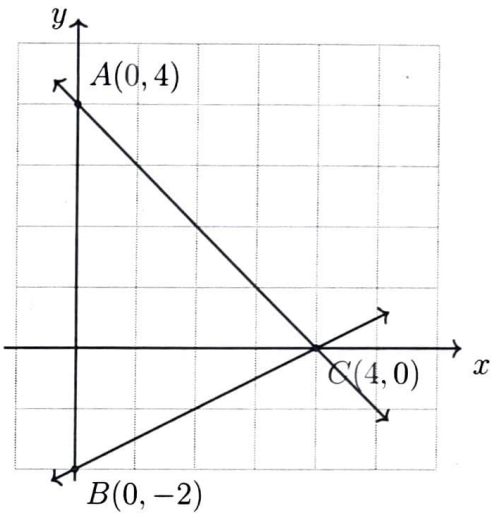
Name: Solutions

6.9 Pop Quiz: Slope-intercept form of linear equations

8.F.A.3

1. Two lines are shown in the graph below.



   (a) Write down their equations in slope-intercept form.

$\overleftrightarrow{AC}$: $y = -x + 4$

$\overleftrightarrow{BC}$: $y = \frac{1}{2}x - 2$

   (b) Write down their intersection as an ordered pair.

$(4, 0)$

   (c) Show that the lines are not perpendicular by taking the product of their slopes.

$-1 \times \frac{1}{2} = -\frac{1}{2} \neq -1$

The midpoint formula

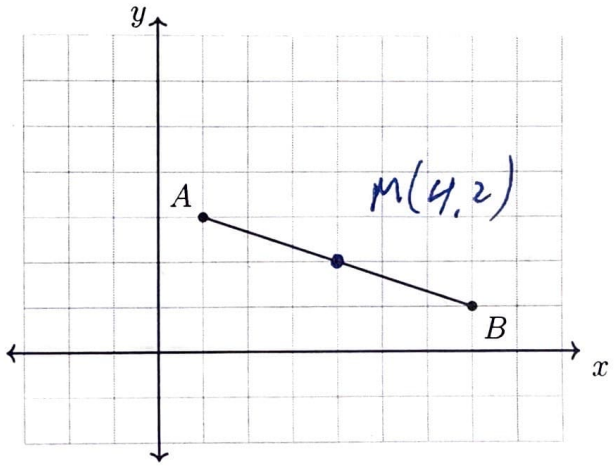
2. Write down the midpoint formula.

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

3. In the diagram below, $\overline{AB}$ has endpoints with coordinates $A(1, 3)$ and $B(7, 1)$. Find the coordinates of the midpoint M of $\overline{AB}$. Mark and label it on the graph.

$$M = \left(\frac{1+7}{2}, \frac{3+1}{2} \right)$$

$$= (4, 2)$$



The distance formula

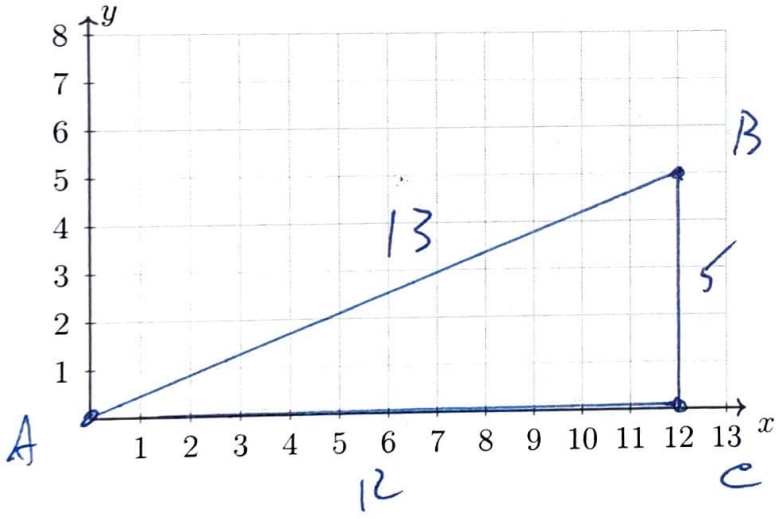
4. Write down the distance formula.

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

5. What is the length of $\overline{PQ}$ if $P(3,1)$ and $Q(9,9)$?

$$PQ = \sqrt{(9-3)^2 + (9-1)^2}$$
$$= \sqrt{6^2 + 8^2}$$
$$= \sqrt{36+64} = \sqrt{100} = 10$$

6. Graph and label $\triangle ABC$. Calculate the lengths of its sides. $A(0,0)$, $B(12,5)$, $C(12,0)$.



$AC = 12$

$BC = 5$

$$AB = \sqrt{12^2 + 5^2}$$
$$= \sqrt{144 + 25}$$
$$= \sqrt{169}$$
$$= 13$$

7. Write the linear equation $x - 3y = 9$ in the form $y = mx + b$.

$$-3y = -x + 9$$
$$y = \frac{1}{3}x - 3$$