

Name: _____

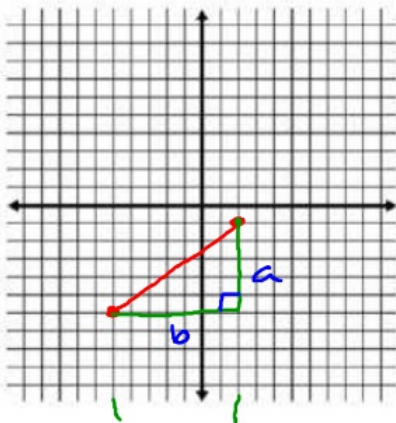
Period: _____

NS & L Day 6 IN CLASS

Secondary 2 Honors

Those silly wizards are at it again! Remember, Malfoy is in the car on the ground, he must follow the streets to get to Gringotts. Harry can fly along a straight line to get there, as he is borrowing Ron's magic flying car. *Make sure to label which coordinate is the starting point and which is the finishing point for each question.*

1) They race from $(-5, -6)$ to $(2, -1)$



a. Sketch both Harry's and Draco's path on the graph to the right.

b. Explain how to find Draco's horizontal distance ALGEBRAICALLY, then find it.

$$-5 - (-2) = -2 - (-5) \\ -7 \quad -7$$

c. Explain how to find Draco's vertical distance ALGEBRAICALLY, then find it.

$$-6 - (-1) = -1 - (-6) \\ -5 \quad 5$$

d. Explain how to use Draco's horizontal and vertical distances to find Harry's distance travelled, then find it.

$$a^2 + b^2 = c^2 \\ (5)^2 + (7)^2 = c^2$$

2) This time they race from $(2, -1)$ to (X, Y)

a. Find an expression for Draco's TOTAL horizontal distance.

$$2 - x$$

b. Find an expression for Draco's TOTAL vertical distance.

$$-1 - y$$

c. Use your answers above to find an expression for Harry's distance travelled in terms of X & Y.

$$(2-x)^2 + (-1-y)^2 = c^2$$

3) Think of (X_{start}, Y_{start}) as (X_1, Y_1) and (X_{finish}, Y_{finish}) as (X_2, Y_2) . So this time they race from (X_1, Y_1) to (X_2, Y_2) .

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

a. Find an expression for Draco's TOTAL horizontal distance.

$$x_2 - x_1$$

b. Find an expression for Draco's TOTAL vertical distance.

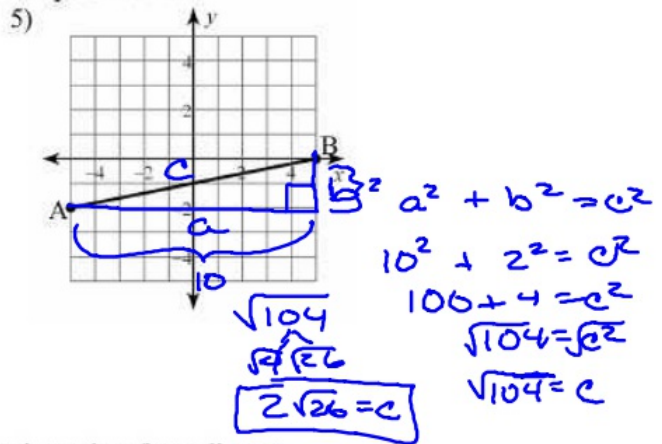
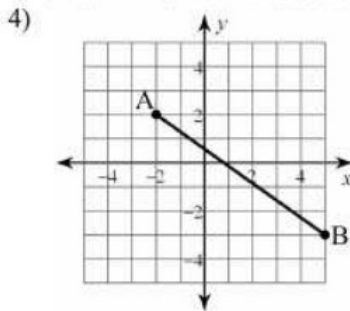
$$y_2 - y_1$$

c. Use your answers above to find an expression for Harry's distance travelled.

d. Does it matter which point we call the starting point and which point we call the finishing point when we are finding the distance between the 2 points? Explain why or why not.

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

Find the EXACT distance between points A & B. Show your work!!!



Find the EXACT distance between each of the following pairs of coordinates.

