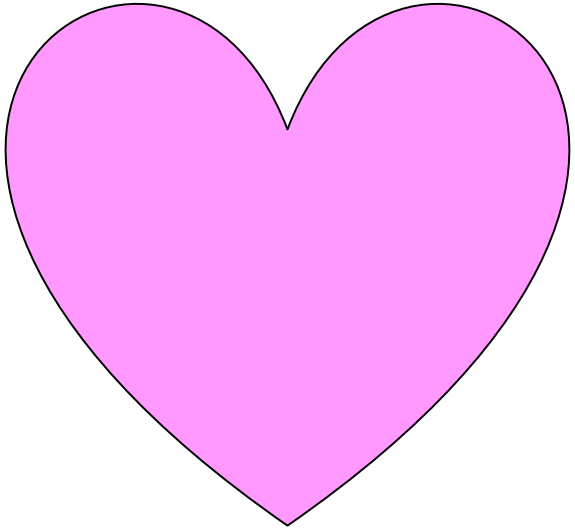
9.1-9.3

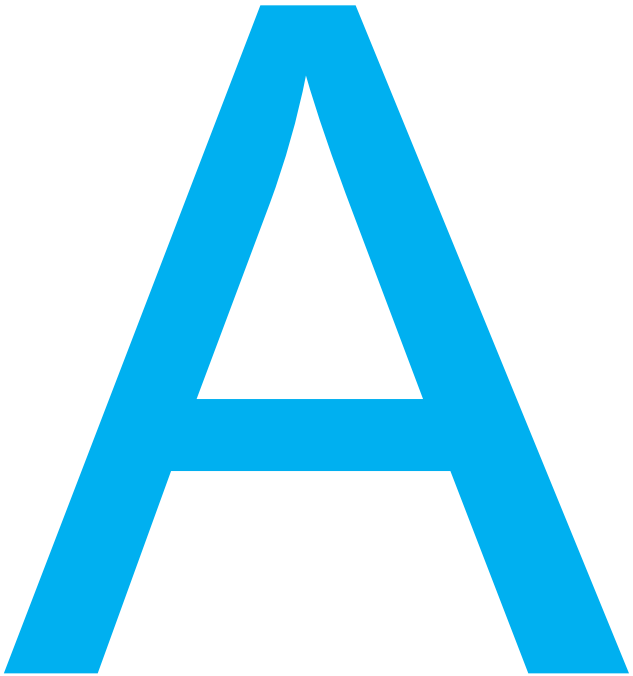
Exploring Symmetry, Translations, Vectors & Reflections

Line Symmetry

When parts of a figure are _____ of each other around a line.



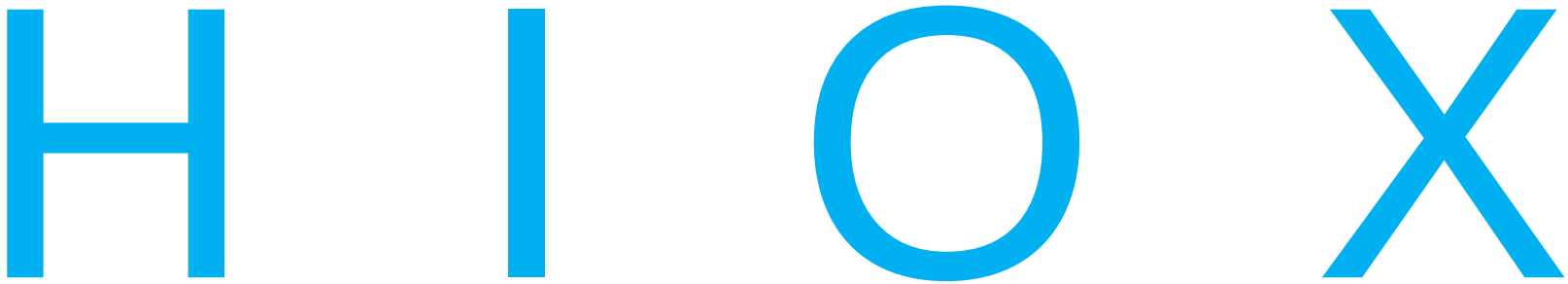
A figure can have more than one line of symmetry.


A

A C D E

M T U V

W Y


HIOX

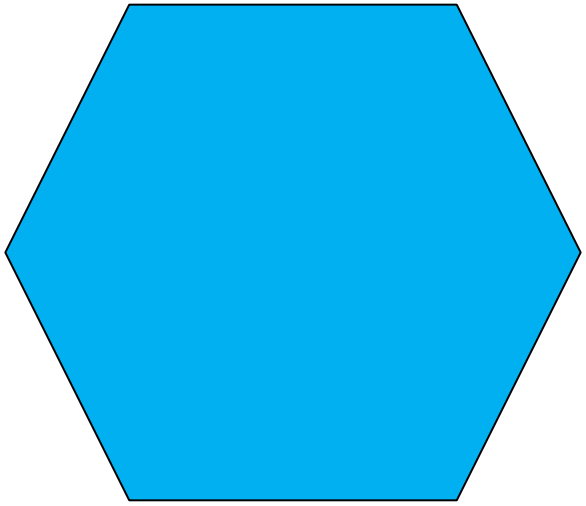
How about these?

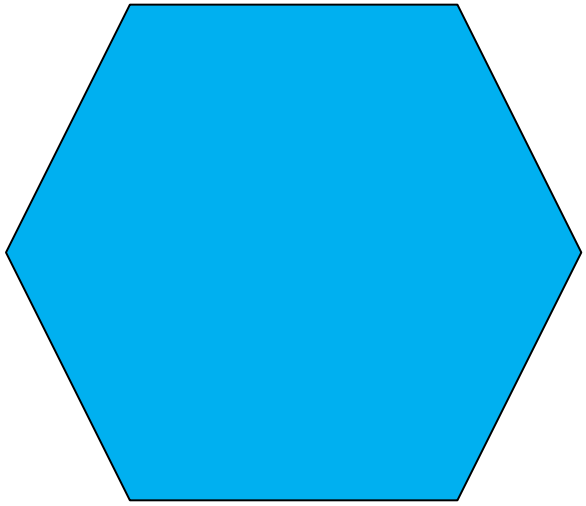
S

Z

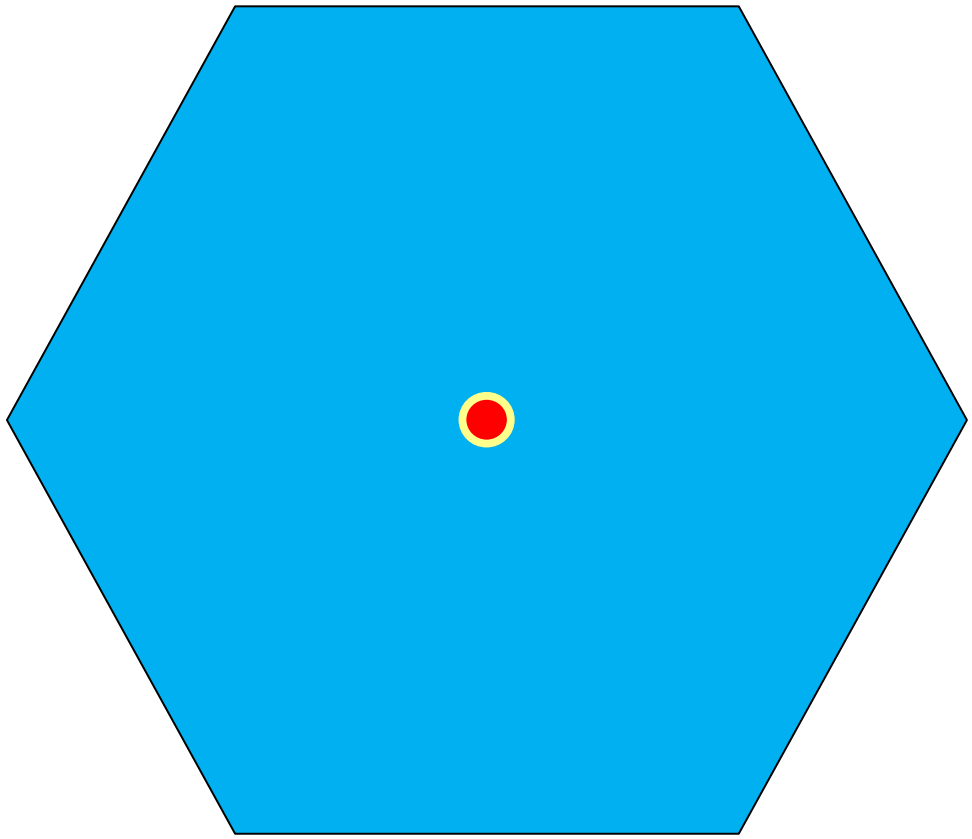
Rotational Symmetry

A figure is said to have rotational (or point) symmetry when you are able to _____ an object to see if it will eventually look the same before it can be turned _____.

