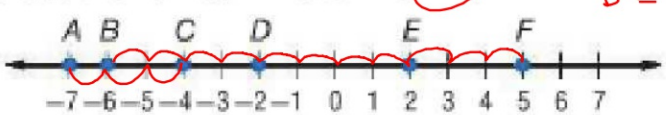
VOCABULARY WORDS	PICTURES
1. Coordinate: The real number that corresponds to a point	(5, 2)
2. Distance/Length On a Number Line: The absolute value of the distance between two coordinates. **Ex: If P has coordinate x_1 and Q has coordinate x_2 :**	

Example 1:

A. **Use the number line to find BE.** Distance between B E



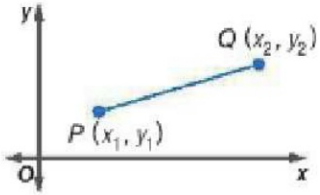
*8

B. **Find AC.**

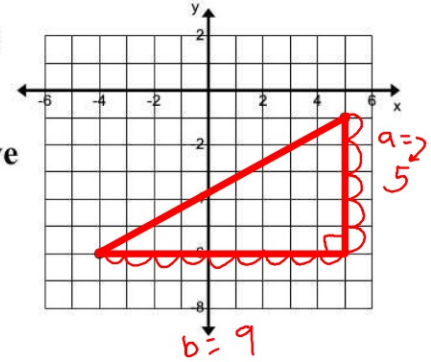
3

C. **Find FB.**

11

THEOREMS & FORMULAS	PICTURES
1. Pythagorean Theorem: **In a right triangle with sides, a, b, & c,**	$c^2 = a^2 + b^2$ $c = \sqrt{a^2 + b^2}$ ⋮ $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
2. Distance Formula: If P has coordinates (x_1, y_1) and Q has coordinates (x_2, y_2), then $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.	

Example 2: Find the distance between C(-4, -6) and D(5, -1) using the Pythagorean Theorem. Give the exact & estimated decimal values rounded to the nearest tenth.



$a^2 + b^2 = c^2$

$(5)^2 + (9)^2 = c^2$

$25 + 81 = c^2$

$\sqrt{106} = \sqrt{c^2}$

$c = \sqrt{106}$

≈ 10.3

Example 3: Find the distance between each pair of points. Give the exact & estimated decimal values rounded to the nearest tenth.

a. **X(1, 3) and Y(2, 7)**

$d = \sqrt{(2-1)^2 + (7-3)^2}$

$= \sqrt{(1)^2 + (4)^2}$

$= \sqrt{1+16}$

$= \sqrt{17}$ exact

≈ 4.1 estimate approximation

$d = \sqrt{(1-2)^2 + (3-7)^2}$

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

b. **E(-5, 6) and F(8, -4)**

$d = \sqrt{(8 - -5)^2 + (-4-6)^2}$

$= \sqrt{269}$ exact

≈ 16.4 approximate

c. **J(4, 3) and K(-3, -7)**

$d = \sqrt{(-3-4)^2 + (-7-3)^2}$

$= \sqrt{149} \approx 12.2$

Example 4: Find the distance between the two points. Give the exact & estimated decimal values rounded to the nearest tenth.

a. **A(2, 4) and B (-2, 2)**

b. **X(0, 5) and Y(-2, 3)**