

Welcome Back MYP Math 9!

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: 10/9 Topic: No HW - Unit 1 Test Friday	0 1 2	
Tuesday Date: 10/10 Topic: Pythagorean Thm. Practice	0 1 2	
Wednesday Date: _____ Topic: _____	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

Class Plan:

1. Warm-up
2. 8A Distance Between Two Points

A THE DISTANCE BETWEEN TWO POINTS

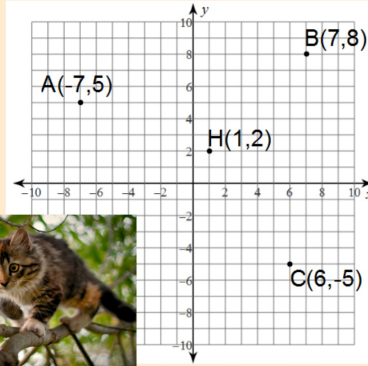
3. Joke!
4. Practice

8A Opening Problem: Cat in a Tree!

Fire stations have been alerted, and firefighters from the closest station will save the kitty.

a) Will the firefighter come from station A, B, or C?

b) What is the equation of the line from the firestation to the house?



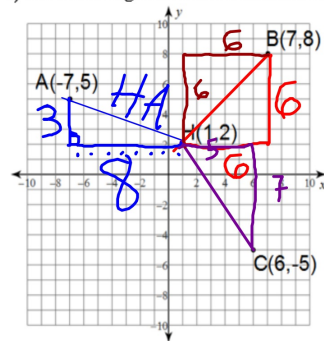
8A Opening Problem: $y = x + 1$ (line BH) Cat in a Tree!

b) What is the equation of the line from the firestation to the house?

Opening Problem: Cat in a tree

Fire stations have been alerted, and firefighters from the closest station will save the kitty.

a) Will the firefighters come from station A, B, or C?



$$\begin{aligned}
 HA^2 &= 3^2 + 8^2 & HA &= \sqrt{73} \\
 HA^2 &= 9 + 64 \\
 HA^2 &= 73 \\
 HB^2 &= 6^2 + 6^2 & HB &= \sqrt{72} \\
 HB^2 &= 72 \\
 HC^2 &= 5^2 + 7^2 & HC &= \sqrt{74} \\
 HC^2 &= 25 + 49
 \end{aligned}$$

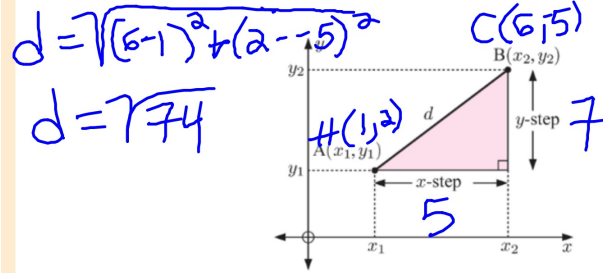
A

THE DISTANCE BETWEEN TWO POINTS

The Distance Formula: The distance from A (x₁, y₁) to B (x₂, y₂).

$$d^2 = (x_1 - x_2)^2 + (y_1 - y_2)^2$$

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



A

THE DISTANCE BETWEEN TWO POINTS

THE DISTANCE FORMULA

Instead of graphing points and applying Pythagoras' theorem, we establish the **distance formula**.

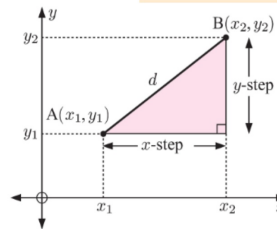
In going from A(x₁, y₁) to B(x₂, y₂),
 the x-step = x₂ - x₁
 and the y-step = y₂ - y₁.

Using Pythagoras' theorem,

$$d^2 = (x\text{-step})^2 + (y\text{-step})^2$$

$$\therefore d = \sqrt{(x\text{-step})^2 + (y\text{-step})^2}$$

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



The distance between two points on the number plane, A(x₁, y₁) and B(x₂, y₂), is given by:

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

A**THE DISTANCE BETWEEN TWO POINTS****3. Joke!**

Q: What kind of crackers do firemen like in their soup?

A: Firecrackers!



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A**THE DISTANCE BETWEEN TWO POINTS**

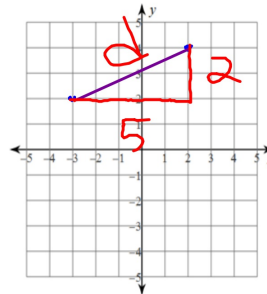
Example 1: Find the distance from A(-3,2) to B(2,4).

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

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

$$d = \sqrt{25 + 4}$$

$$d = \sqrt{29}$$



A**THE DISTANCE BETWEEN TWO POINTS**

Example 2: Find the distance from C(4,3) and D(-1,-1) (x_1, y_1) (x_2, y_2)

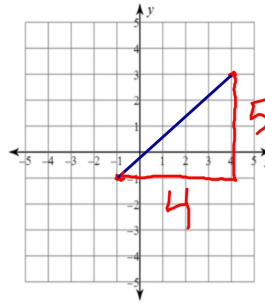
$$d = \sqrt{(4 - (-1))^2 + (3 - (-1))^2}$$

$$d = \sqrt{(4 - (-1))^2 + (3 - (-1))^2}$$

$$d = \sqrt{5^2 + 4^2}$$

$$d = \sqrt{25 + 16}$$

$$d = \sqrt{41}$$

**Exercises... 8A (p.150) #1, 3**

***Need graph paper**

- 2** By plotting points and using Pythagoras' theorem, find the distance between:
- | | |
|--------------------------------|-------------------------------|
| a O(0, 0) and M(3, 5) | b C(1, 2) and D(3, 7) |
| c A(-1, -2) and B(2, 3) | d A(1, 4) and B(2, -1) |
- 3** Two planes are travelling from A(-5, -4) to B(7, 5). The first plane must touch down at C(0, 2) along the way, and the second plane must touch down at D(4, 0) along the way. Each grid unit represents 10 km.
- Plot the points A, B, C, and D on a number plane.
 - Find the distance between A and B.
 - Find, correct to 1 decimal place, the total distance travelled by:
 - the first plane
 - the second plane.
 - Which plane has the shorter distance to travel?



SOLUTIONS

- 2 a $\sqrt{34}$ units b $\sqrt{29}$ units c $\sqrt{34}$ units
d $\sqrt{26}$ units e $\sqrt{17}$ units f $\sqrt{13}$ units

