Midpoint Formula

1. Opener

a) Evaluate: $a^3 - 3$ for a = -2

b) Simplify: $3^3 - 3 \cdot 4^2 - (2 - 7)$

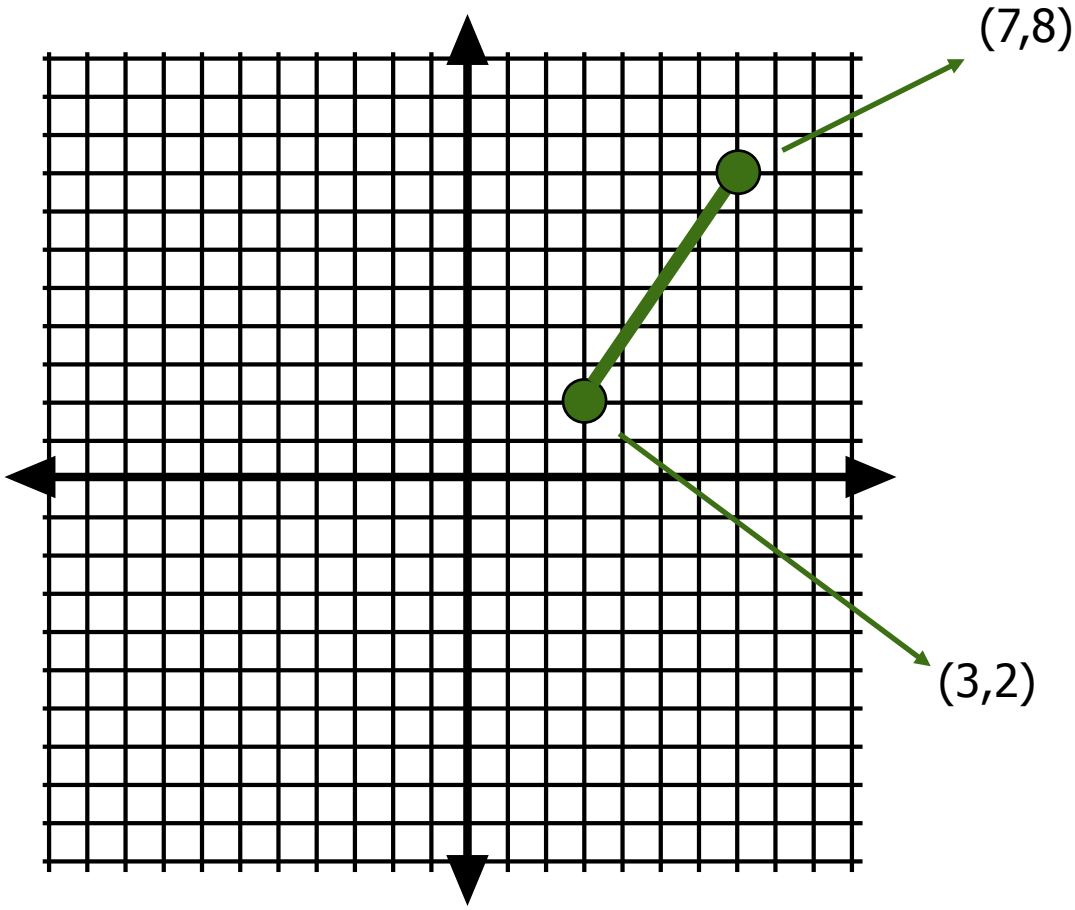
c) Simplify: $-3^2 - (2 - 4)^3$

d) What does Manero's Steakhouse in Greenwich, CN, give to any baby born in the restaurant?

e) What has no size, no friends, only location?

2. Notes - Midpoint Formula

How do we find the exact center of a line segment?



2. Notes - Midpoint Formula

How do we find the exact center of a line segment?

