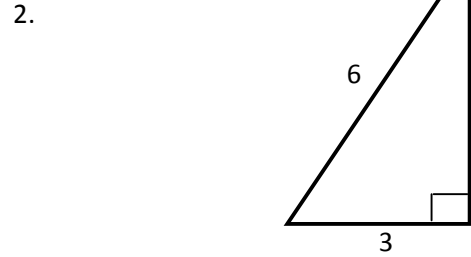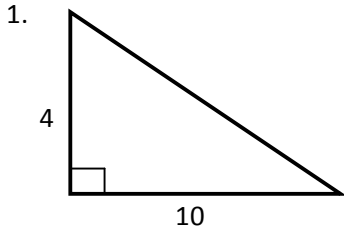I can develop a formula for distance. I can develop a formula for midpoint.

Finding Distances: Solve for the missing side of the triangles below.

1.

4

10

2.

6

3

You can use the Pythagorean Theorem to help you find the distance between
the points $A(2, 5)$ and $B(-4, -3)$.

A   Plot the points A and B in the coordinate plane at right.

B   Draw $\overline{AB}$.

C   Draw a vertical line through point A and a horizontal
line through point B to create a right triangle. Label the
intersection of the vertical line and the horizontal line as
point C.

D   Each small grid square is 1 unit by 1 unit. Use this fact to
find the lengths AC and BC.

$AC =$ _____ $BC =$ _____
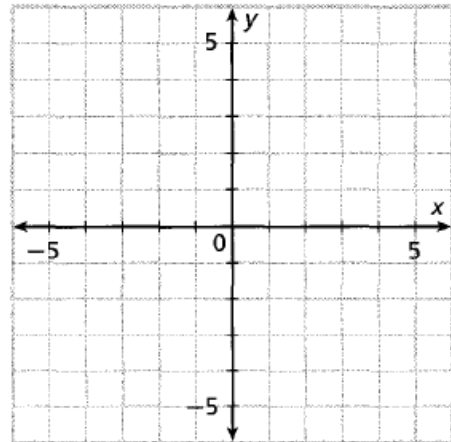
E   By the Pythagorean Theorem, $AB^2 = AC^2 + BC^2$.
Complete the following using the lengths from Step D.

$AB^2 = ^2 + ^2$

REFLECT

1a. Explain how you solved for AB in Step F.

_____

1b. Can you use the above method to find the distance between any two points in the
coordinate plane? Explain.

_____

_____

I can develop a formula for distance. I can develop a formula for midpoint.

Given: $A(x_1, y_1)$, $B(x_2, y_2)$

Find: The distance between A and B repeating the process above realizing that the only change is that both ordered pairs are unknown/variables.
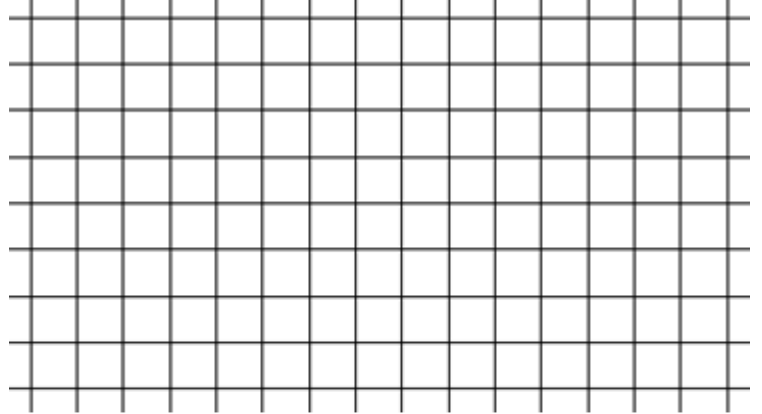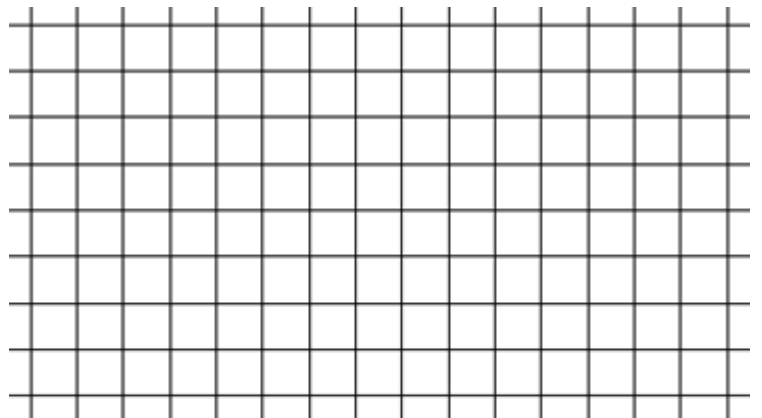

Distance Formula:

Processing:

1. Find the distance between (8, -4) and (2, 2).   2. Find the distance between (-1, 2) and (-4, 6).

Finding Midpoints:

Given $A(x_1, y_1)$, $B(x_2, y_2)$

Find: The midpoint of AB.

Midpoint Formula:

I can develop a formula for distance. I can develop a formula for midpoint.

Note: The result of this formula is **NOT** a distance or length – it is a **POINT**.