

Geometry

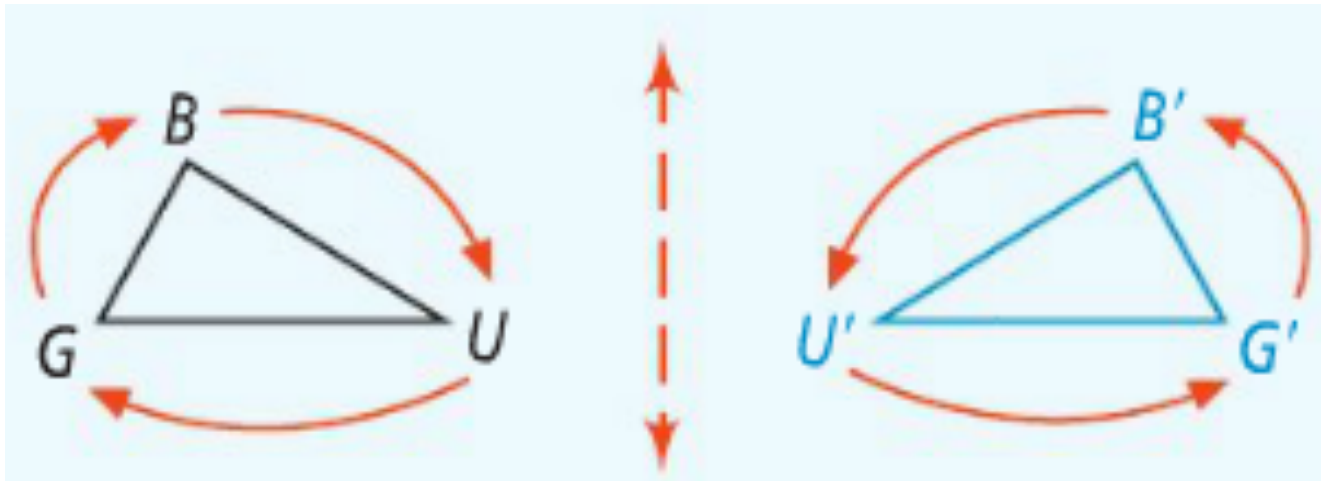
Chapter 9

Section 9-2

Reflections (like a mirror)

A reflection is exactly what you would think.

A reflection of a shape is a mirror image of that shape using a line as the "mirror".



Reflections

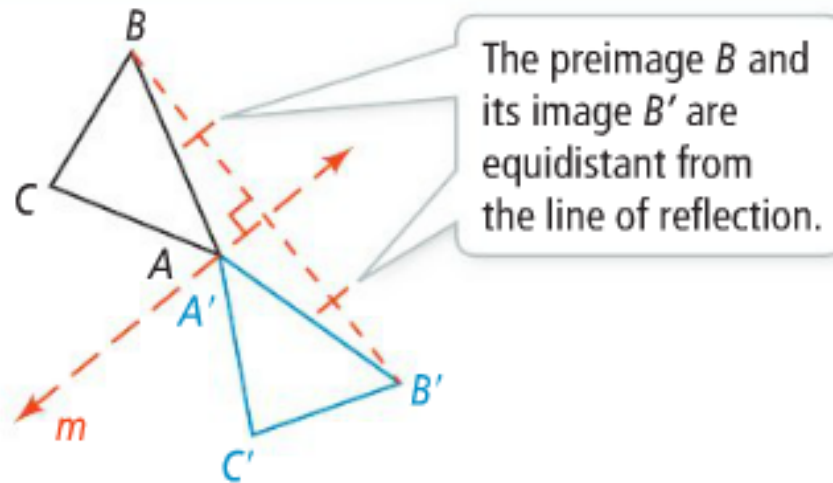
take note

Key Concept Reflection Across a Line

A **reflection** across a line m , called the **line of reflection**, is a transformation with the following properties:

- If a point A is on line m , then the image of A is itself (that is, $A' = A$).
- If a point B is not on line m , then m is the perpendicular bisector of $\overline{BB'}$.

You write the reflection across m that takes P to P' as $R_m(P) = P'$.



$R_k(A)$ means reflect the point A across line k .