Conjecture 1: Midpoint Conjecture

If your points are (x_1, y_1) and (x_2, y_2) then your midpoint is:

2. Notes - Midpoint Formula

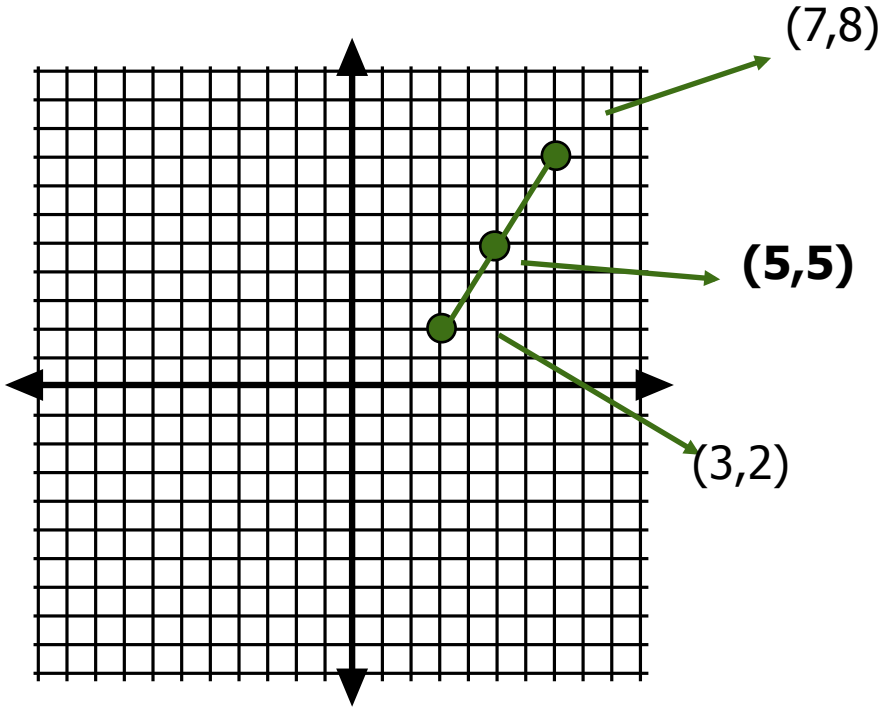
Let's make it work for us.

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

$$\left(\frac{7+3}{2}, \frac{8+2}{2}\right)$$

$$\left(\frac{10}{2}, \frac{10}{2}\right)$$

$$(5,5)$$



2. Notes - Midpoint Formula

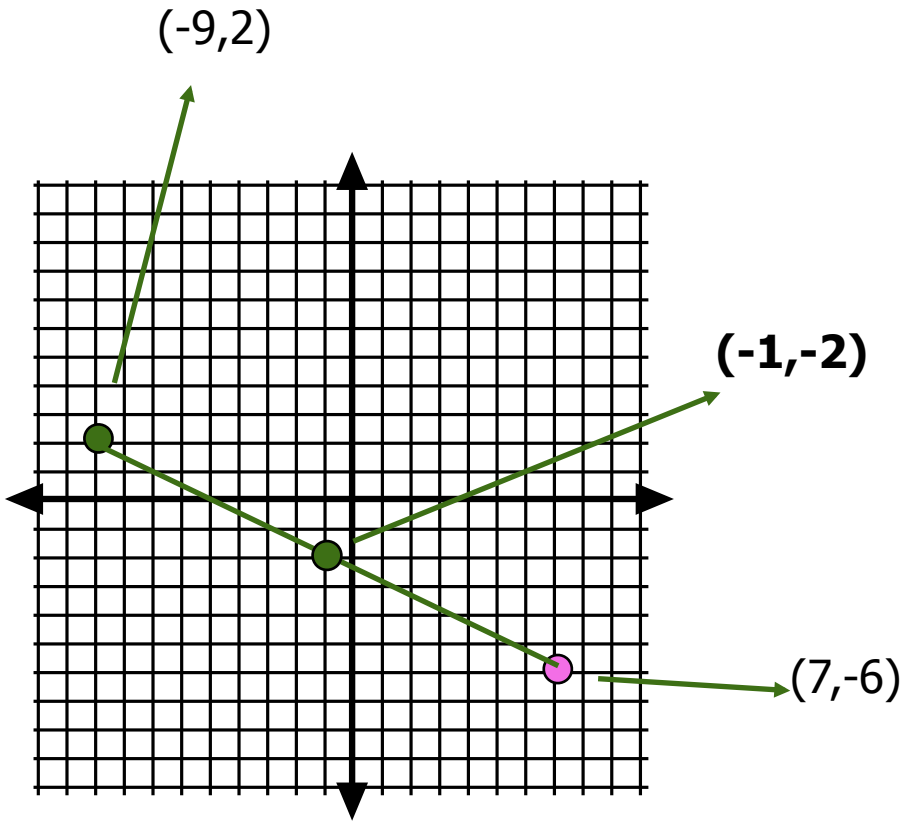
One more time.

