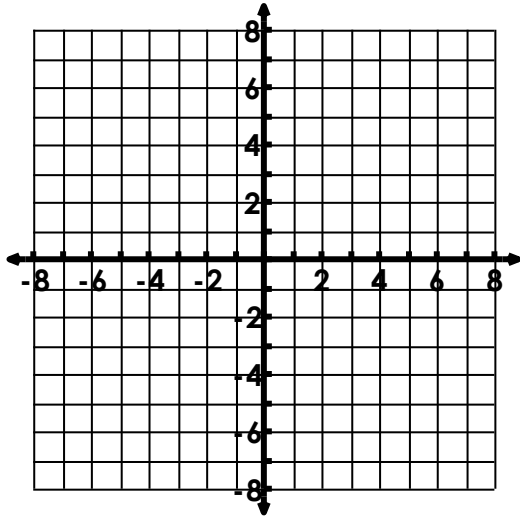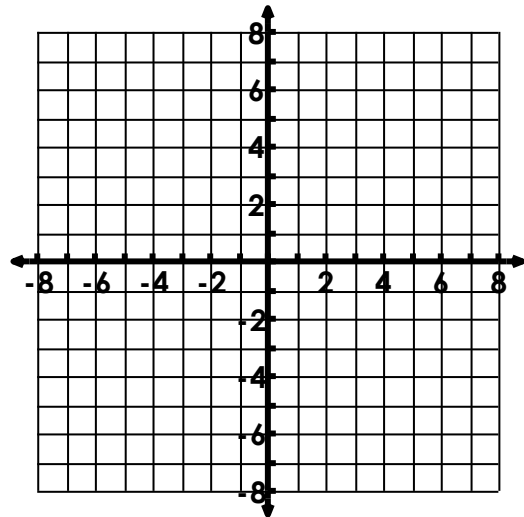# Unit 10 Coordinate Geometry Review Guide

1. Use the distance formula to calculate the distance between two points.

a. Find the distance between the given points:
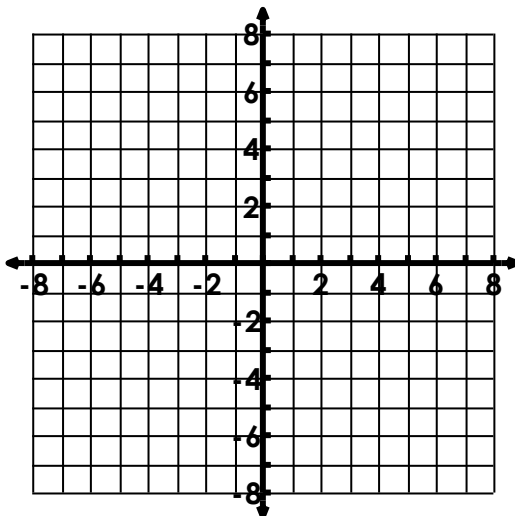A(-3, 1) & B (-5, -8)

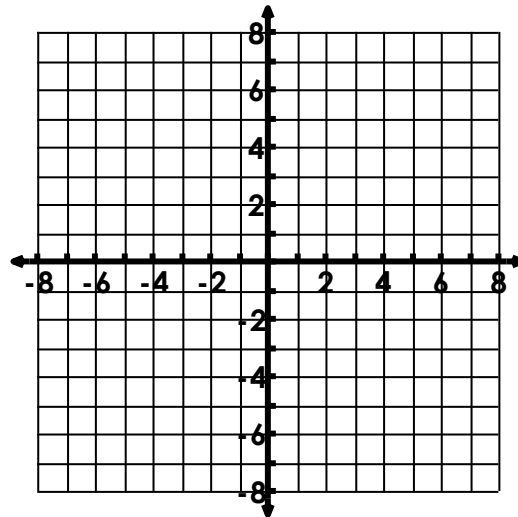b. Find the length of the segment that has the endpoints (0, 0) and (3, 4).

2. Use the midpoint formula to calculate the midpoint or an endpoint when given the midpoint.

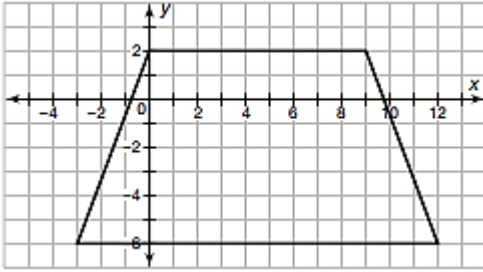a. Find the midpoint of the segment that has the endpoints (-6, 7) and (2, 3).

