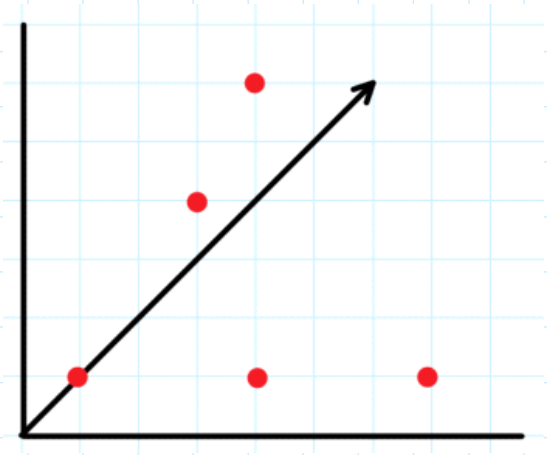
3.1 Reflections

Monday, September 23, 2019 7:46 AM

Warm Up

Move the points from one side of the given line to the other, making sure that the point is the same distance from the line it was originally.



Essential Question

How are the properties of reflection used to transform a figure?

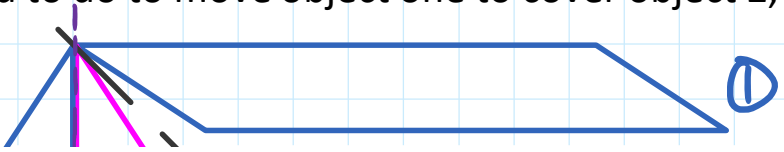
Needed Vocab:

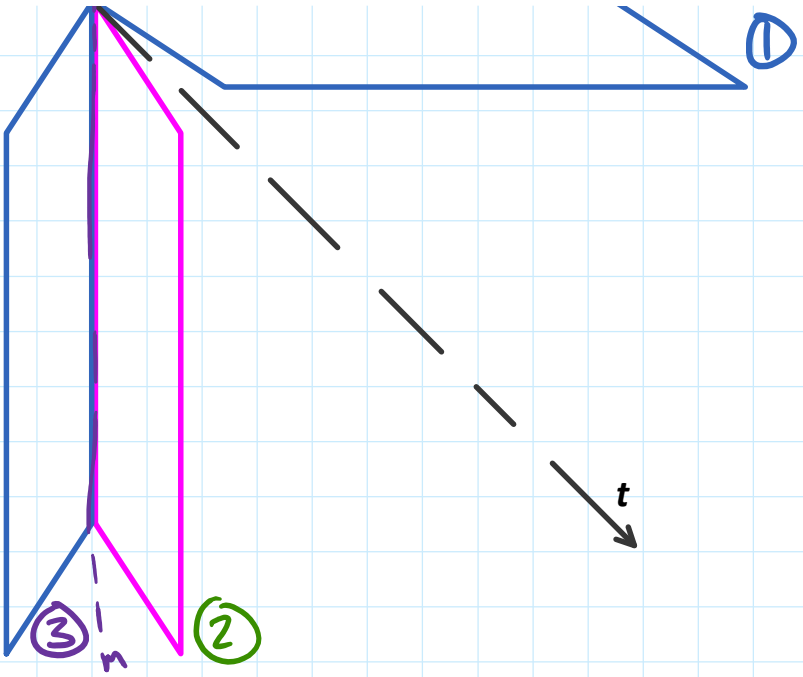
- **Rigid Motion**

Goal: "I can. . .

Draw and describe the reflection of a figure across a line of reflection."

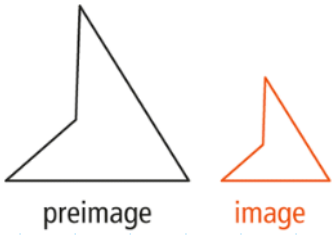
What would you need to do to move object one to cover object 2, object 3?



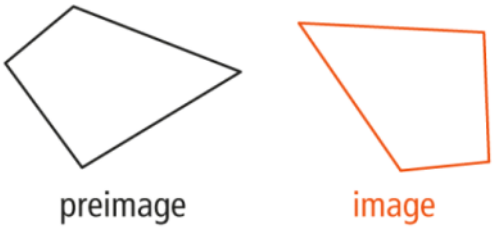


Example 1 Identify Rigid Motions

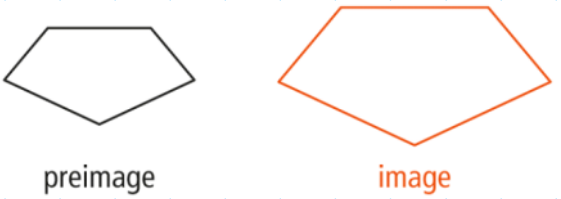
A rigid motion is a type of transformation that does not change the size or dimensions of the object. Is the transformation shown a rigid motion?