Reflections of Points

Use the following Points:

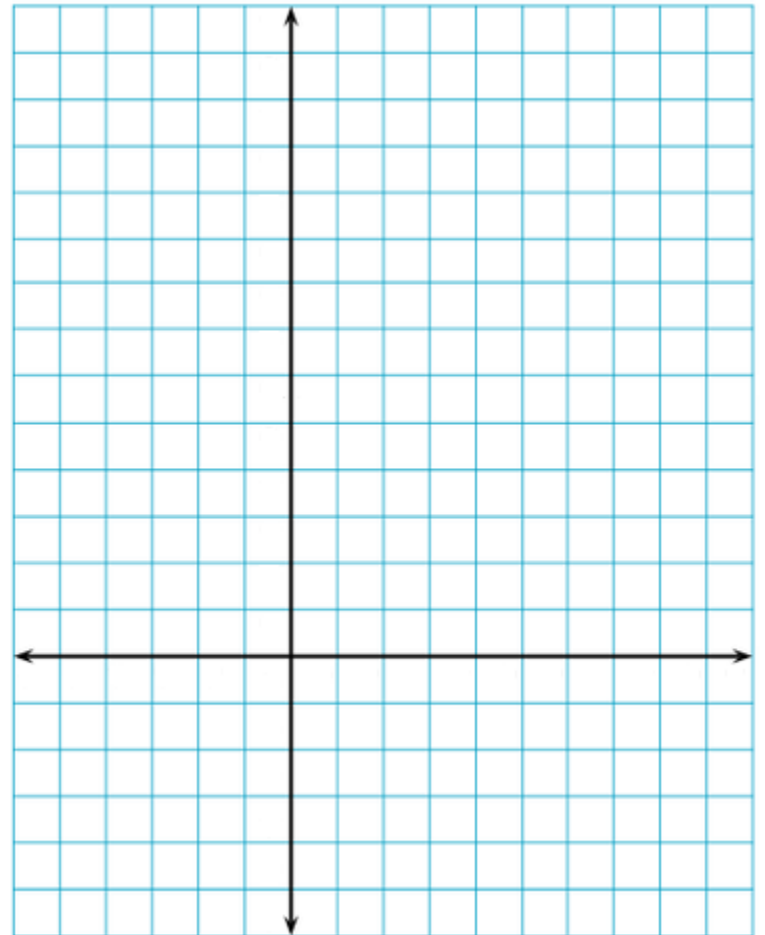
A: (4, 0) , B: (5, -3) , F: (-3, -1) , G: (9, 10)

What is $R_{x\text{-axis}}(A)$?

What is $R_{y=2}(F)$?

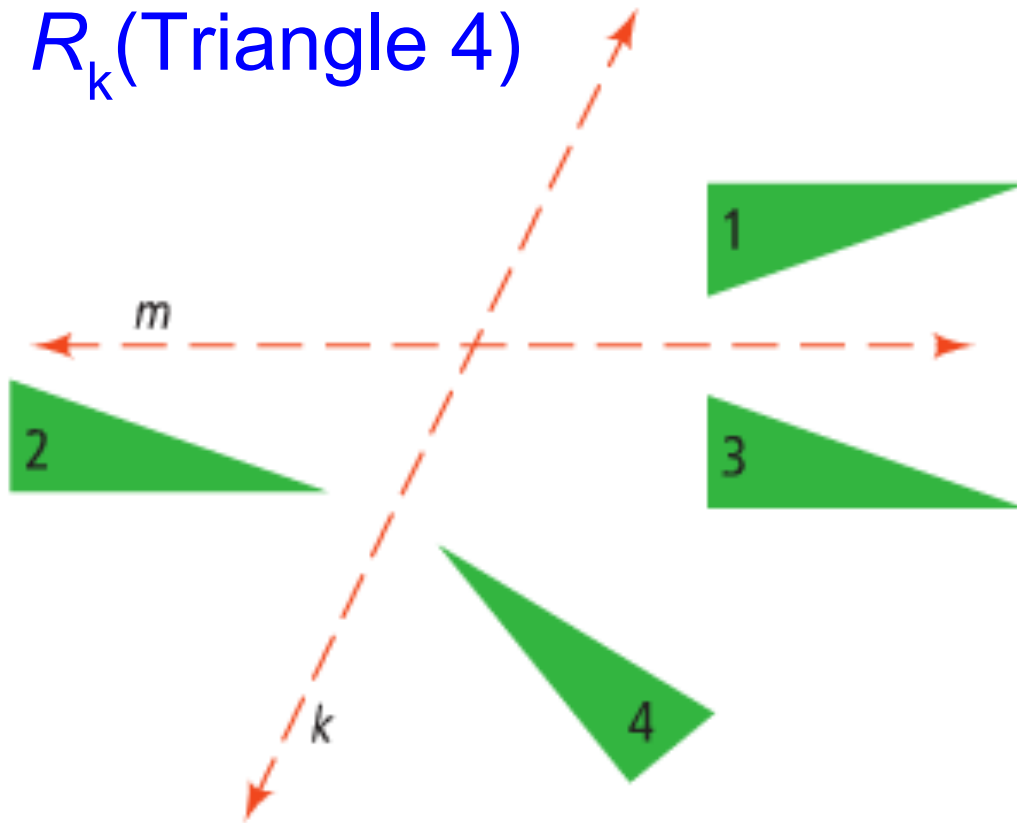
What is $R_{x=3}(B)$?