b. Find the coordinates of the other endpoint of a segment with an endpoint of A(-2, 0) and a midpoint M(3, -1).
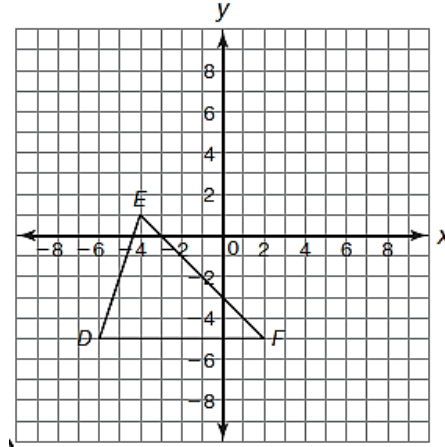
3. *Find the area and perimeter of a figure in the coordinate plane. Leave all answers in simplified radical form.*
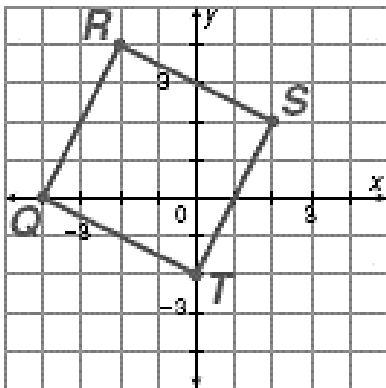
a. Find the area & perimeter of the following figure:

b. Find the area & perimeter of the following figure:

c. Find the area and perimeter of the following figure:

4. Determine if a pair of lines are parallel, perpendicular, or neither. Explain why.
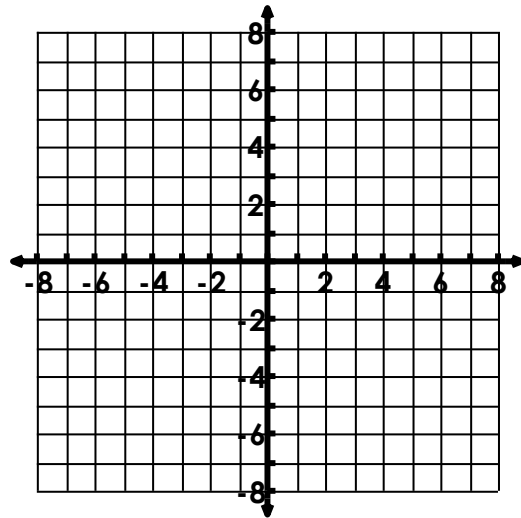
a.
$$y = -2x + 4$$
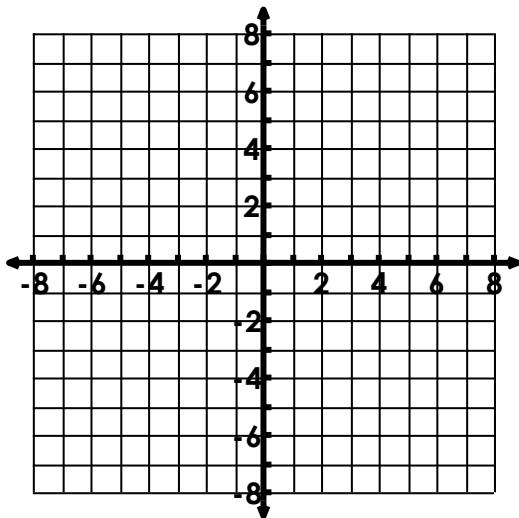$$y = \frac{1}{2}x - 5$$

b.
$$2x + 4y = 8$$
$$3x + 6y = -6$$

5. Given the slope and a point on a line, determine the equation of a line parallel or perpendicular to the original line

a. Write an equation of a line that is parallel to y = 2x - 8 and passes through the point (3,10).

b. Write an equation of a line that is perpendicular to y = 1/3x – 1 and passes through the point (6, 3).

6. *Determine if the quadrilateral ABCD can best be described as a parallelogram, square, rectangle, rhombus, or trapezoid. Then explain why using coordinate geometry concepts.*

a.

Side lengths: $AB = \sqrt{20}$, $BC = \sqrt{45}$, $CD = \sqrt{20}$, $DA = \sqrt{45}$

Slope of $\overline{AB}$ is -2 Slope of $\overline{BC}$ is $\frac{1}{2}$

Slope of $\overline{CD}$ is -2 Slope of $\overline{DA}$ is $\frac{1}{2}$

b.

Side lengths: $AB = \sqrt{13}$, $BC = \sqrt{13}$, $CD = \sqrt{13}$, $DA = \sqrt{13}$

Slope of $\overline{AB}$ is $-\frac{3}{2}$ Slope of $\overline{BC}$ is 1

Slope of $\overline{CD}$ is $-\frac{3}{2}$ Slope of $\overline{DA}$ is 1

c.