1. a. Is the transformation a rigid motion? Explain.



b. Is the transformation a rigid motion? Explain.



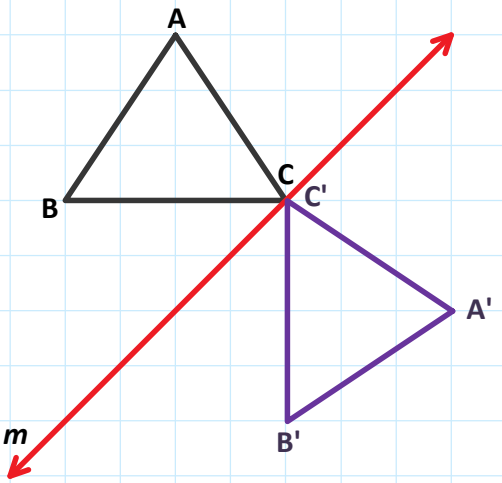
REFLECTIONS

A reflection is a transformation that reflects each point in a preimage across a line of reflection.

A reflection has these properties:

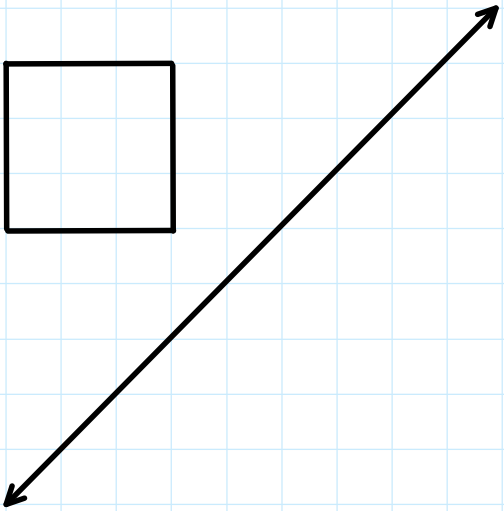
- If a point A is on line *m,* then the point and its image are the same point. (A'=A)
- If a point B is not on line *m,* line m is the perpendicular bisector of $\overline{BB'}$

Reflections are rigid motions, so all dimensions and relationships are preserved.

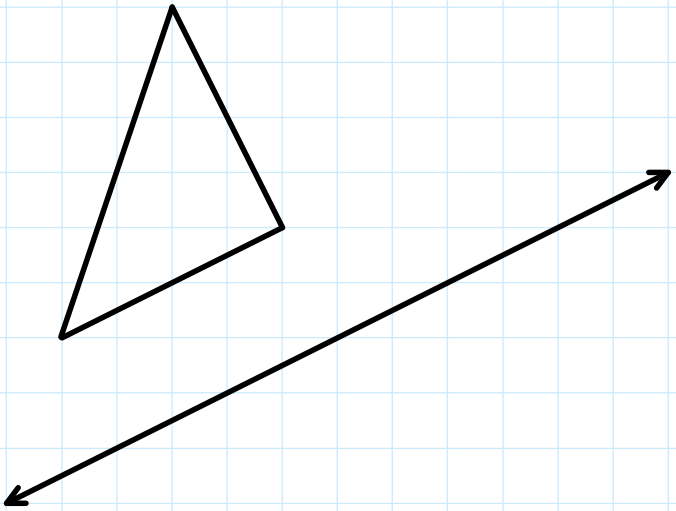


Example 2 Reflect a Figure Across a Line

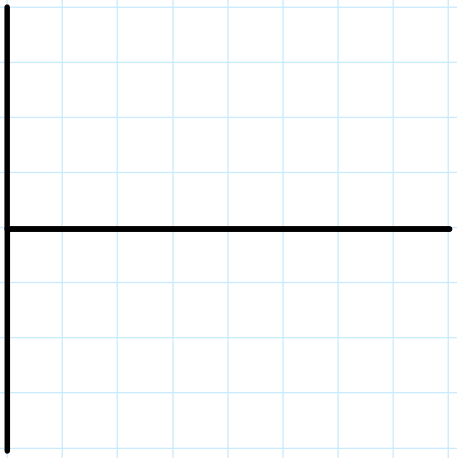
What steps do you need to take to reflect the given preimage across the given line?



