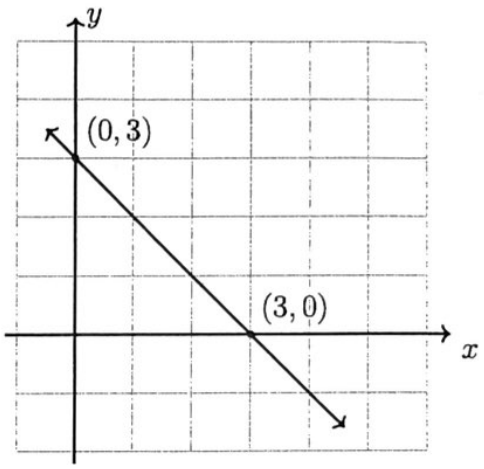
Name: SOLUTIONS

6.12 Pre-Test: Analytic geometry **8.F.A.3**

1. A line is plotted in the graph below.



   (a) Write down the y-intercept of the line.

   3

   (b) What is the slope of the line?

   -1

   (c) What is the x-intercept of the line?

   3

   (d) Write down its equation in slope-intercept form.

   $y = -x + 3$

2. Find the slope of the line through the points $(1, 3)$ and $(7, 6)$.

$$m = \frac{6-3}{7-1} = \frac{3}{6} = \frac{1}{2}$$

3. A line has a slope of $\frac{2}{3}$ and passes through the point $(9, 7)$.

   (a) Write the equation of the line in the form $(y - y_1) = m(x - x_1)$.

$$y - 7 = \frac{2}{3}(x - 9)$$

   (b) Rewrite the equation of the line in the form $y = mx + b$.

$$y - 7 = \frac{2}{3}x - 6$$

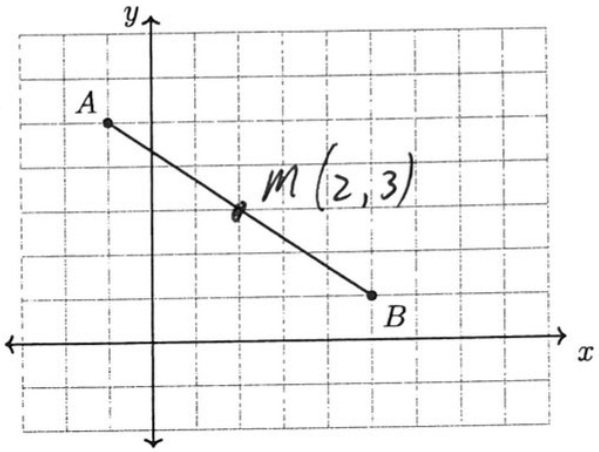
$$y = \frac{2}{3}x + 1$$

The midpoint formula **HSG.GPE.B.6**

4. In the diagram below, $\overline{AB}$ has endpoints with coordinates $A(-1,5)$ and $B(5,1)$. Find the coordinates of the midpoint M of $\overline{AB}$. Mark and label it on the graph.

$M = \left(\frac{-1+5}{2}, \frac{5+1}{2}\right)$

$= (2, 3)$



5. Find the midpoint of $\overline{PQ}$ if $P(3,7)$ and $Q(13,2)$.

$M = \left(\frac{3+13}{2}, \frac{7+2}{2}\right)$

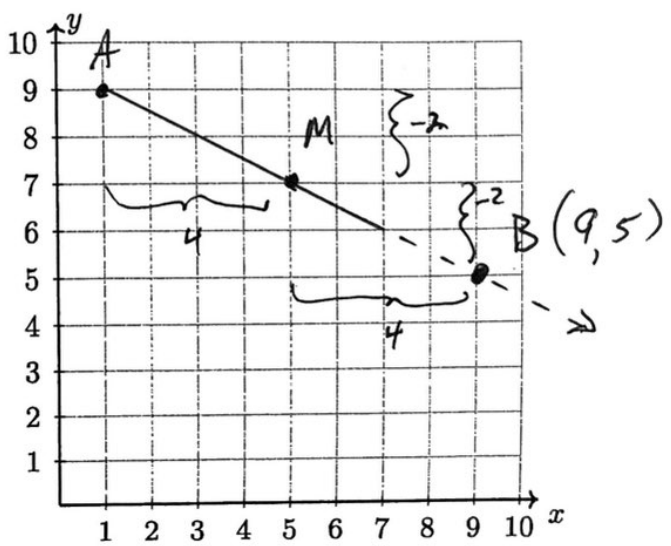
$= \left(8, 4\frac{1}{2}\right)$

6. Given the midpoint $M(5,7)$ of $\overline{AB}$ with $A(1,9)$. Find the coordinates of point B. The use of the grid below is optional.