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

$$\left(\frac{-9 + 7}{2}, \frac{2 + -6}{2}\right)$$

$$\left(\frac{-2}{2}, \frac{-4}{2}\right)$$

$$\mathbf{(-1,-2)}$$



3. Classwork

Follow the Questions on the next slide. DO NOT Copy the Questions!

Write the answers only!

1. (12, −7) and (−6, 15) **2.** (−17, −8) and (−1, 11) **3.** (14, −7) and (−3, 18)

4. One endpoint of a segment is (12, −8). The midpoint is (3, 18). Find the coordinates of the other endpoint.

5. A classmate tells you, "Finding the coordinates of a midpoint is easy. You just find the averages." Is there any truth to it? Explain what you think your classmate means.

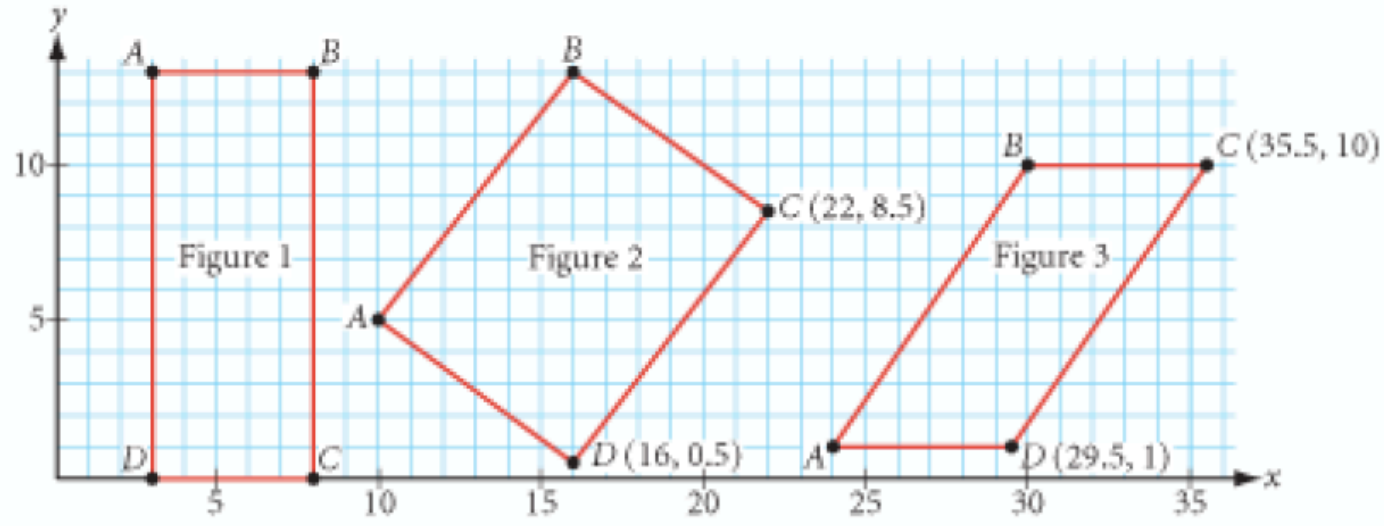
6. Find the two points on $\overline{AB}$ that divide the segment into three congruent parts. Point A has coordinates (0, 0) and point B has coordinates (9, 6). Explain your method.

7. Describe a way to find points that divide a segment into fourths.

8. In each figure below, imagine drawing the diagonals $\overline{AC}$ and $\overline{BD}$

a. Find the midpoint of $\overline{AC}$ and the midpoint of $\overline{BD}$ in each figure.

b. What do you notice about the midpoints?



4. Homework - all questions no exceptions

LESSON 1.4: 1-5; 12; 29-32; 42-43; 79; 83-84