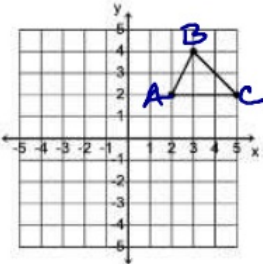
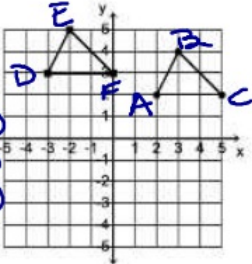


Notes: T2-23 Transformations

Use the vertices and graphs to understand the rules and transformations for each new triangle compared with the original triangle, $\triangle ABC$.

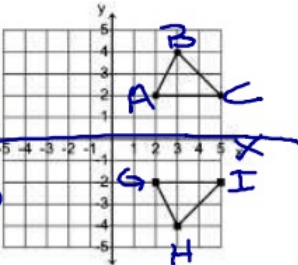
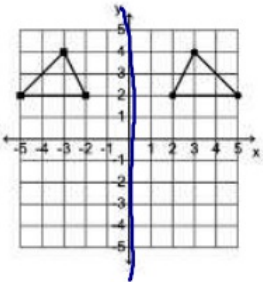
Original Triangle $\triangle ABC$

$\triangle DEF$

<p><u>Vertices</u> A (2, 2) B (3, 4) C (5, 2)</p>  <p>Rule: (x, y)</p>	<p><u>Vertices</u> D (-3, 3) <i>A(2, 2)</i> E (-2, 5) <i>B(3, 4)</i> F (0, 3) <i>C(5, 2)</i></p>  <p>Rule: $(x - 5, y + 1)$ Transformation: translate left 5 spaces and up 1</p>
---	--

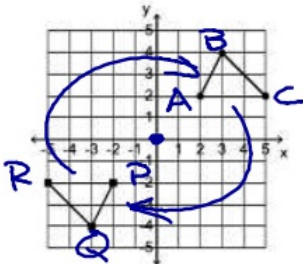
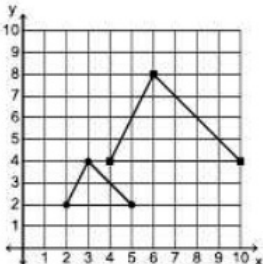
$\triangle GHI$

$\triangle JKL$

<p><u>Vertices</u> G (2, -2) <i>A(2, 2)</i> H (3, -4) <i>B(3, 4)</i> I (5, -2) <i>C(5, 2)</i></p>  <p>Rule: $(x, -y)$ Transformation: reflection over the x-axis</p>	<p><u>Vertices</u> J (-2, 2) K (-3, 4) L (-5, 2)</p>  <p>Rule: $(-x, y)$ Transformation: reflection over the y-axis</p>
--	---

$\triangle MNO$

$\triangle PQR$

<p><u>Vertices</u> P (-2, -2) Q (-3, -4) R (-5, -2)</p>  <p>Rule: $(-x, -y)$ Transformation: reflection over the x-axis and the y-axis</p>	<p><u>Vertices</u> P (4, 4) Q (6, 8) R (10, 4)</p>  <p>Rule: $(2x, 2y)$ Transformation: twice as wide and twice as tall <i>Dilation</i></p>
--	---

Describe the result of applying each transformation to a figure $[A(x, y)]$ in the coordinate plane. Be specific with direction and distance.

Examples

Answers

1) $G(x, y) = (x + 3, y - 9)$

Translate right 3 and down 9.

2) $R(x, y) = (4x, 3y)$

Four times as wide and three times as tall.

3) $L(x, y) = (-x, y)$

Reflection over the y-axis.

4) $B(x, y) = (2x, -5y)$

Reflection over the x-axis, twice as wide, and five times as tall.

Write the original coordinates and the new coordinates and then write the rule for the transformation.

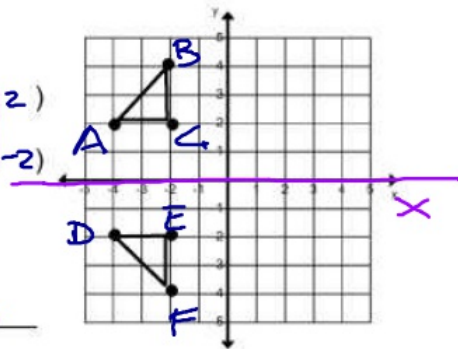
5)

Original Coordinates: $A(-4, 2)$ $B(-2, 4)$ $C(-2, 2)$

New Coordinates: $D(-4, -2)$ $E(-2, -4)$ $F(-2, -2)$

Rule: $(x, -y)$

Description: reflection across the x-axis.



