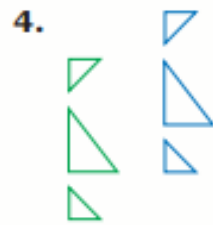


Use prior knowledge of the terms: reflection, translation, rotation, and dilation to answer the following:

Exercises Identify the following transformations. The blue figure is the preimage.



Make a Conjecture

11. An *isometry* is a transformation in which the resulting image is congruent to the preimage. Which transformations are isometries?

Concept Summary

Reflections in the Coordinate Plane

Reflection	x-axis	y-axis	origin	$y = x$
Preimage to Image	$(a, b) \rightarrow (a, -b)$	$(a, b) \rightarrow (-a, b)$	$(a, b) \rightarrow (-a, -b)$	$(a, b) \rightarrow (b, a)$
How to find coordinates	Multiply the y-coordinate by -1 .	Multiply the x-coordinate by -1 .	Multiply both coordinates by -1 .	Interchange the x- and y-coordinates.
Example				

ORDINATE GEOMETRY Graph each figure and its image under the given reflection.

- \overline{AB} with endpoints $A(2, 4)$ and $B(-3, -3)$ reflected in the x -axis
- $\triangle ABC$ with vertices $A(-1, 4)$, $B(4, -2)$, and $C(0, -3)$ reflected in the y -axis
- $\triangle DEF$ with vertices $D(-1, -3)$, $E(3, -2)$, and $F(1, 1)$ reflected in the origin
- $\square GHIJ$ with vertices $G(-1, 2)$, $H(2, 3)$, $I(6, 1)$, and $J(3, 0)$ reflected in the line $y = x$

Refer to the figure at the right. Name the image of each figure under a reflection in:

line ℓ

15. \overline{WX}

16. \overline{WZ}

17. $\angle XZY$

line m

18. T

19. \overline{UY}

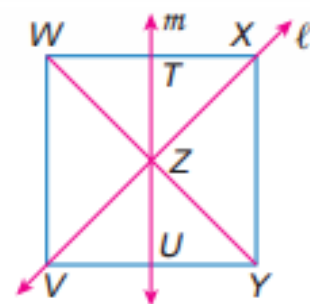
20. $\triangle YVW$

point Z

21. U

22. $\angle TXZ$

23. $\triangle YUZ$



ORDINATE GEOMETRY Graph each figure and its image under the given reflection.

7. rectangle $MNPQ$ with vertices $M(2, 3)$, $N(2, -3)$, $P(-2, -3)$, and $Q(-2, 3)$ in the origin
8. quadrilateral $GHIJ$ with vertices $G(-2, -2)$, $H(2, 0)$, $I(3, 3)$, and $J(-2, 4)$ in the origin
9. square $QRST$ with vertices $Q(-1, 4)$, $R(2, 5)$, $S(3, 2)$, and $T(0, 1)$ in the x -axis
10. trapezoid with vertices $D(4, 0)$, $E(-2, 4)$, $F(-2, -1)$, and $G(4, -3)$ in the y -axis
11. $\triangle BCD$ with vertices $B(5, 0)$, $C(-2, 4)$, and $D(-2, -1)$ in the line $y = x$
12. $\triangle KLM$ with vertices $K(4, 0)$, $L(-2, 4)$, and $M(-2, 1)$ in the line $y = 2$
13. The reflected image of $\triangle FGH$ has vertices $F'(1, 4)$, $G'(4, 2)$, and $H'(3, -2)$. Describe the reflection in the y -axis.
14. The reflected image of $\triangle XYZ$ has vertices $X'(1, 4)$, $Y'(2, 2)$, and $Z'(-2, -3)$. Describe the reflection in the line $x = -1$.