$M = \left(\frac{1+x}{2}, \frac{9+y}{2}\right) = (5, 7)$

$(1+x, 9+y) = (10, 14)$

$(x, y) = (9, 5)$



The distance formula **8.G.B.8**

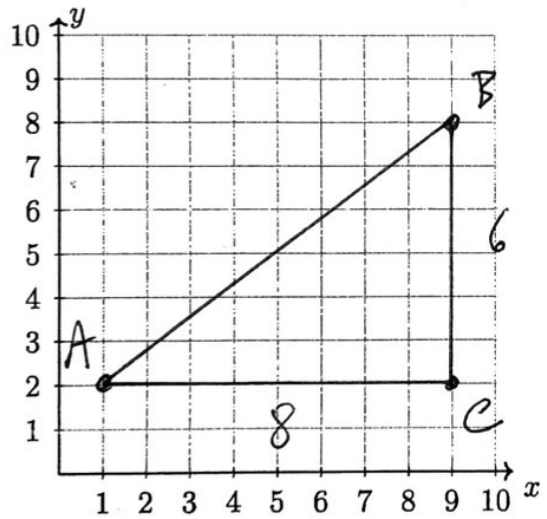
7. Use the distance formula to find the length of $\overline{RS}$ if $R(3, 14)$ and $S(8, 2)$.

$d = \sqrt{(8-3)^2 + (2-14)^2}$

$= \sqrt{5^2 + (-12)^2}$

$= \sqrt{25 + 144} = \sqrt{169} = 13$

8. Graph and label $\triangle ABC$, $A(1, 2)$, $B(9, 8)$, $C(9, 2)$.



Find the lengths of its sides.

(a) $AC =$ 8

(b) $BC =$ 6

(c) $AB = \sqrt{6^2 + 8^2}$

$= \sqrt{36 + 64}$

$= \sqrt{100} = 10$

Parallel and perpendicular slopes **HSG.GPE.B.5**

9. The slope of a line is $m = \frac{1}{2}$. What is the slope of the line perpendicular to it?

-2

10. What is the slope a line parallel to the line $y = -3x + 1$?

-3

Systems of equations **8.G.B.8**

11. Riley buys ten sandwiches for a party. Small sandwiches cost \$4 and large ones \$8. The total cost was \$48. How many of each size did they buy?

$x + y = 10$

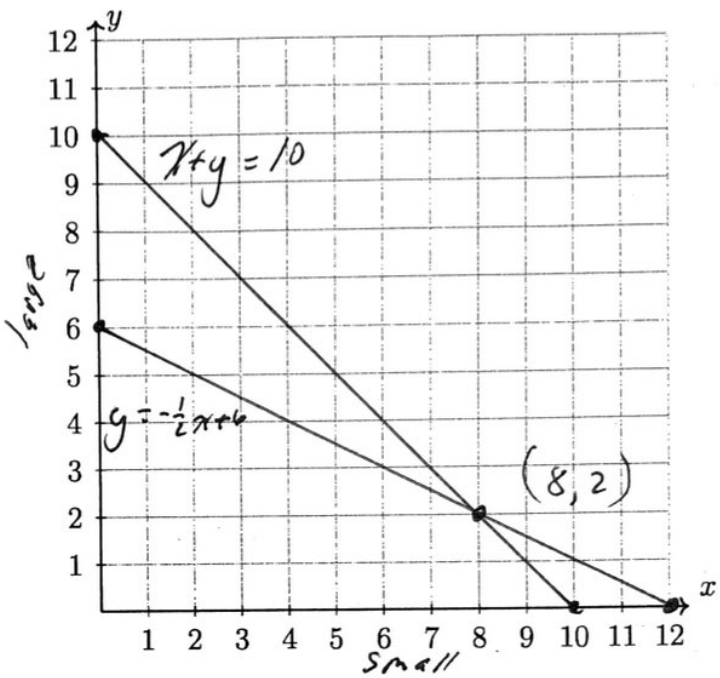
$4x + 8y = 48$

$8y = -4x + 48$

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

8 small

2 large



12. Graph and label the two equations. Mark their intersection as an ordered pair.

$f(x) = -x + 5$ $g(x) = \frac{3}{4}x - 2$