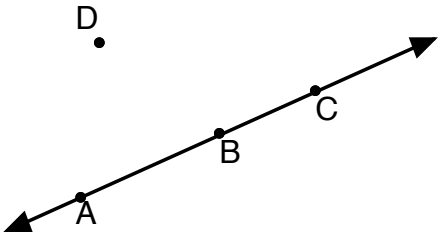
Section 1.4
Measuring Segments

Objective To find the distance between two points on a number line and between two points in a coordinate plane, and
to use the Pythagorean Theorem to find the length of the hypotenuse of a right triangle

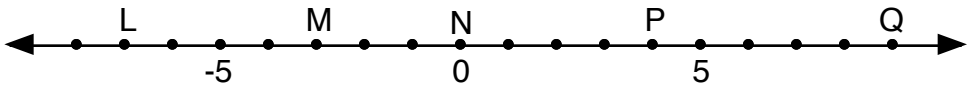
In the figure point B is **between** points A and C, while point D is not between A and C. For B to be between A and C, all three points must be collinear. Segments AB, written $\overline{AB}$, consist of points A and B and all points between A and B. The **measure** of $\overline{AB}$ written AB (no bar over the letters) is the distance between A and B.



To find the distance between two points on a number line.

$$AB = |A - B|$$
$$BA = |B - A|$$

Find the measure of each segment



1. LM

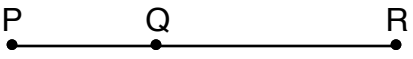
2. MQ

3. PL

4. PQ

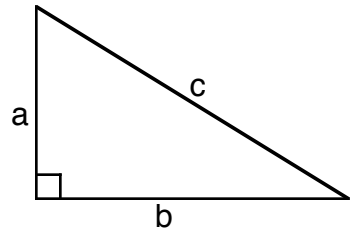
5. LQ

Segment Addition Postulate If Q is between P and R, then PQ+QR=PR.
It PQ+QR=PR, then Q is between P and R.



1. Find the measure of $\overline{MN}$ if N is between M and P,
MN = 3x+2, NP = 18, and MP = 5x

Pythagorean Theorem In a right triangle, the sum of the squares of the measures of the legs equals the $a^2 + b^2 = c^2$ square of the measure of the hypotenuse.



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

1. Find the distance from A(1,2) to B(4,6)

A. Solve by using the Pythagorean Thm. B. Solve by using the distance formula

When two segments have the same length, they are said to be **congruent** segments. For example, if $AB = CD$, then we write $\overline{AB} \cong \overline{CD}$ which is read "segment AB is congruent to segment CD."