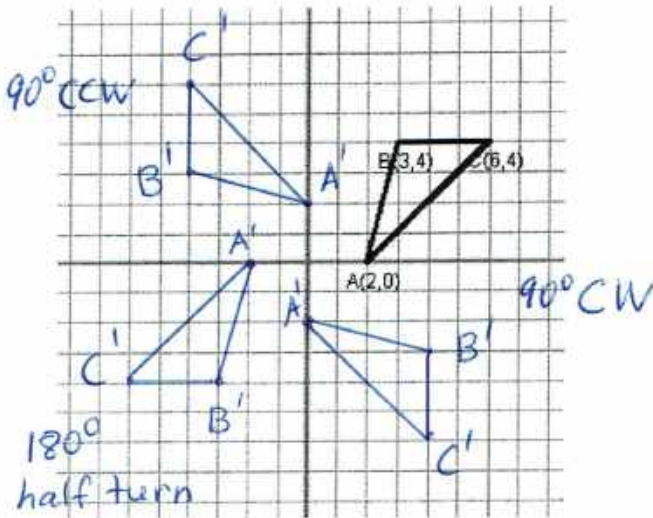


Rotation – a turn in a given direction a given number of degrees about a fixed point (called the center)

Activity 9: Rotations on the Coordinate Plane



- $\triangle ABC$ has coordinates $A(2,0)$, $B(3,4)$, $C(6,4)$. Trace the triangle and the x- and y-axes on patty paper.
- Rotate $\triangle ABC$ 90° counter-clockwise, using the axes you traced to help you line it back up correctly. Record the new coordinates. $A'(\underline{0}, \underline{2})$, $B'(\underline{-4}, \underline{3})$, $C'(\underline{-4}, \underline{6})$
- Rotate $\triangle ABC$ 90° clockwise, using the axes you traced to help you line it back up correctly. Record the new coordinates. $A''(\underline{2}, \underline{-2})$, $B''(\underline{4}, \underline{-3})$, $C''(\underline{4}, \underline{-6})$
- Rotate $\triangle ABC$ 180° , using the axes you traced to help you line it back up correctly. Record the new coordinates. $A'''(\underline{-2}, \underline{0})$, $B'''(\underline{-3}, \underline{-4})$, $C'''(\underline{-6}, \underline{-4})$

Checkpoint: Look at the patterns & complete the rule. Then summarize the pattern/rule in words.

- A 90° counter-clockwise rotation maps $(x, y) \rightarrow (\underline{-y}, \underline{x})$.
 - A 90° clockwise rotation maps $(x, y) \rightarrow (\underline{y}, \underline{-x})$.
 - A 180° rotation maps $(x, y) \rightarrow (\underline{-x}, \underline{-y})$.
 - A rotation of 270° clockwise is equivalent to a rotation of 90° counter-clockwise.
 - A rotation of 270° counterclockwise is equivalent to a rotation of 90° clockwise.
- } switch order and fix signs for new quadrant
} keep order and take opp. of both

GO ③

Topic: Slopes of parallel and perpendicular lines and finding slope and distance between two points.

For each linear equation write the slope of a line parallel to the given line.

11. $y = -3x + 5$

$m = -3$
 $m_{\parallel} = -3$

12. $y = 7x - 3$

$m = 7$
 $m_{\parallel} = 7$

13. $3x - 2y = 8$

$m = \frac{3}{2}$
 $m_{\parallel} = \frac{3}{2}$

$2y = 3x - 8$
 $y = \frac{3}{2}x - 4$

For each linear equation write the slope of a line perpendicular to the given line.

14. $y = -\frac{2}{7}x + 5$

$m = -\frac{2}{7}$
 $m_{\perp} = \frac{7}{2}$

15. $y = \frac{1}{5}x - 4$

$m = \frac{1}{5}$
 $m_{\perp} = -5$

16. $3x + 5y = -15$

$m = -\frac{3}{5}$
 $m_{\perp} = \frac{5}{3}$

$5y = -3x - 15$
 $y = -\frac{3}{5}x - 3$

Find the slope between each pair of points. Then, using the Pythagorean Theorem, find the distance between each pair of points. You may use the graph to help you as needed.

17. $(-2, -3)$ $(1, 1)$

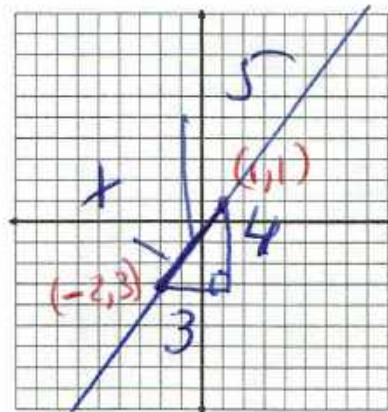
a. Slope:

$m = \frac{4}{3}$

b. Distance:

5

$x^2 = 3^2 + 4^2$
 $x^2 = 9 + 16$
 $x^2 = 25$
 $x = 5$



18. $(-7, 5)$ $(-2, -7)$

a. Slope:

$m = -\frac{12}{5}$

b. Distance:

13