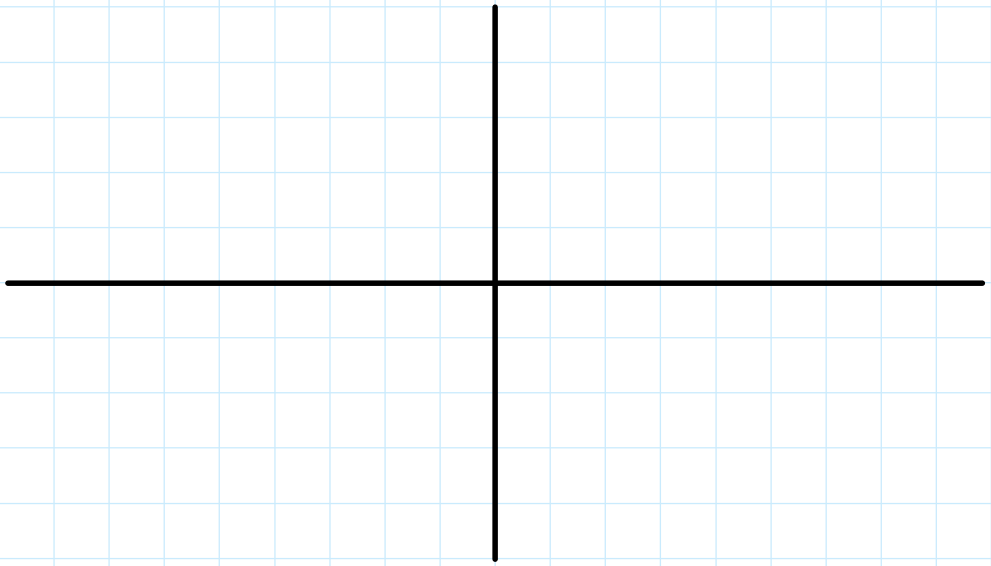
Reflect the given preimage across the given line.



Example 3 Quadrilateral FGHJ has coordinate F(0, 3), G(2, 4), H(4, 2), J(-2, 0).
A. Graph and label FGHJ and then reflect it across the x-axis. What do you notice about the points of the preimage compared to the reflected points in the image?



Triangle RST has the coordinates R(2, 2), S(4, 2), T(4, 4). Reflect Triangle RST in the x-axis, image 1, as well as in the y-axis, image 2. Reflect image 1 in the y-axis and reflect image 2 in the x-axis. What are the coordinates of the final two images?



Example 4 **Reflection Rules**

Reflection Rules are in the form $R_{x-axis}(\Delta RST) = (\Delta R'S'T')$

Line of reflection — Preimage — Image

Find the Reflection Rule that maps ΔKLM to its image.
K(1, 2), L(3, 4), M(2, 6)
K'(2, 1), L'(4, 3), M'(6, 2)

4. What is a reflection rule that maps each triangle to its image?

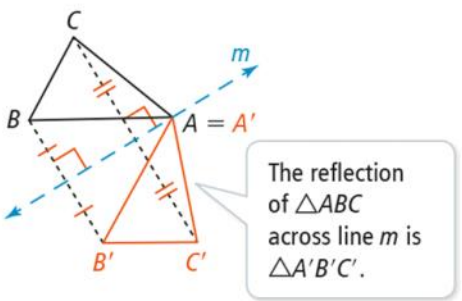
a. $C(3, 8)$, $D(5, 12)$, $E(4, 6)$ and $C'(-8, -3)$, $D'(-12, -5)$, $E'(-6, -4)$

b. $F(7, 6)$, $G(0, -4)$, $H(-5, 0)$ and $F'(-5, 6)$, $G'(2, -4)$, $H'(7, 0)$

Reflections

WORDS A reflection is a transformation that reflects each point in the preimage across a line of reflection.

DIAGRAM



SYMBOLS $R_m(\triangle ABC) = \triangle A'B'C'$

$R_m(A) = A'$

Line m is the perpendicular bisector of $\overline{BB'}$ and $\overline{CC'}$.

Homework

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