Reflectional Symmetry

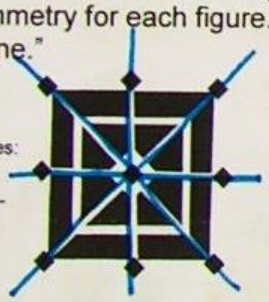
An image has **Reflectional Symmetry** if there is at least one line which splits the image in half so that one side is the mirror image of the other. Reflectional symmetry is also called **line symmetry** or **mirror symmetry** because there is a line in the figure where a mirror could be placed, and the figure would look the same.

Think of a figure on a piece of paper, then folding the paper in two so that the two halves match up, or actually placing a mirror on the line of symmetry.

It is possible to have more than one line of reflectional symmetry.

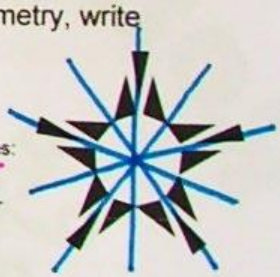
Draw all of the **lines of symmetry** for each figure. Indicate the number of lines of symmetry for each figure. If the figure does not have reflectional symmetry, write "none."

1. #of lines: 4



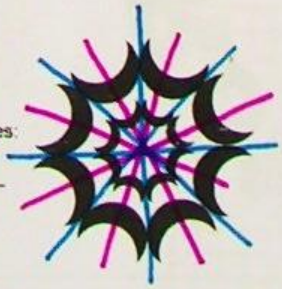
2. #of lines: 1

3. #of lines: 5

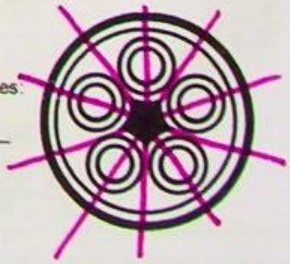


4. #of lines: 0 (None)

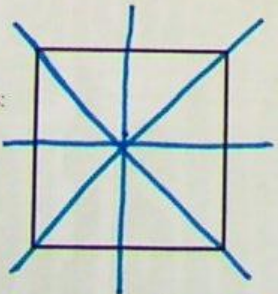
5. #of lines: 8



6. #of lines: ____

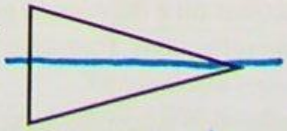


7. #of lines: 4



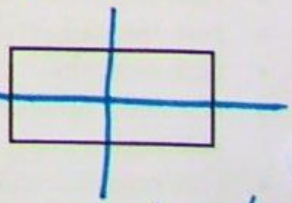
Square

8. #of lines: 1



isosceles triangle

9. #of lines: 2



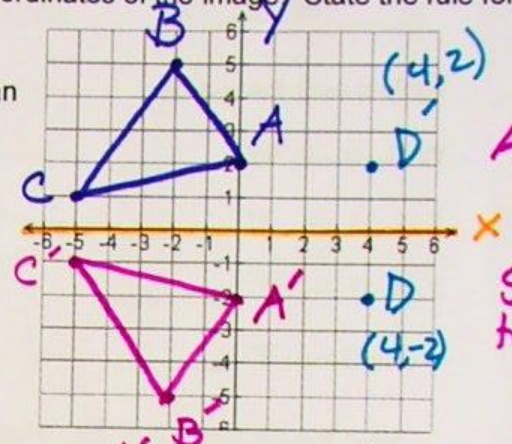
rectangle

(corners)

Notes for Reflectional Symmetry on a Coordinate Grid

The vertices of a polygon are listed. Graph and label each polygon and its image after a reflection over the given line. Name the coordinates of the image. State the rule for the transformation.

1. Reflect over the **x-axis**. (The x-axis can also be described as the line $y = 0$.)



A (0, 2) → A' (0, -2)

B (-2, 5) → B' (-2, -5)

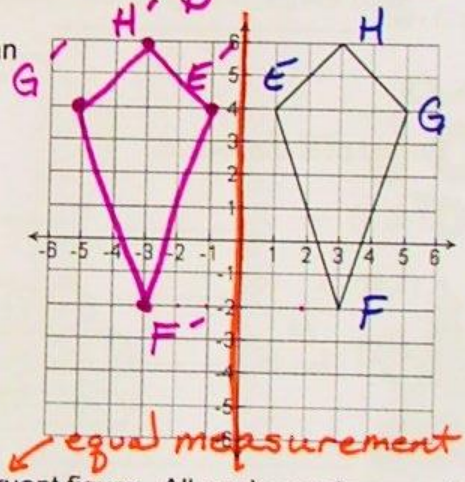
C (-5, 1) → C' (-5, -1)

Scalene triangle

General rule: (x, y) → (x, -y)

--2 = 2

2. Reflect over the **y-axis**. (The y-axis can also be described as the line $x = 0$.)



E (1, 4) → E' (-1, 4)

F (3, -2) → F' (-3, -2)

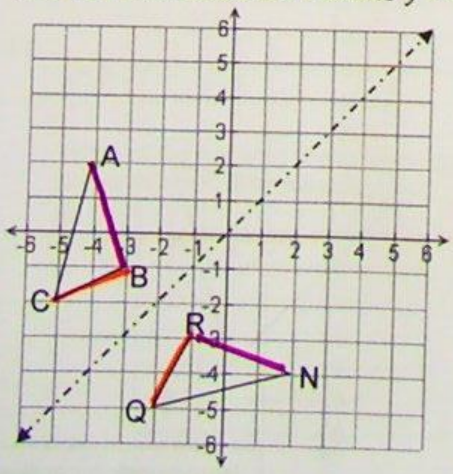
G (5, 4) → G' (-5, 4)

H (3, 6) → H' (-3, 6)

Kite

General rule: (x, y) → (-x, y)

A reflectional transformation results in a congruent figure. All angles and segments maintain the same measurements. Identify the congruent parts for the following triangle that was reflected over the line $y = x$.



$\overline{AB} \cong \overline{RN}$ $\quad \angle A \cong \angle N$

$\overline{BC} \cong \overline{QR}$ $\quad \angle B \cong \angle R$

$\overline{CA} \cong \overline{QN}$ $\quad \angle C \cong \angle Q$

$\Delta ABC \cong \Delta NRQ$

State the coordinates of A and its corresponding vertex:

A: (-4, 2) $\quad$ N(2, -4)

Write the general rule for a reflection over the line $x = y$

(x, y) → (y, x)