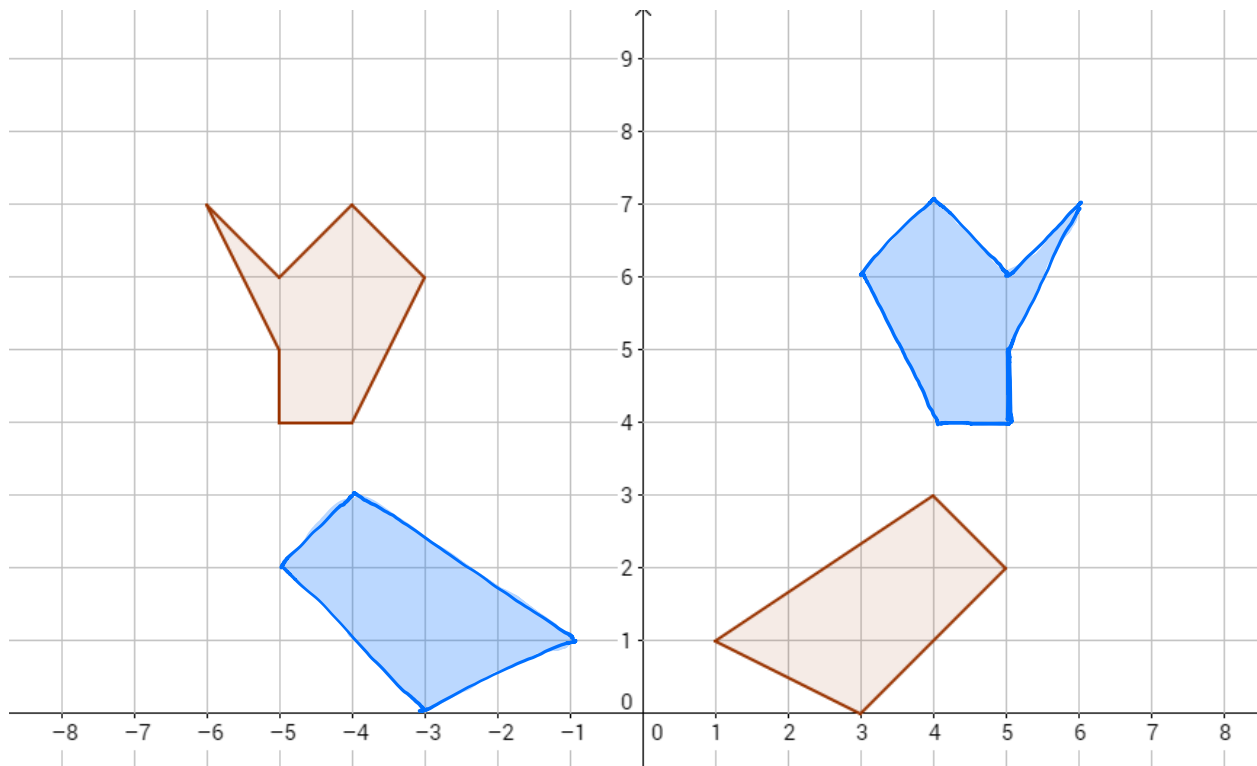
Problem #2: Translations in a Coordinate Plane

Draw the result of translating the shaded shapes in the next figure according to the direction and the distance given by the arrow. It may help you to consider the coordinates of the vertices of the shapes.



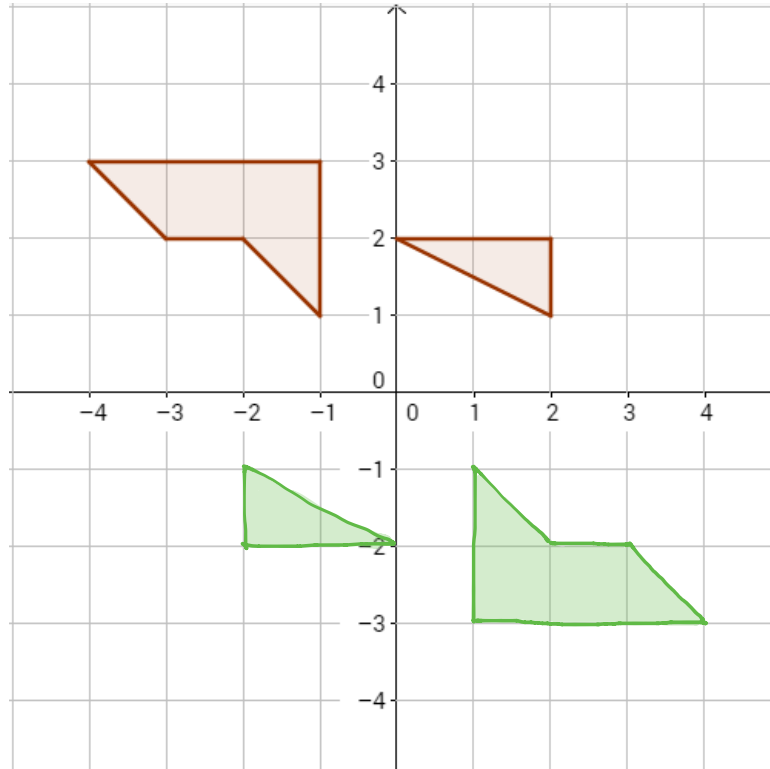
Problem #3: Reflections in a Coordinate Plane

Draw the result of reflecting the shaded shapes in the next figure across the y-axis. It may help you to consider the coordinates of the vertices of the shapes.



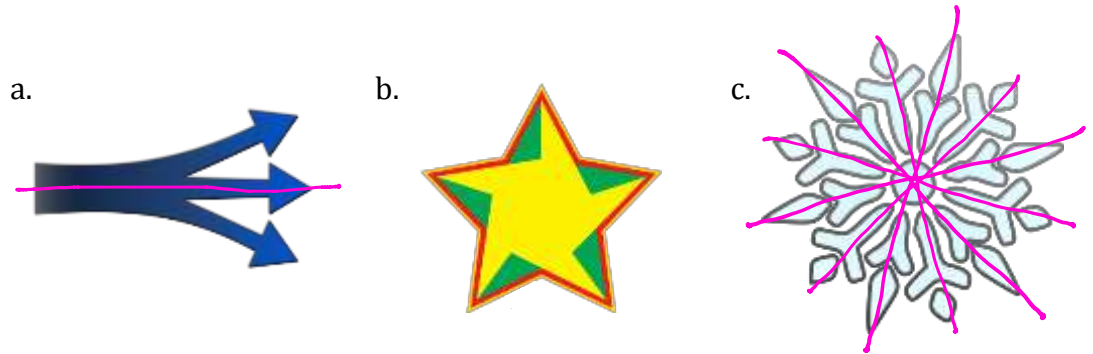
Problem #4: Rotations in a Coordinate Plane

Draw the result of rotating the shaded shapes in the next figure by 180° around the origin, where the x - and y -axes meet. It may help you to consider the coordinates of the vertices of the shapes.

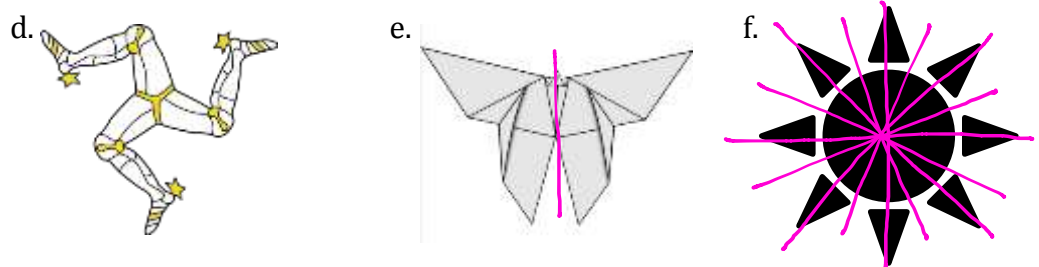


Problem #5: Checking for Symmetry

For the six figures below, determine how many lines of symmetry each has, and the degree of rotational symmetry each has.



Lines of Symmetry	1	0 (notice shaded parts)	6
Degree of Rotational Symmetry	0°	$\frac{360}{5} = 72^\circ$	$\frac{360}{6} = 60^\circ$



Lines of Symmetry	0	1	8
Degree of Rotational Symmetry	$\frac{360}{3} = 120^\circ$	0°	$\frac{360}{8} = 45^\circ$