What is $R_{y=x}(G)$?



Identifying Reflection Rules

$R_k(\text{Triangle 4})$



Write a reflection rule in which Triangle 2 is the *image* of the transformation.

Could Triangle 1 be a reflection preimage of Triangle 2?

Could Triangle 3 be a reflection preimage of Triangle 2?

Could Triangle 4 be a reflection preimage of Triangle 2?

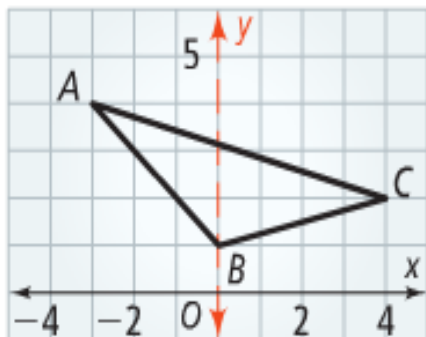
What is the line of reflection?

Reflections in the Coordinate Plane

What are the coordinates of A, B, and C?
Graph $R_{y\text{-axis}}(ABC)$.

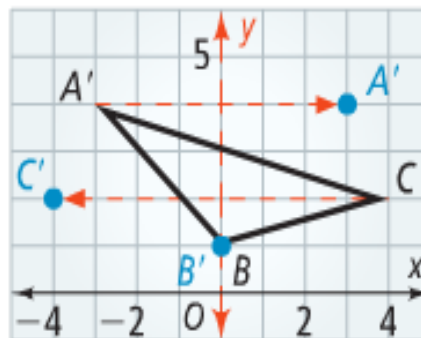
Step 1

Graph $\triangle ABC$. Show the y -axis as the dashed line of reflection.



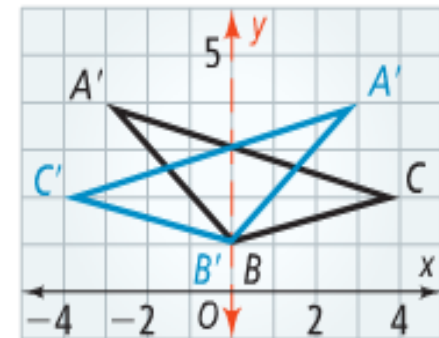
Step 2

Find A' , B' , and C' . B' is in the same position as B because B is on the line of reflection. Locate A' and C' so that the y -axis is the perpendicular bisector of $\overline{AA'}$ and $\overline{CC'}$.



Step 3

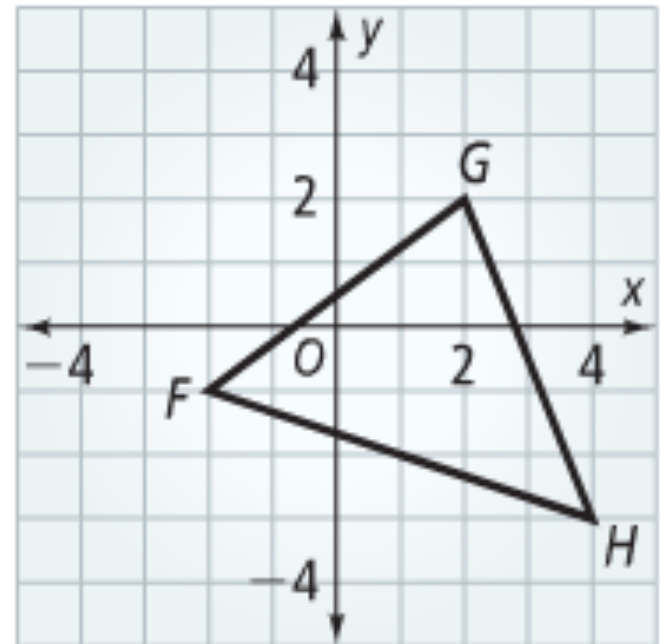
Draw $\triangle A'B'C'$.