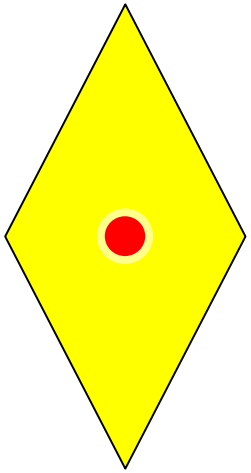


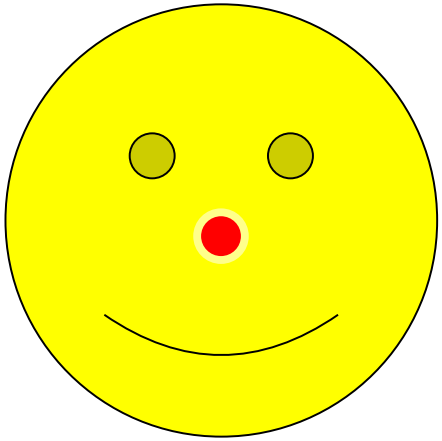


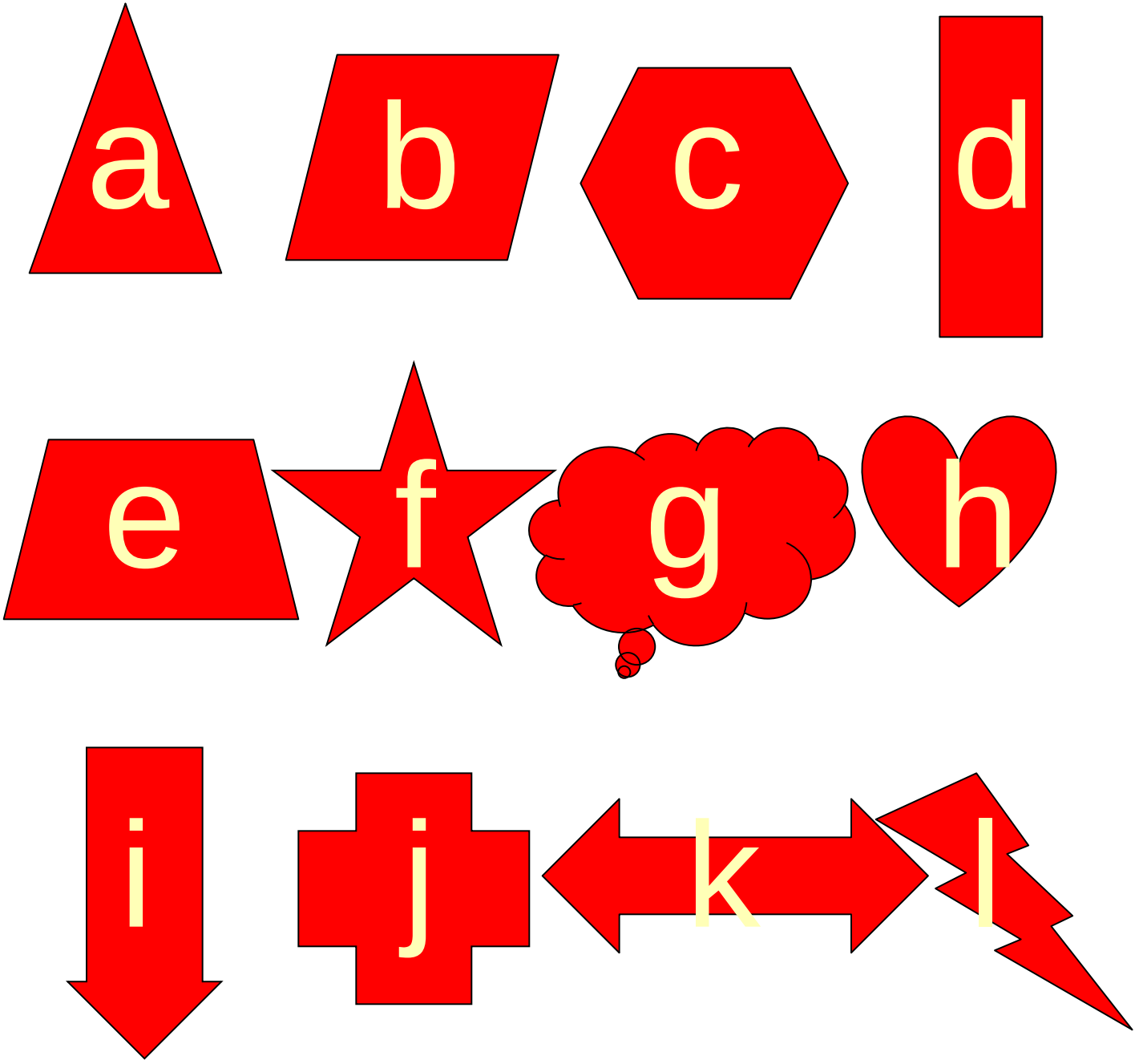
How to figure out the angle of rotation



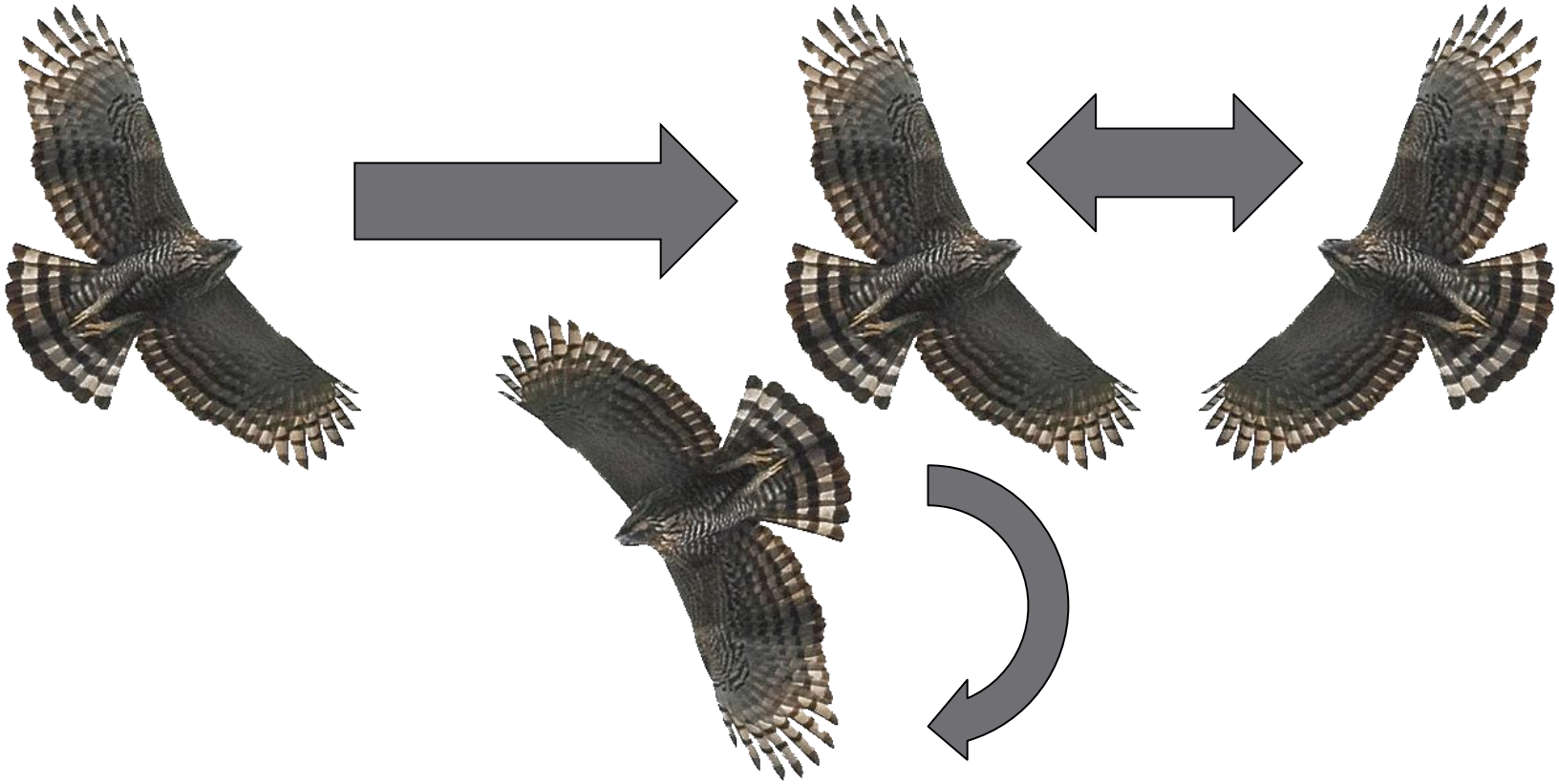
Do these have rotational symmetry?



