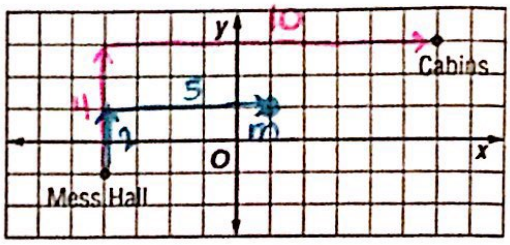
Day 4: Midpoint Formula Practice

Problem 1: Troop 175 is designing their new campground by first mapping everything on a coordinate grid. They have found a location for the mess hall and for their cabins. They want the bathrooms to be halfway between these two. What will be the coordinates of the location of the bathrooms? (-4,-1) & (6,3)



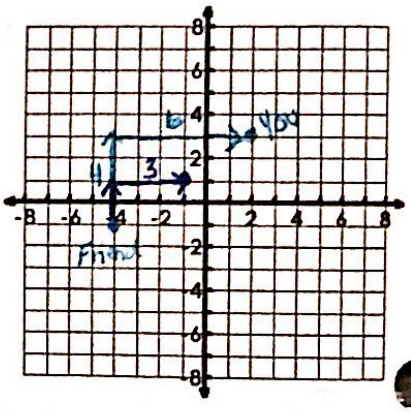
$x = \frac{-4+6}{2}$ $y = \frac{-1+3}{2}$

$x = \frac{2}{2}$ $y = \frac{2}{2}$

$x = 1$ $y = 1$

Bathrooms: (1,1)

Problem 2: You and a friend go hiking. You hike 3 miles north and 2 miles west. Starting from the same point, your friend hikes 4 miles east and 1 mile south. If you and your friend wanted to meet for lunch, where could you meet so that both of you hike the same distance? (2,3) and (-4,-1)



$x = \frac{2+-4}{2}$ $y = \frac{3+-1}{2}$

$x = \frac{-2}{2}$ $y = \frac{2}{2}$

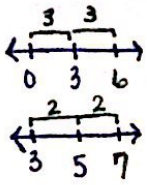
$x = -1$ $y = 1$

You could meet 1 mile west and 1 mile north.

Problem 3: Determine the other endpoint given one of the endpoints and the midpoint.

a. Endpoint (0, 3) and Midpoint (3, 5) (x, y)

$2 \cdot 3 = \frac{0+x_2}{2} \cdot 2$ $2 \cdot 5 = \frac{3+y_2}{2} \cdot 2$



$6 = 0 + x_2$ $10 = 3 + y_2$

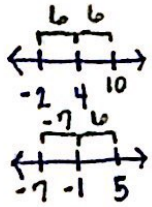
$-3 \quad -3$

$6 = x_2$ $7 = y_2$

(6, 7)

b. Endpoint (-2, 5) and Midpoint (4, -1) (x, y)

$2 \cdot 4 = \frac{-2+x_2}{2} \cdot 2$ $2 \cdot -1 = \frac{5+y_2}{2} \cdot 2$

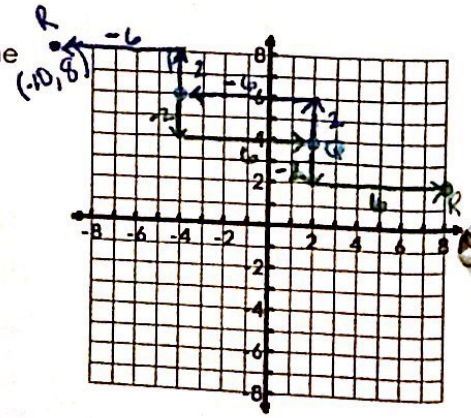


$8 = -2 + x_2$ $-2 = 5 + y_2$

$10 = x_2$ $-7 = y_2$

(10, -7)

Problem 4: Points P(-4, 6), Q(2, 4) and R are collinear. One of the points is the midpoint of the segment formed by the other two points. What are the possible coordinates of R?



If P is the midpoint, R would be (-10,8)

If Q is the midpoint, R would be (8,2)