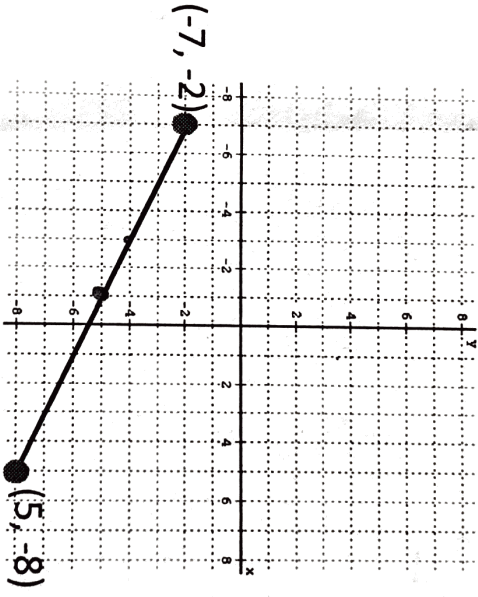
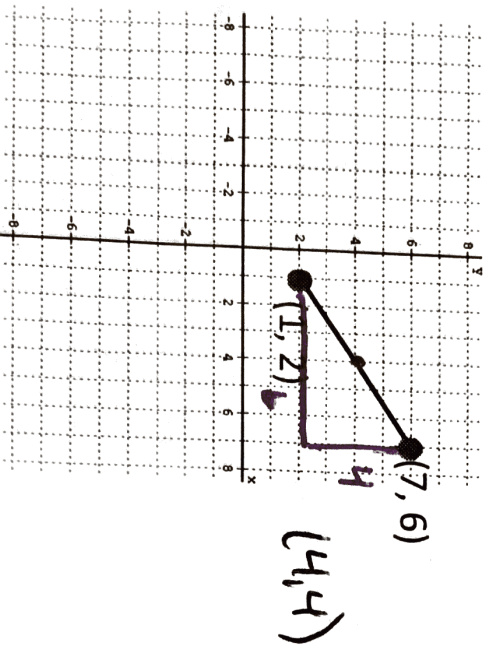


Exploration: Finding the Midpoint of a Segment

Key

1) A segment is a piece of a line. It goes from point to point and does not continue on forever. The midpoint of a segment is the point that is exactly halfway between the two endpoints. If you had to guess, where would you say the midpoint of each segment is?



- 2) Where do you think the midpoint would be if the coordinates were (200, 471) and (300, 473)?
- 3) If I give you any two numbers, what mathematical steps can you take to always find the number that is halfway in between them?

4) If (x_1, y_1) and (x_2, y_2) are the coordinates of two points, can you come up with a formula that will give you the midpoint of the segment that connects them?

STOP: CHECK WITH A TEACHER TO SEE IF YOUR FORMULA IS RIGHT BEFORE MOVING ON!!!!

Find the midpoint of the segment with the given coordinates.

- 5) (6, 3) and (9, 11) 6) (-2, 8) and (-10, -6) 7) (-7, 0) and (8, -18) 8) (4, 8) is the midpt of (-2, 5) and (?, ?)
- $(7.5, 7)$ $(-6, 1)$ $(\frac{1}{2}, -9)$ $(10, 11)$

$(-1, -5)$

$(250, 472)$

FORMULA:

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

$$\frac{-2 + x}{2} = 4$$

$$\frac{5 + y}{2} = 8$$