Side lengths: $AB = \sqrt{13}$, $BC = \sqrt{17}$, $CD = \sqrt{52}$, $DA = \sqrt{10}$

Slope of $\overline{AB}$ is $\frac{2}{3}$ Slope of $\overline{BC}$ is $-\frac{1}{4}$

Slope of $\overline{CD}$ is $\frac{2}{3}$ Slope of $\overline{DA}$ is -3

d.

Side lengths: $AB = \sqrt{14}$, $BC = \sqrt{14}$, $CD = \sqrt{14}$, $DA = \sqrt{14}$
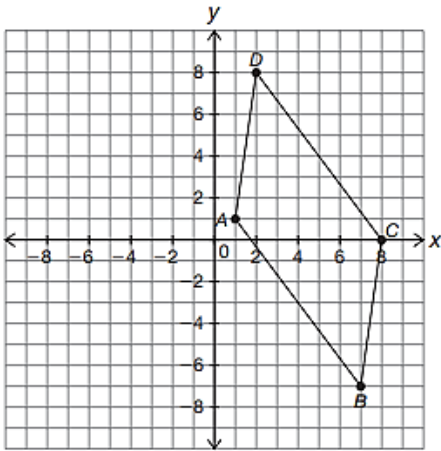
Slope of $\overline{AB}$ is $\frac{1}{8}$ Slope of $\overline{BC}$ is -8

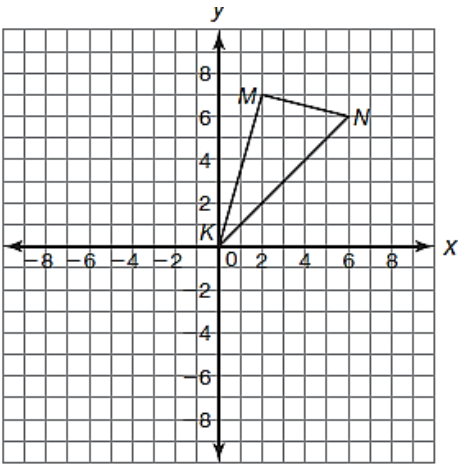Slope of $\overline{CD}$ is $\frac{1}{8}$ Slope of $\overline{DA}$ is -8

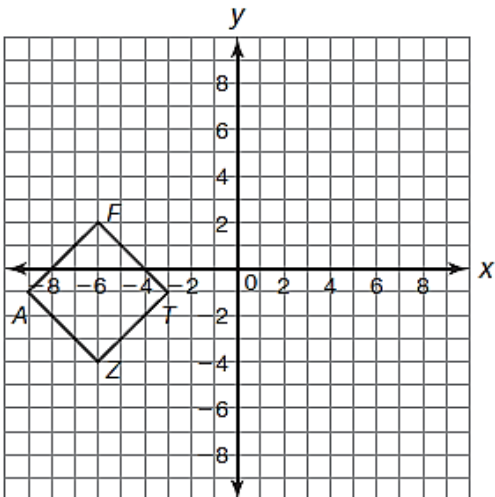7. Use the following graphs to complete coordinate proofs:

a. Prove or disprove the following figure is a parallelogram:

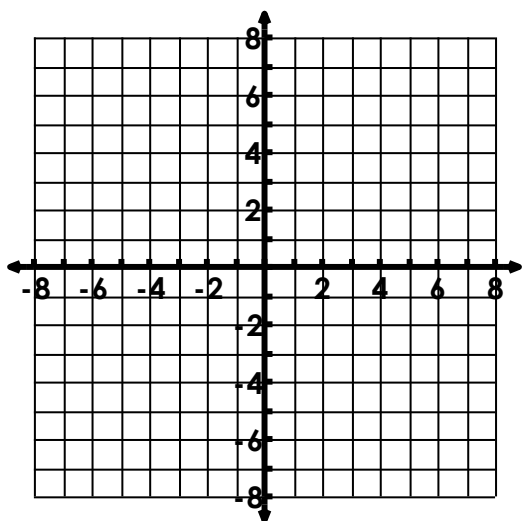b. Prove or disprove that the following figure is a right triangle:

c. Prove or disprove the following figure is a square:

8. Partition a line segment on the coordinate plane.

a. Find the coordinate of point P that lies along the directed line segment from A(1, 5) to B(6, 10) and partitions the segment in the ratio of 3 to 2.

b. Find the coordinates of the point P that lies along the directed segment from A(1, 0) to B(7, 3) and partitions the segment in the ratio of 2:1.