NAME

Module 18 Solving Radical Equations
Lesson 4 Solving Problems Using the Distance and Midpoint Formulas

guided notes

Lesson Objectives

- Recognize distance as the absolute value of a difference.
- Demonstrate the correct use of the Pythagorean Theorem.
- Use the distance formula to solve problems.
- Use the midpoint formula to solve problems.

In the Pythagorean Theorem, if c is the length of hypotenuse of the right triangle and a and b are the lengths of the legs, then $c^2 =$ $a^2 + b^2$.

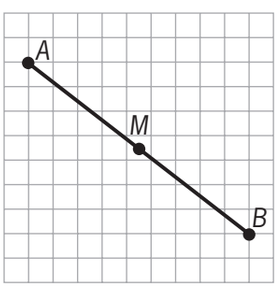
To determine the distance between two points on a number line, find the absolute value of the **difference** between their coordinates.

The distance between points (x_1,y_1) and (x_2,y_2) is given by the Distance Formula $d =$ $\sqrt{(x_2 - x_1)^2 - (x_2 - x_1)^2}$.

1. Find the distance between point R with coordinates (4, –6) and point S with coordinates (–4, –10).

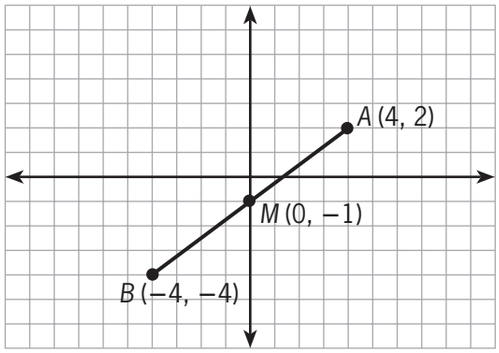
   $4\sqrt{5}$ miles or about 8.9 miles

The midpoint of $\overline{AB}$ is the point M such that **$AM = MB$**.



The midpoint of a segment can be found using the Midpoint Formula.

The midpoint between points $A(x_1,y_1)$ and $B(x_2,y_2)$ is the point
M $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$.



2. What is the distance from Mike's house, $M(0, -1)$, to Angelo's house, $A(4, 2)$?

5 units

3. What is the distance from Mike's house, $M(0, -1)$, to Brenda's house, $B(-4, -4)$?

5 units