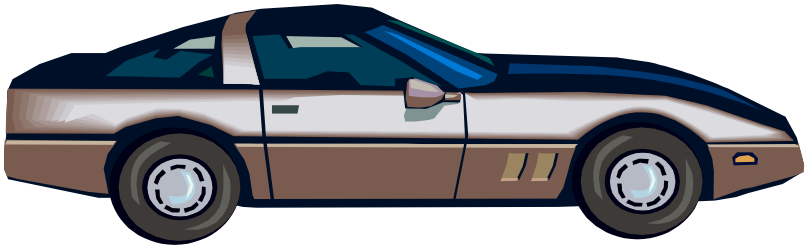


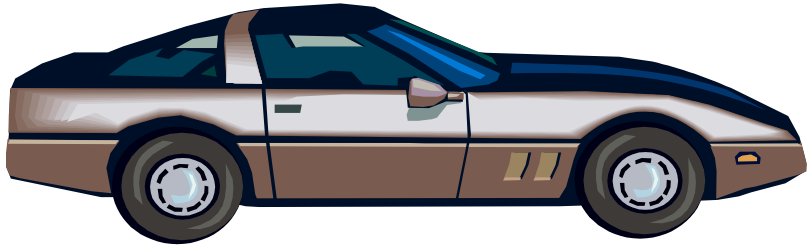

a
b
c
d
e
f
g
h
i
j
k
l

What are Transformations?

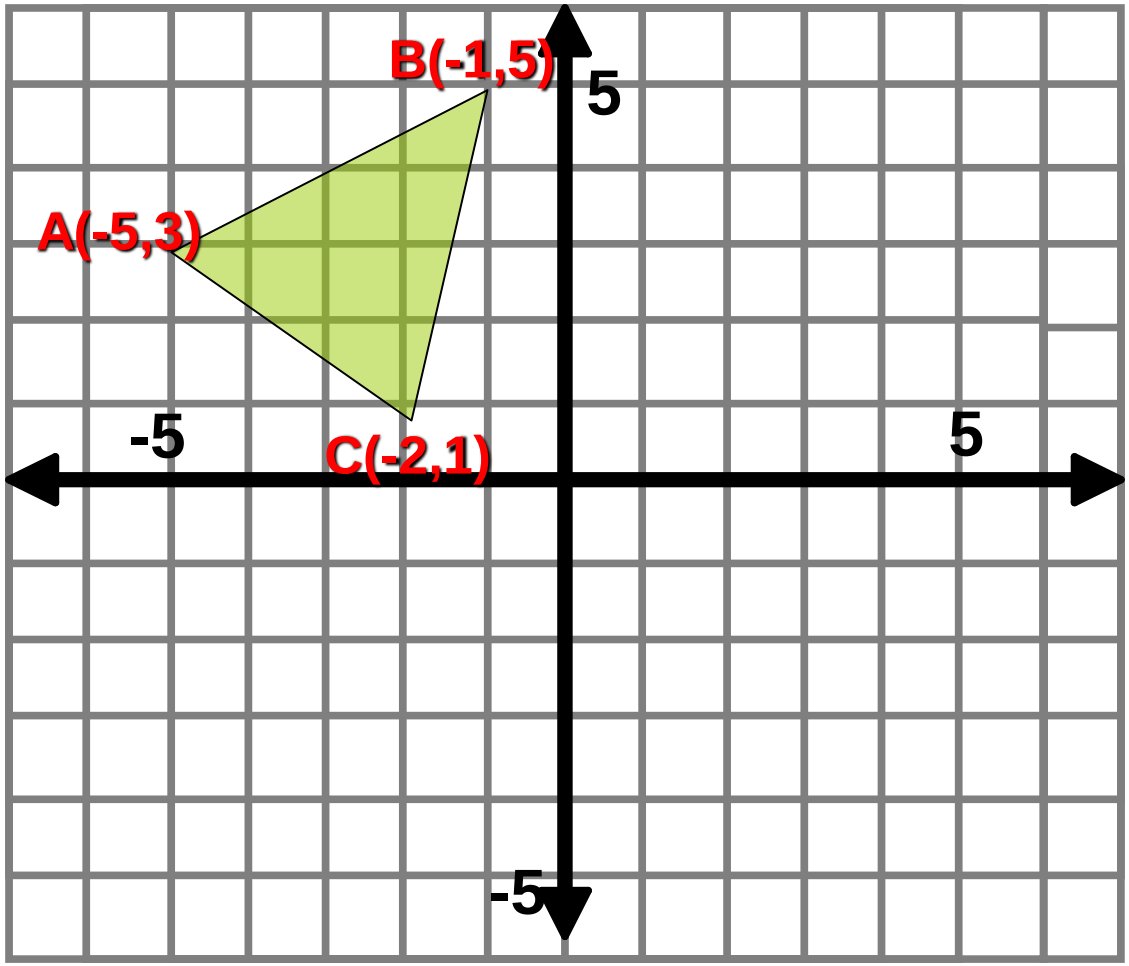


Translation





Translations on a Coordinate Plane Using a Rule



Rule:

(x,y)→(x+6, y-5)

Afterwards…

(x,y)→(x-8, y-2)