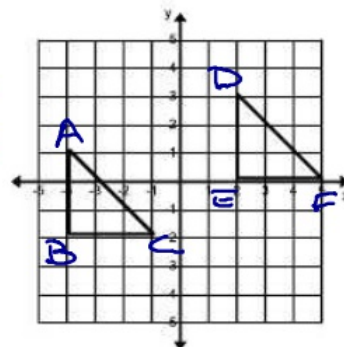
6)

Original Coordinates: $A(-4, 1)$ $B(-4, -2)$ $C(-1, -2)$

New Coordinates: $D(2, 3)$ $E(2, 0)$ $F(5, 0)$

Rule: $(x+6, y+2)$

Description: right 6 and up 2 translation.



Assignment: T2-23 Transformations

Date _____ Period _____

Describe the result of applying each transformation to a figure $[A(x, y)]$ in the coordinate plane. Be specific with direction and distance.

1. $H(x, y) = (x - 2, y + 3)$

2. $R(x, y) = (x + 3, -y)$

3. $T(x, y) = (-x, -y)$

4. $K(x, y) = \left(\frac{1}{2}x, 6y\right)$

5. $D(x, y) = (x, y - 6)$

6. $R(x, y) = (x - 4, y - 1)$

7. $G(x, y) = (x, -y - 4)$

8. $F(x, y) = (8x, 10y)$

Write the rule for each transformation described below for a given (x, y) coordinate.

9. translation 6 units right

10. translation 4 units down

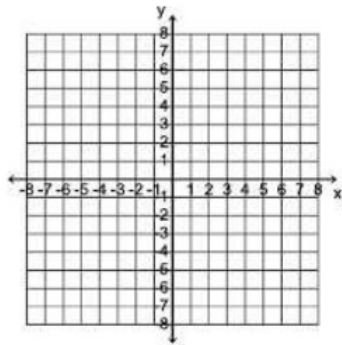
11. reflection across the x -axis and translated up 3 units

12. translation 9 units right and 8 units down

The coordinates of $\triangle ABC$ are $A(-2, 3)$, $B(-3, 1)$, and $C(4, 2)$. Plot the points and draw the triangle. Use the given rule to transform the figure. Write down the new vertices. Then describe the transformation.

13. $\triangle DEF$

Vertices

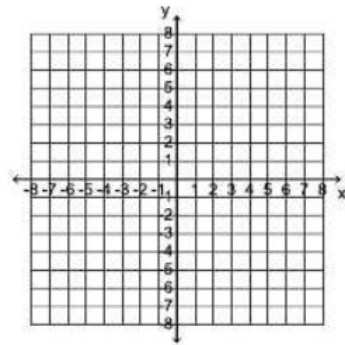


Rule: $(2x, y)$

Transformation

14. $\triangle GHI$

Vertices

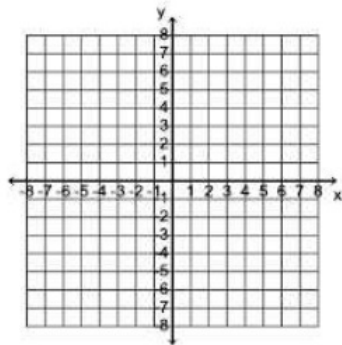


Rule: $(x, -y)$

Transformation:

15. $\triangle JKL$

Vertices

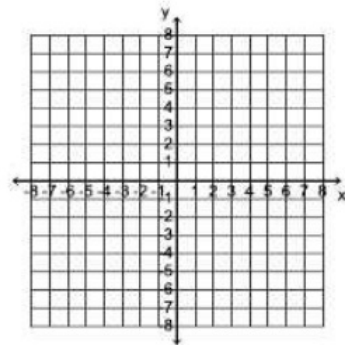


Rule: $(x+3, y-2)$

Transformation:

16. $\triangle MNO$

Vertices



Rule: $(x-2, y-1)$

Transformation: