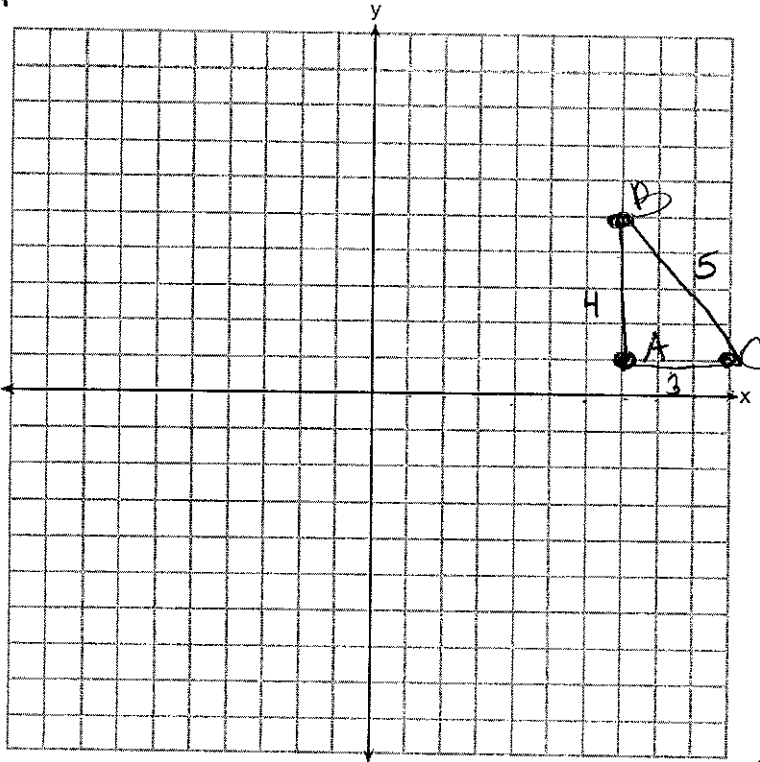


Name: KeyDate: HW 9/15/17Coordinate Geometry Review

1. The vertices of triangle ABC are A(7, 1), B(7, 5), and C(10, 1). Find the area of the triangle using the distance formula.

NOT  
on  
Assessment

$$d_{AB} = \sqrt{(7-7)^2 + (1-5)^2}$$

$$= \sqrt{(0)^2 + (-4)^2}$$

$$d = \sqrt{0+16} = \sqrt{16} = 4$$

$$d_{BC} = \sqrt{(7-10)^2 + (5-1)^2}$$

$$= \sqrt{(-3)^2 + (4)^2}$$

$$d = \sqrt{9+16} = \sqrt{25} = 5$$

$$d_{AC} = \sqrt{(7-10)^2 + (1-1)^2}$$

$$= \sqrt{(-3)^2 + (0)^2}$$

$$d = \sqrt{9+0} = \sqrt{9} = 3$$

$$A = \frac{b \cdot h}{2} = \frac{3 \cdot 4}{2} = 6 \text{ u}^2$$

2.

What are the coordinates of the midpoint of the line segment whose endpoints are  $(c, 0)$  and  $(0, d)$ ?

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

$$M = \left( \frac{c+0}{2}, \frac{0+d}{2} \right)$$

$$M = \left( \frac{c}{2}, \frac{d}{2} \right)$$

3

Find the value of  $k$  so that the slope of the line joining  $(4, k)$  and  $(5, k^2)$  is 20.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$20 = \frac{k^2 - k}{5 - 4}$$

$$k^2 - k = 20$$

$$k^2 - k - 20 = 0$$

$$(k-5)(k+4) = 0$$

$k = 5$	$k = -4$
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Factor:

$$\frac{20}{1} = \frac{k^2 - k}{1}$$

4.

Change sign and flip fraction

What is the slope of a line that is perpendicular to the line whose equation is  $2x - y = 7$ ?

A

A)  $-\frac{1}{2}$

B)  $\frac{1}{2}$

C)  $-2$

D)  $2$

Explain your answer:  $\perp$  lines have negative reciprocal slopes

$$2x - y = 7$$

$$-y = -2x + 7$$

$$y = 2x - 7$$

$$m = 2 \quad \perp m = -\frac{1}{2}$$

5.