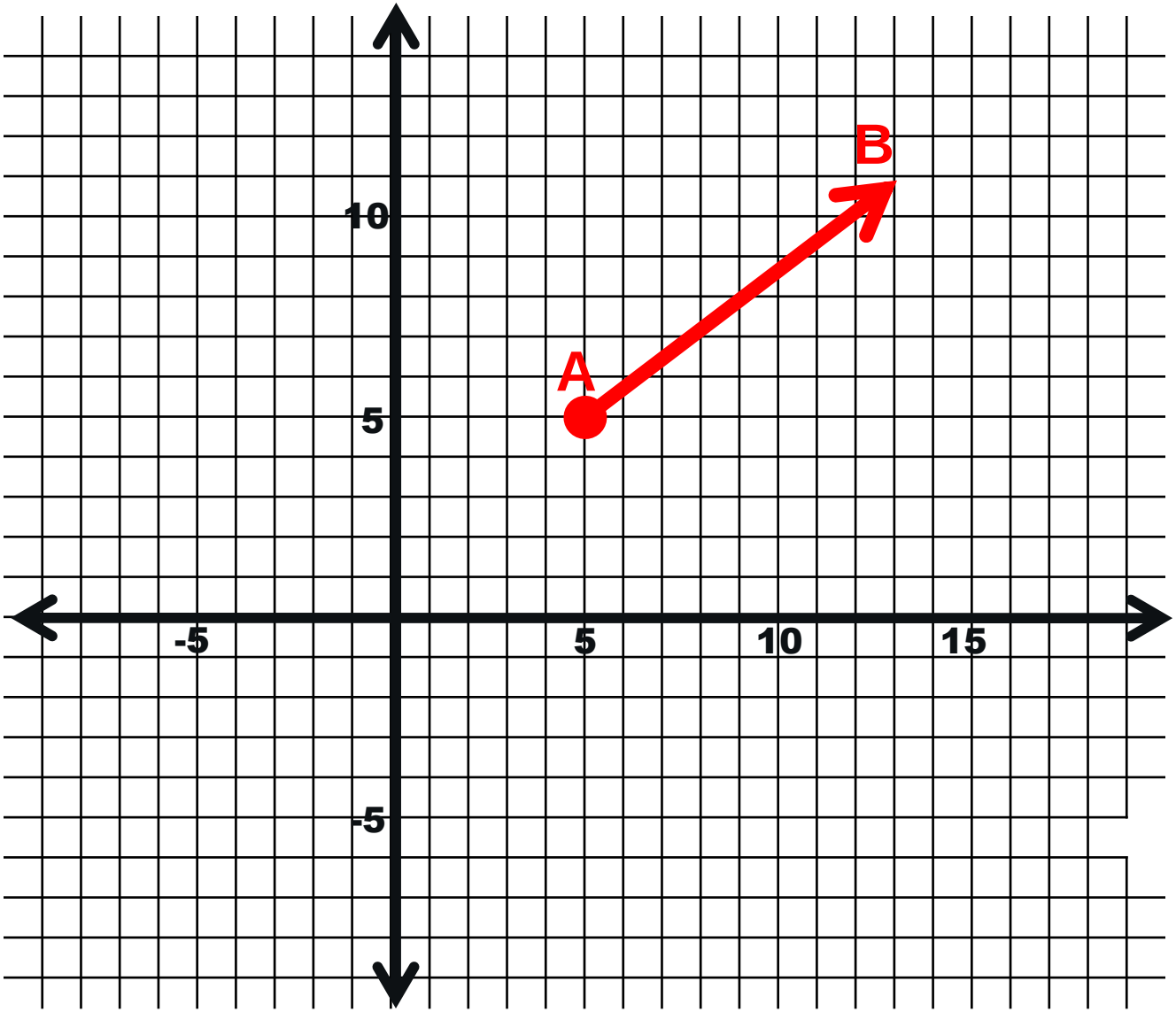
Vectors

A quantity that has direction and magnitude

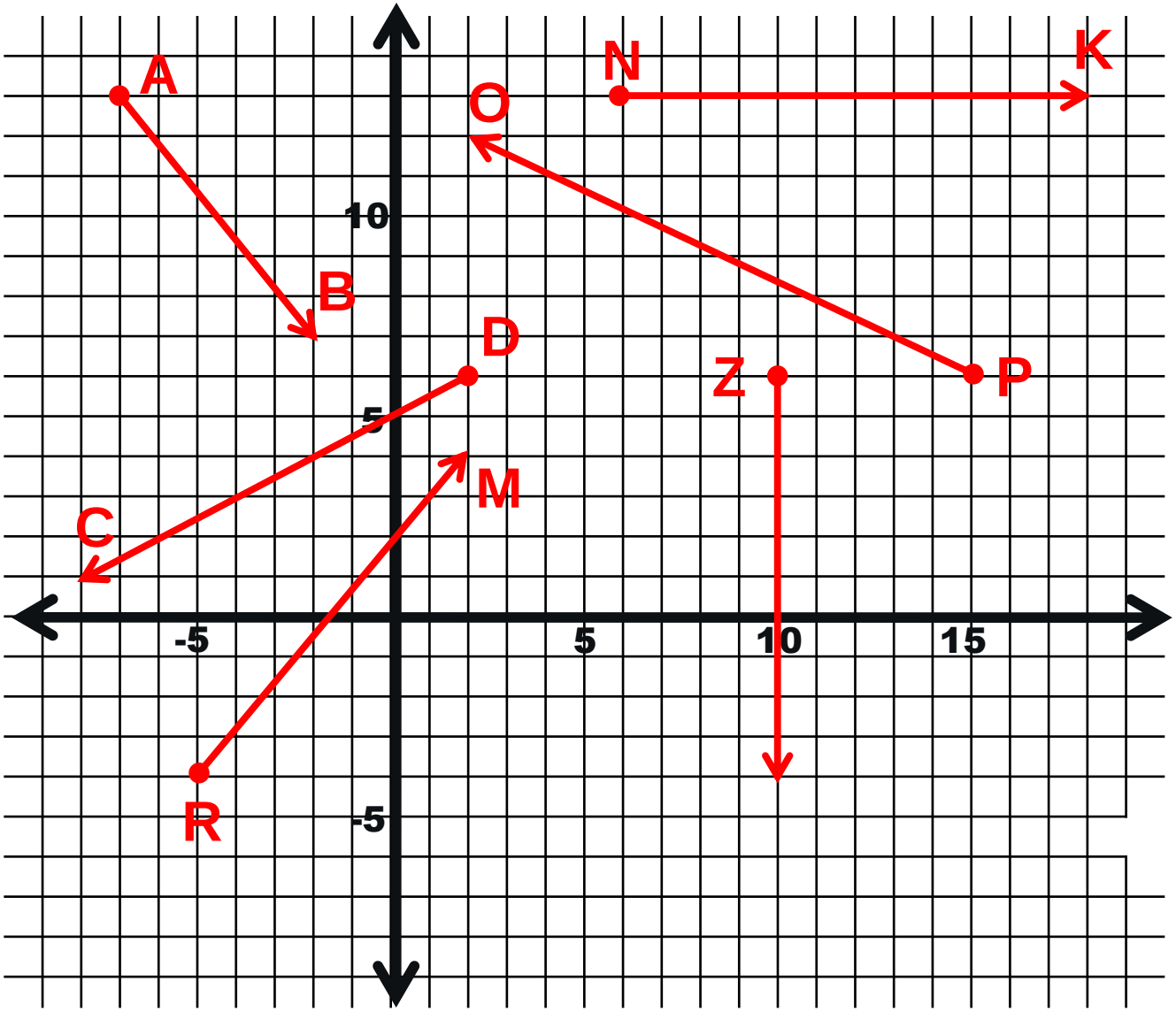
Name:

Magnitude:

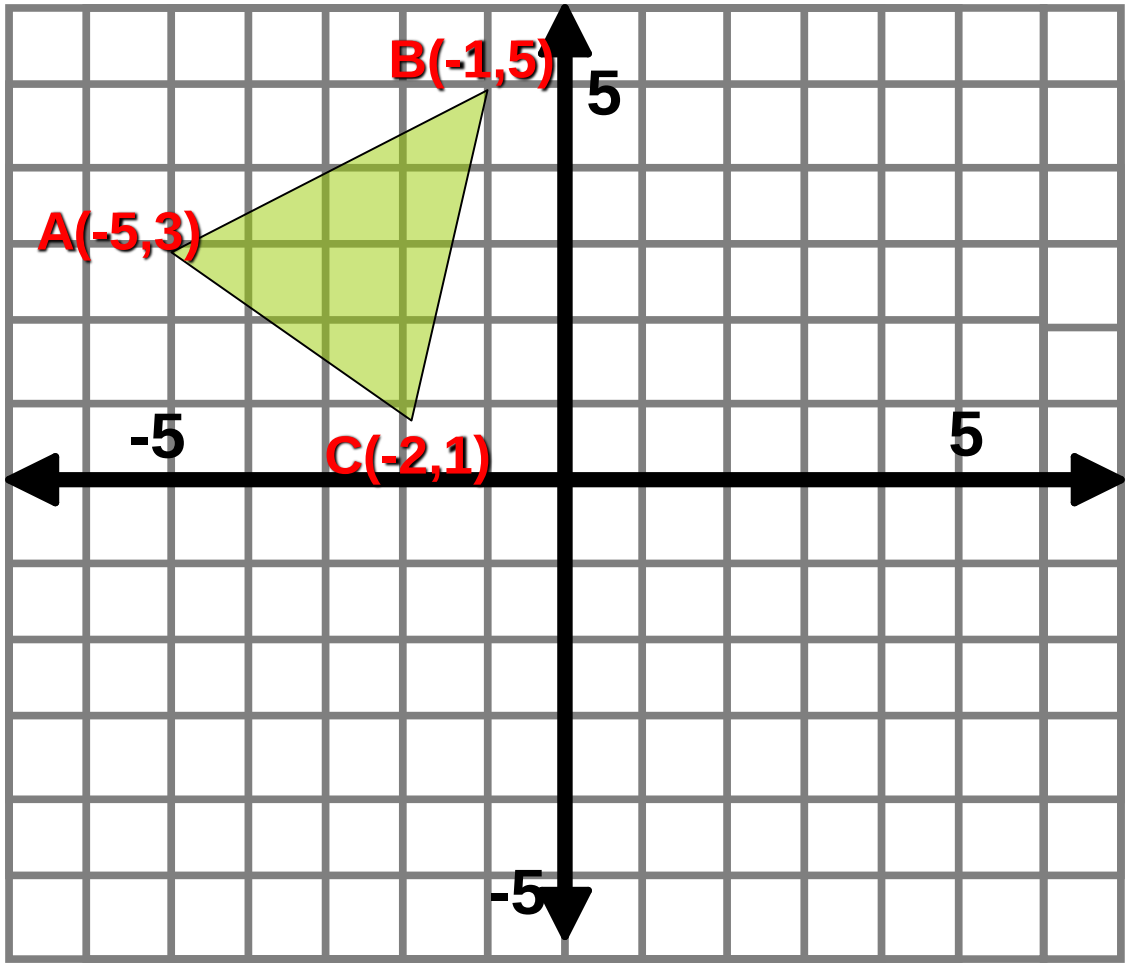
Component Form:



Name the following vectors and indicate their component form.



Translations on a Coordinate Plane Using a Vector



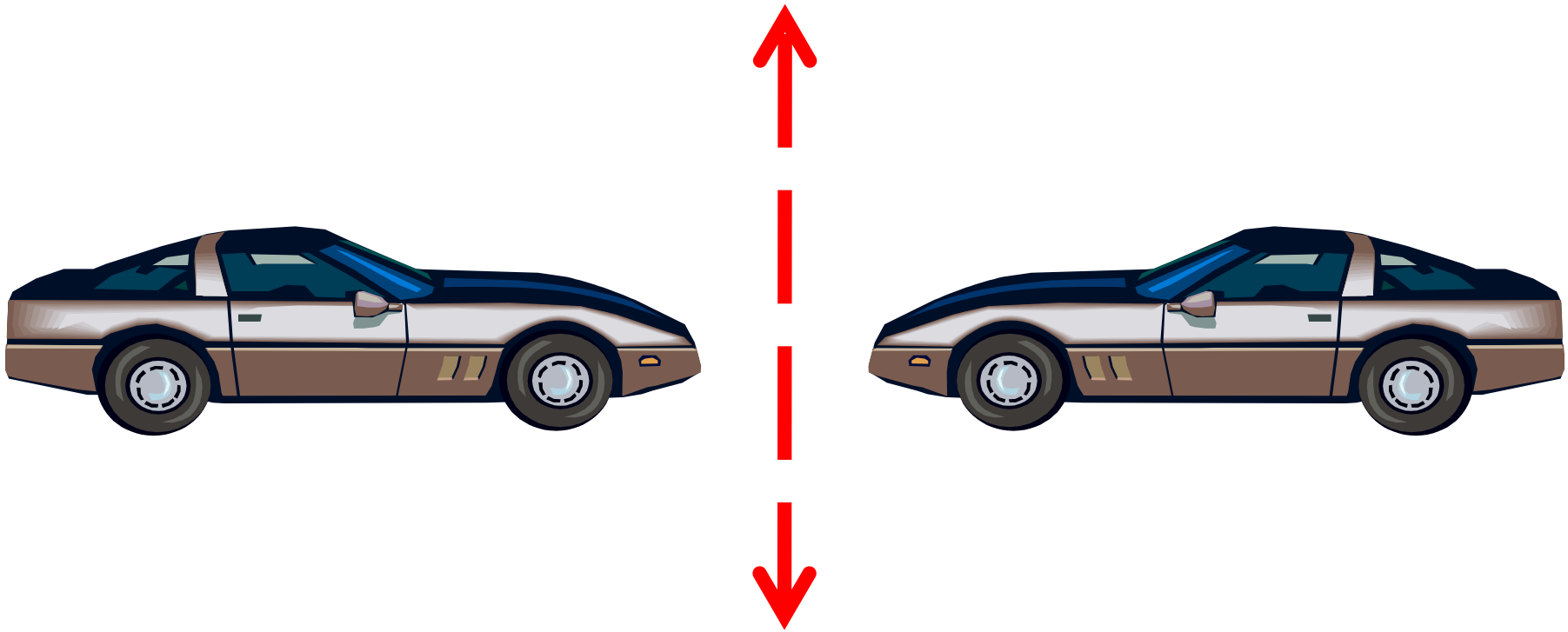
Translate using the components of the vector:

$$\langle 5, -6 \rangle$$

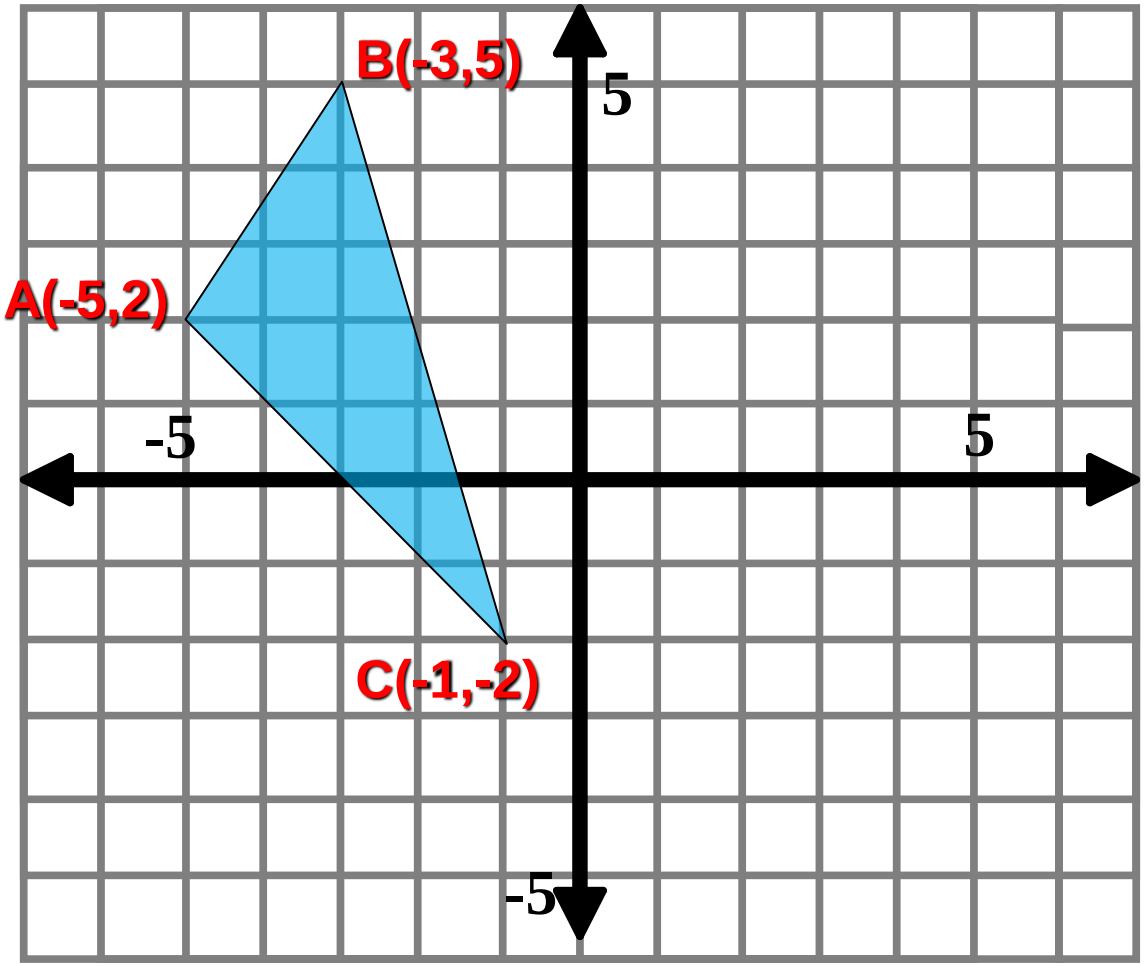
Vocabulary

Reflection

Mirror image of an object across a line or a point



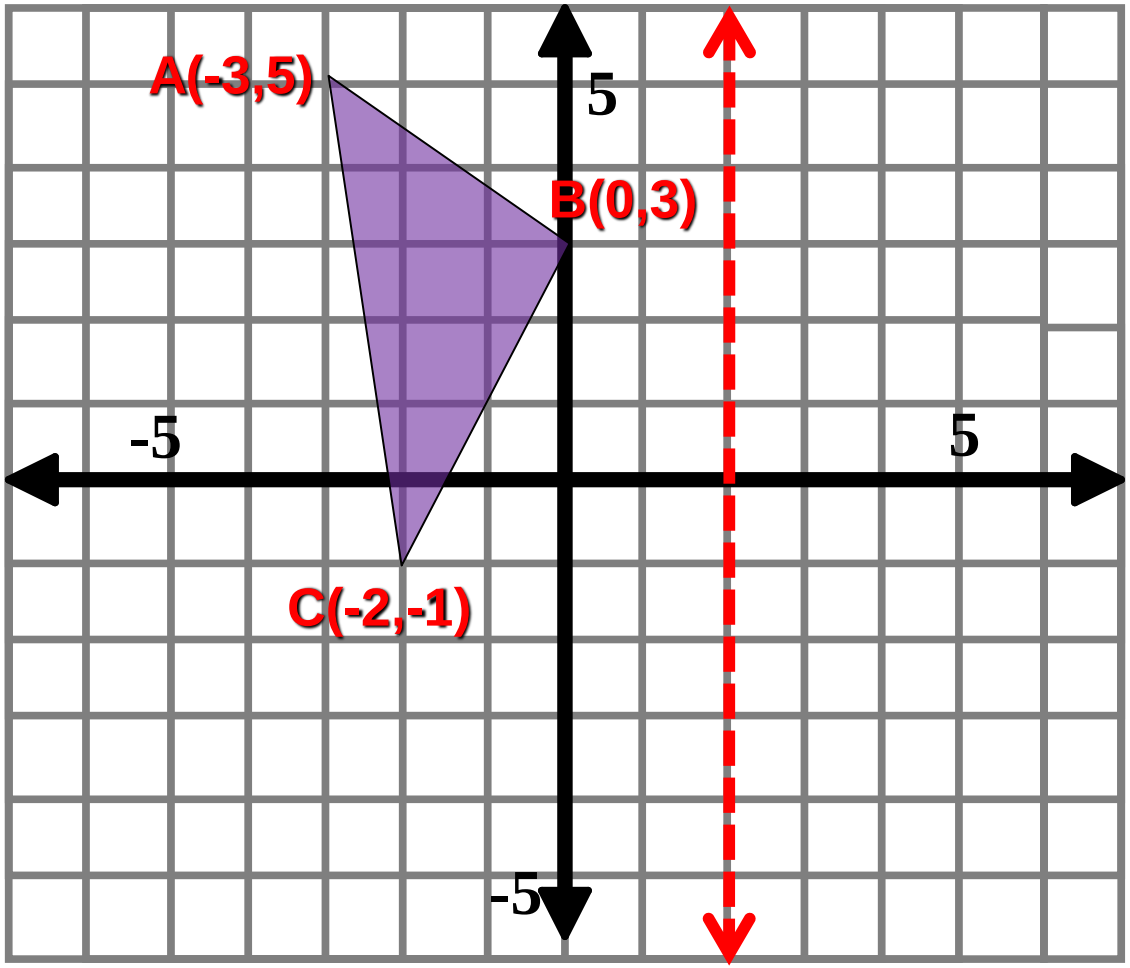
Reflections on a Coordinate Plane



Rule:

Reflect across the y-axis

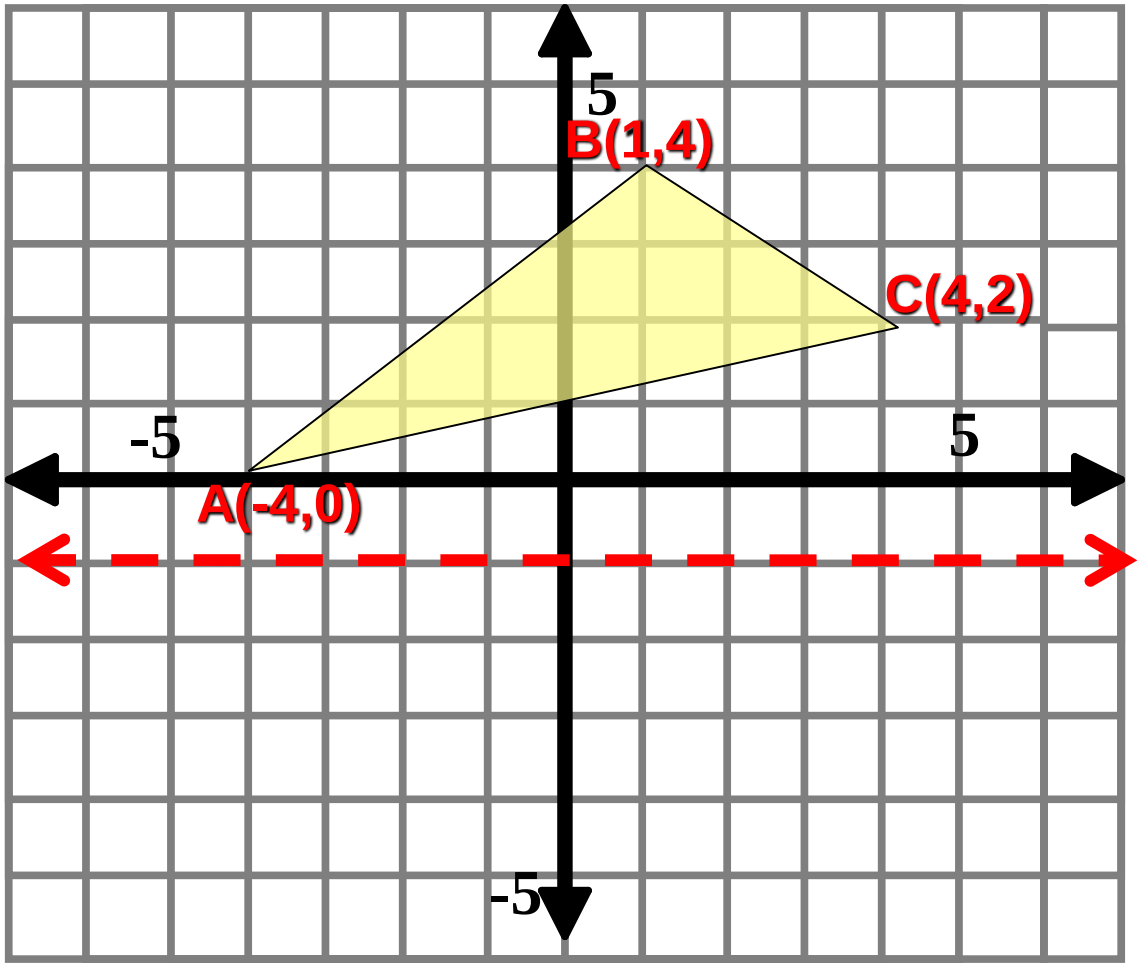
Reflections on a Coordinate Plane



Rule:

Reflect across x=2

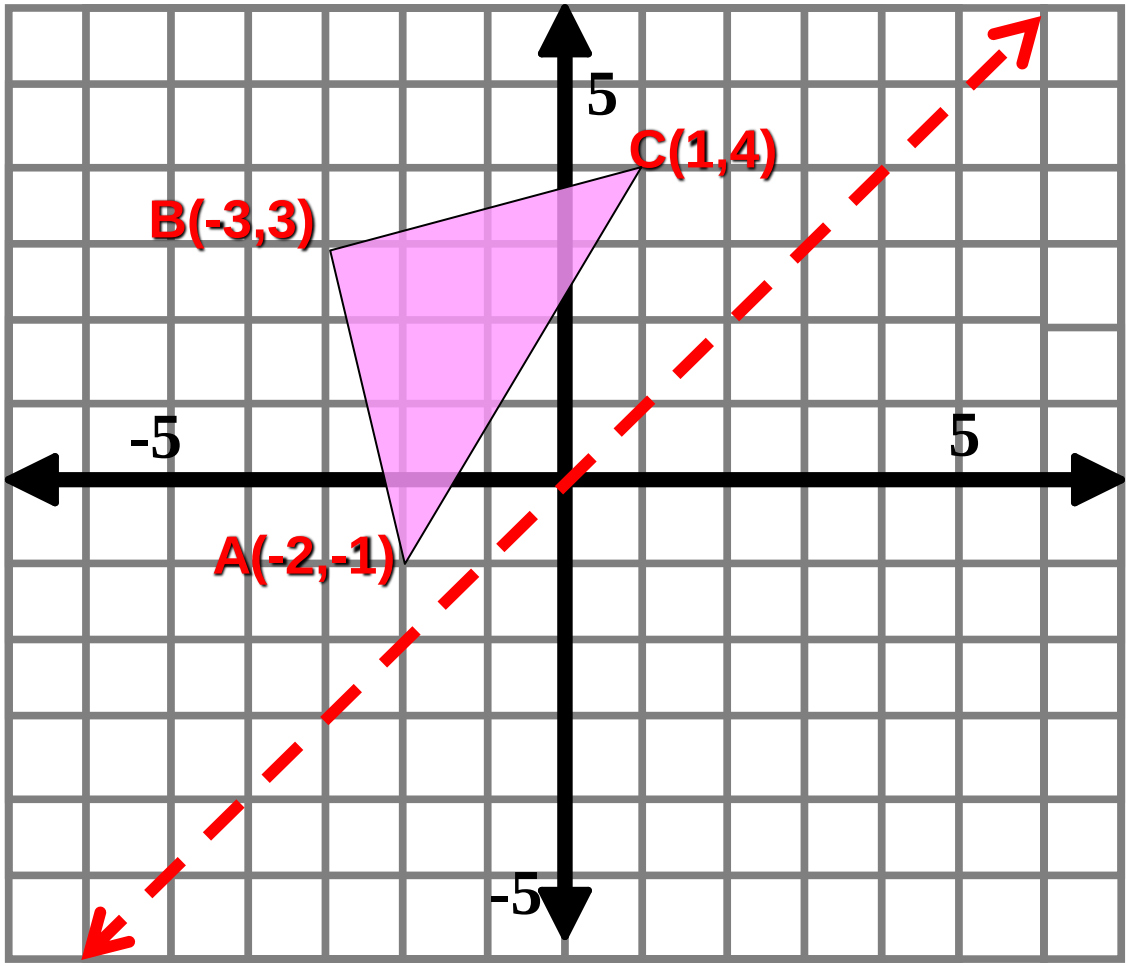
Reflections on a Coordinate Plane



Rule:

Reflect across y=-1

Reflections on a Coordinate Plane



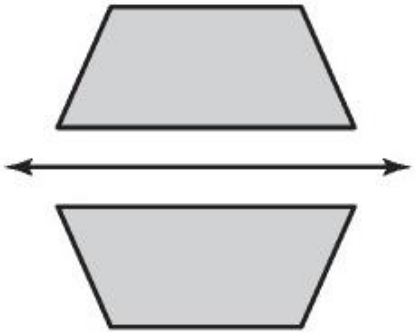
Rule:

Reflect across y=x

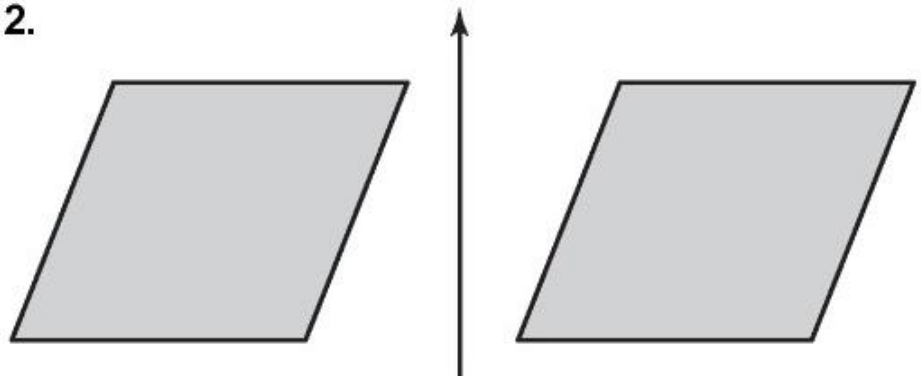
Practice

Tell whether one figure is a reflection of the other figure.

1.

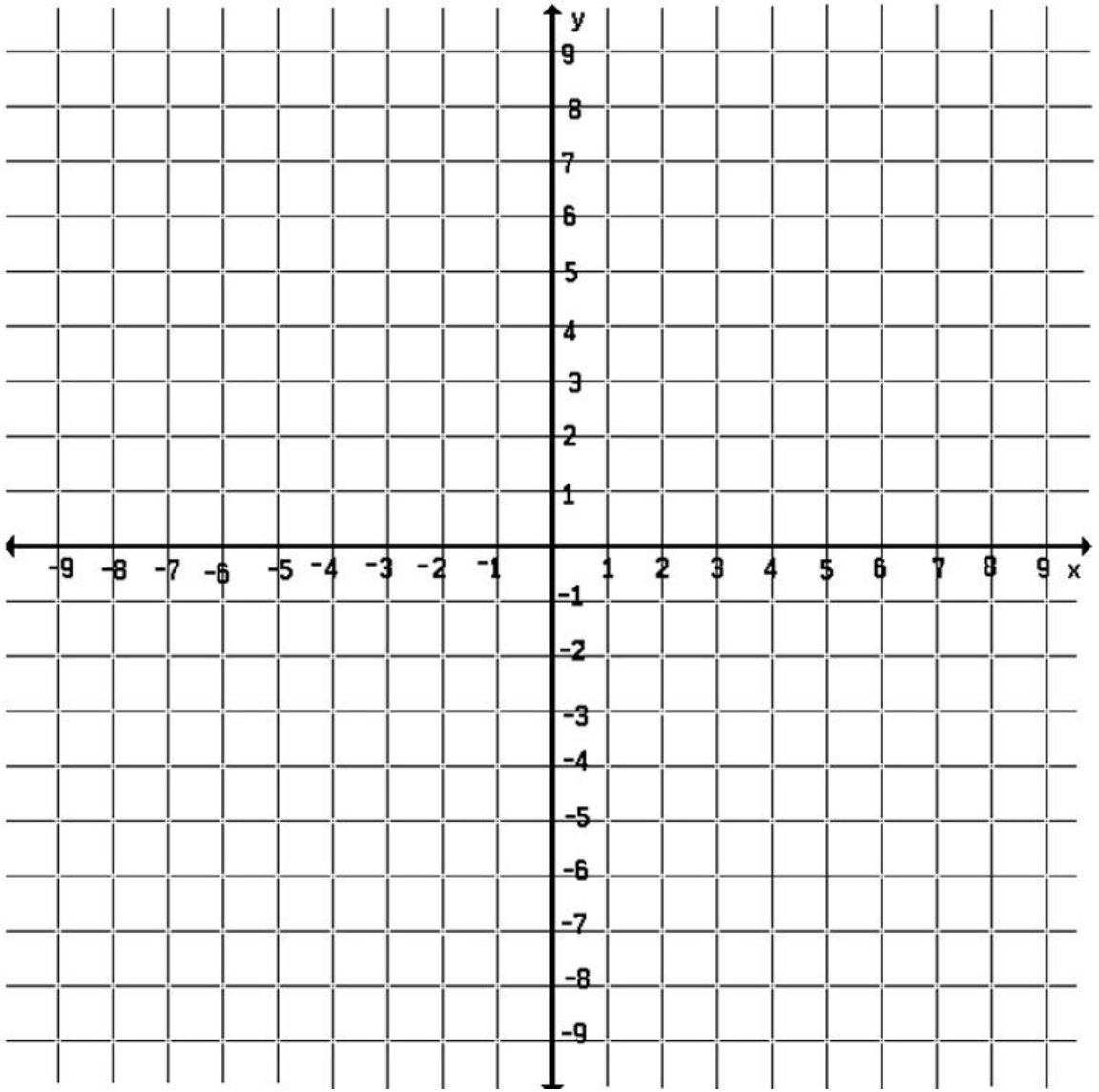


2.