6) $(-1, 9)$ & $(-3, -5)$

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

$$d = \sqrt{(-3 - (-1))^2 + (-5 - 9)^2}$$

$$d = \sqrt{(-2)^2 + (-14)^2}$$

$$d = \sqrt{4 + 196}$$

$$d = \sqrt{200} = 10\sqrt{2}$$

7) $(2, -10)$ & $(0, 0)$

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

$$d = \sqrt{(0 - 2)^2 + (0 - (-10))^2}$$

$$d = \sqrt{(-2)^2 + (10)^2}$$

$$d = \sqrt{4 + 100}$$

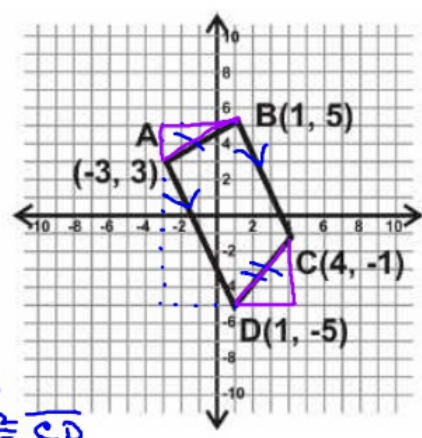
$$d = \sqrt{104} = 2\sqrt{26}$$

8) $(5, 2)$ & $(-3, 4)$

Coordinate Proofs

9) Hermione is helping Ron with his Muggle Studies homework. The assignment is to make an informal coordinate proof that will verify that the following shape is a trapezoid. Ron is having a hard time wanting to show his informal proof. "Of course it's a trapezoid! Look at it!" he says to Hermione. She replies, "well how do you know?" His response "because I'm magic, duuuuhhhh!" After a long stern look, Hermione says "yes, Ronald, but this is MUGGLE STUDIES!!!!" Fill out the following to help Ron with his homework:

- What properties would the figure on the coordinate plane need to have to be classified as a trapezoid?
parallel lines.
- What properties would the figure need to NOT have for trapezoid to be its most specific classification?
opposite congruent segments.
- Showing ALL your work verify your answers to parts a & b for the figure. Make sure to organize & label your work as this is your informal coordinate proof. Remember, you cannot do anything in your head, because unfortunately we aren't magic! ☺



Slope: $\frac{AD}{BC} : \frac{-8}{4} = -2$ | length. $\frac{AB}{CD} ? \frac{CD}{AB}$

$$\frac{AD}{BC} : \frac{-8}{4} = -2$$

$$\frac{BC}{AD} : \frac{4}{-8} = -\frac{1}{2}$$

$$\frac{AB}{CD} : \frac{2^2 + 4^2}{7} = \frac{20}{7}$$

$$\frac{CD}{AB} : \frac{4^2 + 3^2}{7} = \frac{25}{7}$$

Not equal - not isosceles

- 10) Given: Quadrilateral $ABCD$ has vertices $A(-5,6)$, $B(6,6)$, $C(8,-3)$, and $D(-3,-3)$.
 Prove: Quadrilateral $ABCD$ is a parallelogram but is neither a rhombus nor a rectangle.

a) What needs to be true in order to prove that $ABDC$ is a parallelogram?

Two segments that are parallel.

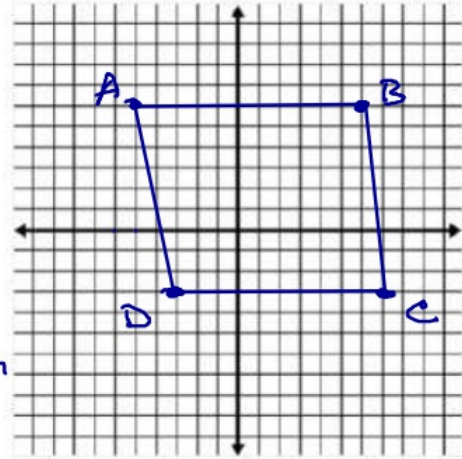
b) What needs to be true in order to prove that $ABDC$ is NOT a rhombus?

Two segments that are Not congruent.

c) What needs to be true in order to prove that $ABDC$ is NOT a rectangle?

Opposite segments that are Not parallel. or congruent length

d) Plot the points, and connect them, for Quadrilateral $ABDC$.



e) Showing all your work, remember this is your coordinate proof, verify that Quadrilateral $ABCD$ is a parallelogram but is neither a rhombus nor a rectangle.

a) Slope: $\frac{\overline{AB}}{\overline{CD}} = 0$ } congruent.

b) Length: $m\overline{AB} = 11$ } not congruent.
 $m\overline{CD} = 10$

c) Slope: $\frac{\overline{AD}}{\overline{BC}} = \frac{-9}{2}$ } not congruent.
 $\frac{-9}{1}$