1.2: SEGMENTS AND DISTANCE

Objective: _____

_____

To measure the ***LENGTH*** of a segment, you can use a number line to find the ***DISTANCE*** between the two endpoints, or you can use the formula:

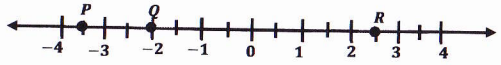
$$d = |a - b|$$

(Where a & b are endpoints of the segment.)

EXAMPLE 1: Find the distance between -2 and 6 on a number line.

$d = |-2 - 6| = |-8| = 8$

EXAMPLE 2: Find PQ, QR and PR on the number line shown below.



$PQ =$ _____ $QR =$ _____ $PR =$ _____

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

EXAMPLE 1: If B is between A and C and $AB = 4$ and $BC = 5$, then $AC =$ _____.

EXAMPLE 2: If $AB = x$, $BC = x + 6$ and $AC = 24$, then find AB and BC.

$AB =$ _____; $BC =$ _____

EXAMPLE 3: Find LM if L is between N and M, $NL = 6x - 5$, $LM = 2x + 3$ and $NM = 30$.

$LM =$ _____

When a segment is drawn on a coordinate plane, you can find its ***LENGTH*** by using the ***DISTANCE*** formula:

$$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$$

EXAMPLE 5: Find the distance between $(2,-1)$ and $(-2,-1)$.

$x_1\ y_1 \qquad x_2\ y_2$

$$d = \sqrt{(-2-2)^2 + (-1-(-1))^2}$$
$$= \sqrt{(-4)^2 + (0)^2}$$
$$= \sqrt{16}$$
$$= 4$$

EXAMPLE 6: Find the distance between $(5,-2)$ and $(-2,-3)$.

EXAMPLE 7: Find AB.