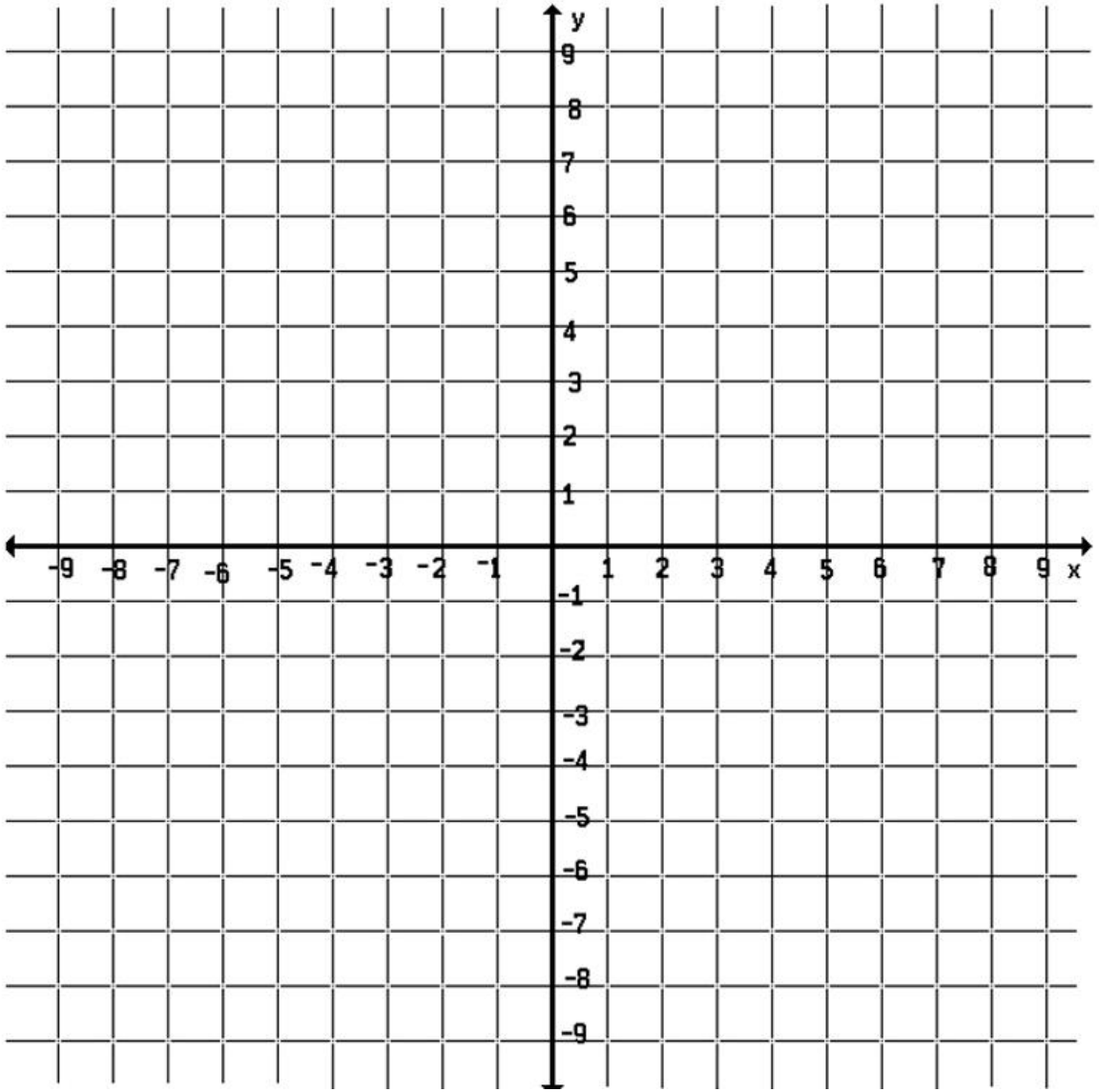
Draw the figure and its reflection in the *x*-axis. Identify the coordinates of the image.

3. $E(0, 2), F(3, 1), G(4, 3)$



Draw the figure and its reflection in the *y*-axis. Identify the coordinates of the image.

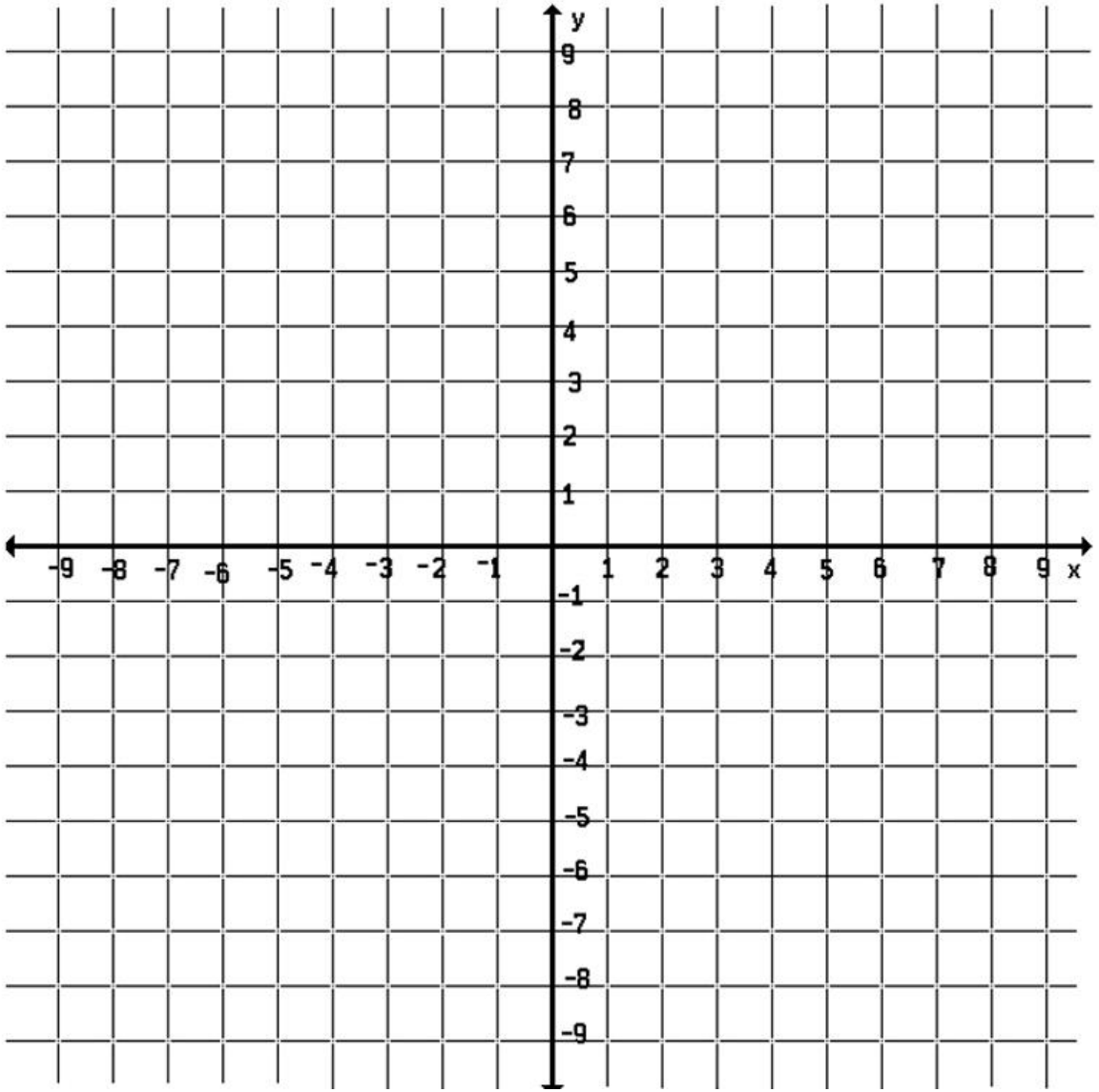
5. $X(0, -1), Y(2, 3), Z(4, -2)$



The coordinates of a point and its image are given. Is the reflection in the *x*-axis or *y*-axis?

8. $(-5, 2) \rightarrow (5, 2)$

9. $(4, 3) \rightarrow (4, -3)$



10. Translate the triangle 2 units left and 1 unit up. Then reflect the image in the x-axis. Graph the resulting triangle.