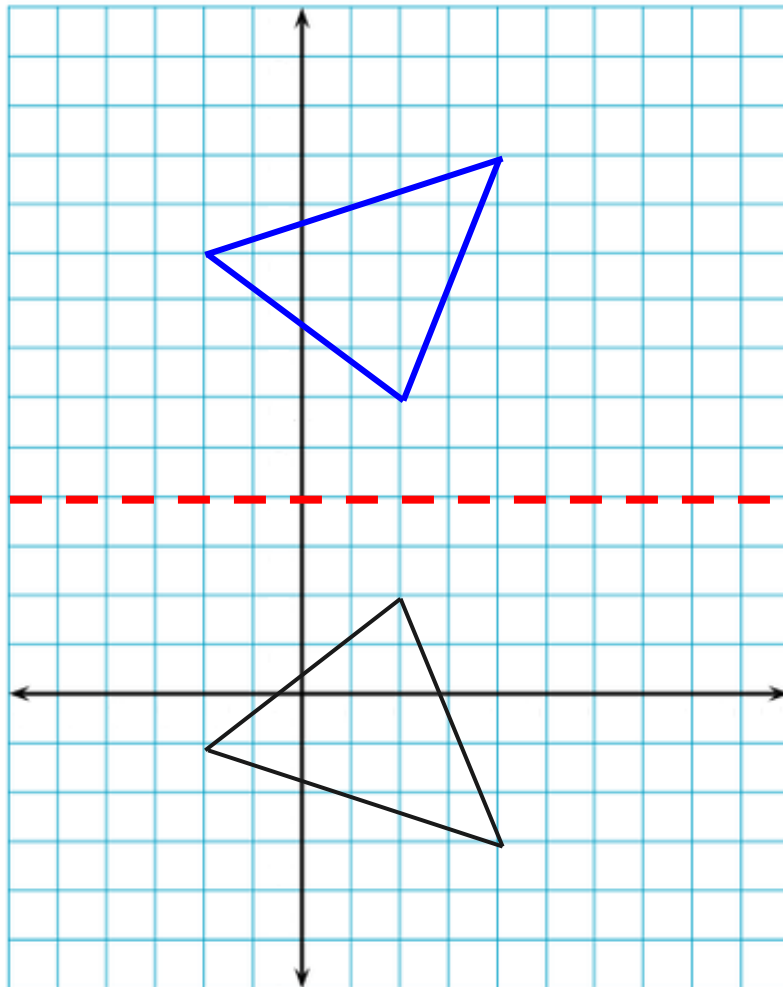
Reflections of Polygons

Use the graph of $\triangle FGH$.

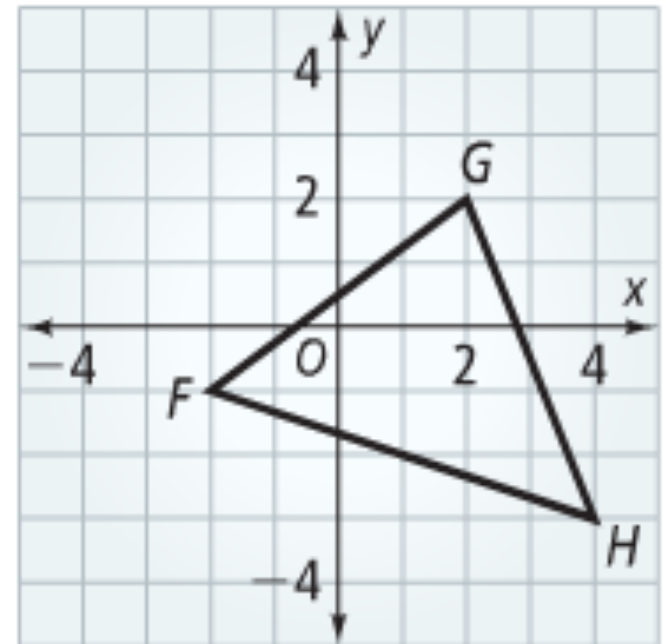
1. What are the coordinates of $R_{y\text{-axis}}(H)$? **$(-4, -3)$**
2. What are the coordinates of $R_{x=3}(G)$? **$(4, 2)$**
3. Graph and label $R_{y=4}(\triangle FGH)$.



Using Reflections



$$R_{y=4}(\triangle FGH)$$



Homework

Pages 557 - 558

8 - 26 even