Write an equation of the line that passes through the points  $(-1, -2)$  and  $(5, 1)$ .

$$m = \frac{-2 - 1}{-1 - 5} = \frac{-3}{-6} = \frac{1}{2}$$

$y - 1 = \frac{1}{2}(x - 5)$	or	$y + 2 = \frac{1}{2}(x + 1)$
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6.

The coordinates of the midpoint of line segment  $\overline{AB}$  are  $(1, 2)$ . If the coordinates of point A are  $(1, 0)$ , find the coordinates of point B.

$$\frac{x_m}{1} = \frac{x_1 + x_2}{2} \quad \left\{ \quad \frac{y_m}{1} = \frac{y_1 + y_2}{2} \right.$$

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

$$\frac{2}{1} = \frac{0 + y}{2}$$

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

$$x = 1$$

$$0 + y = 4$$

$$y = 4 \quad \boxed{B(1, 4)}$$

OR

Shortcut

A  $(1, 0) + 2$   
M  $(1, 2)$   
B  $(1, 4)$

7. *same slope*

Write an equation of the line parallel to the line  $5y + 6x = 11$  and passing through the point  $(-3, 7)$ .

$$5y = -6x + 11 \quad || m = -\frac{6}{5} \quad (-3, 7)$$

$$y = -\frac{6}{5}x + \frac{11}{5}$$

$$m = -\frac{6}{5}$$

$$\boxed{y - 7 = -\frac{6}{5}(x + 3)}$$

8. Write the equation of the line, in slope-intercept form, that is the perpendicular bisector of the line segment having endpoints of  $(-4, -2)$  and  $(8, 4)$ .

$$m = \frac{4 - (-2)}{8 - (-4)} = \frac{6}{12} = \frac{1}{2}$$

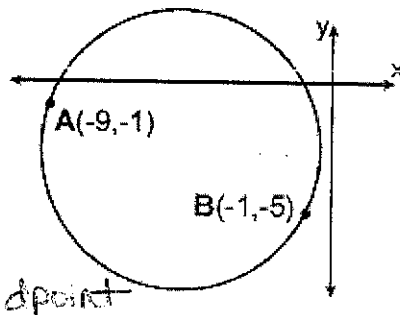
$$\perp m = -2$$

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

$$y - 1 = -2(x - 2)$$
$$\boxed{y = -2x + 5}$$

9.

$\overline{AB}$  is the diameter of the circle shown in the accompanying diagram.



What are the coordinates of the center of this circle?

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

$$= \left( \frac{-9 + (-1)}{2}, \frac{-1 + (-5)}{2} \right)$$

$$= \left( \frac{-10}{2}, \frac{-6}{2} \right)$$

$$\boxed{M = (-5, -3)}$$

10.

Find the value of  $k$ , given the points  $P(-1,5)$  and  $Q(k,2)$ , if  $\overline{PQ}$  has slope,  $m = \text{Undefined}$ .

Vertical  
line

$$K = x = -1$$

11.

The equations of two lines are  $5x = 4y - 10$  and  $5y - 4x = 7$ . Determine whether these lines are parallel, perpendicular, or neither.

$$4y = 5x + 10$$

$$y = \frac{5x + 10}{4}$$

$$m = \frac{5}{4}$$

$$5y = 4x + 7$$

$$y = \frac{4x + 7}{5}$$

$$m = \frac{4}{5}$$

$\therefore$  These lines are neither

12.

Find, in simplest radical form, the distance between points  $(-1,5)$  and  $(-7,3)$ .

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

$$d = \sqrt{(-7 - (-1))^2 + (3 - 5)^2}$$

$$d = \sqrt{(-6)^2 + (-2)^2} = \sqrt{36 + 4} = \sqrt{40}$$

$$d = \sqrt{4} \sqrt{10}$$

$$d = 2\sqrt{10}$$

13.

In quadrilateral ABCD,  $\overline{AB} \parallel \overline{CD}$ . If the slope of  $\overline{AB}$  and  $\overline{CD}$  are  $\frac{2}{5}$  and  $\frac{4}{x+2}$ , respectively, then what is the value of  $x$ ?

Same  
slope

$$\frac{2}{5} = \frac{4}{x+2}$$

$$2(x+2) = 20$$

$$2x + 4 = 20$$

$$2x = 16$$

$$x = 8$$