Lesson 11.5- SWBAT use the distance formula to calculate the length of a line on the coordinate plane.

Kick off-

Directions: Simplify each of the following.

1) Factor completely: $10p^3 - 2p^2 - 36p$

$2p(5p^2 - p - 18)$

MP: $-90p^2$

2) $(x-5)^2$

$(x-5)(x-5)$

3) $\frac{-9x^{-5} \cdot 2x^9}{} = -18x^4$

Multiply add exponents

4) $\frac{2x^4y^7}{2x^7y^7}$ $x^{4-7} = x^{-3}$

Divide * subtract exponents

$\frac{-1}{6x^3}$

$2^{-1} = \frac{1}{2}$

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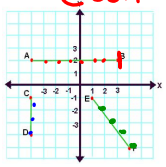
Distance - the length of a line.

Method 1: Count!



Length AB: 7

Length CD: 3

Length EF: ?

*Can't use for diagonals

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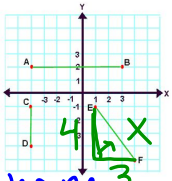
Method 2: Pythagoren Theorem

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

triangle!

hypotenuse



$4^2 + 3^2 = x^2$

$16 + 9 = x^2$

$\sqrt{25} = \sqrt{x^2}$

$5 = x$

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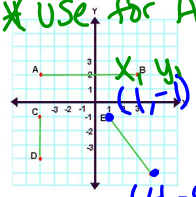
Method 3: Distance Formula

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

* use for ANY Line*



x_1, y_1 $(1,-1)$

$(4,-5)$ x_2, y_2

$\sqrt{(4-1)^2 + (-5+1)^2}$

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

$\sqrt{9+16}$

$\sqrt{25} = 5$

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Examples:

1) Find the length of a line segment connecting the points (-2, -3) and (-4, 4).

x_1, y_1 x_2, y_2

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

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

$\sqrt{(-2)^2 + (7)^2} = \sqrt{4+49}$

$\sqrt{53}$

4, 9, 16, 25, 36, 49

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2) Find the length of a line segment connecting the points (2, -3) and (-1, -2).

$(-1-2)^2 + (-2+3)^2$

$\sqrt{9+1}$ $\sqrt{10}$

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3) Find the length of a line segment whose endpoints are (-3, 4) and (5, 4).

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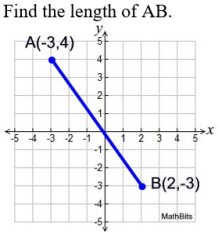
4) Find the length of AB.



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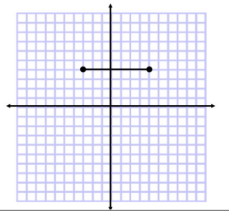
Exit Ticket

Are the following line segments congruent?

Line 1: (-4, 2) & (1, -3)

Line 2:



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