Name: Key
CC ALGEBRA 2

Date: 4/25/18
TROICI

QUIZ 9.1 REVIEW

QUIZ ON THURSDAY- APRIL 26, 2018!!!

Formulas (They will NOT be given to you on the test!)

Slope Formula	**Midpoint Formula**	**Distance Formula**
$m = \frac{y_2 - y_1}{x_2 - x_1}$	$MP = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$	$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$
Slope-intercept Form	**Point Slope Form**	**Parallel and Perpendicular Slope**
$y = mx + b$ *m = slope, b = y-intercept*	$y - y_1 = m(x - x_1)$	Parallel lines have: EQUAL slopes Perpendicular lines have: OPPOSITE RECIPROCAL slopes

Directed Line Segment Formula

$(x_1 + K(\text{RUN}), y_1 + K(\text{RISE}))$ $(x_2 - x_1)$ $(y_2 - y_1)$

x_1: 1st x value; K: 1st # / Total; y_1: 1st y value; 1st # / Total

REVIEW!

1. The slope of the line l is $-\frac{2}{3}$. What is the **slope** of a line perpendicular to line l?

Flip & switch → $\boxed{\frac{3}{2}}$

2. What is the **slope** of a line parallel to the line passing through the points $(4, 6)$ and $(-1, -2)$.

$x_1\ y_1 \quad x_2\ y_2$

$m = \frac{-2-6}{-1-4} = \frac{-8}{-5} = \boxed{\frac{8}{5}}$

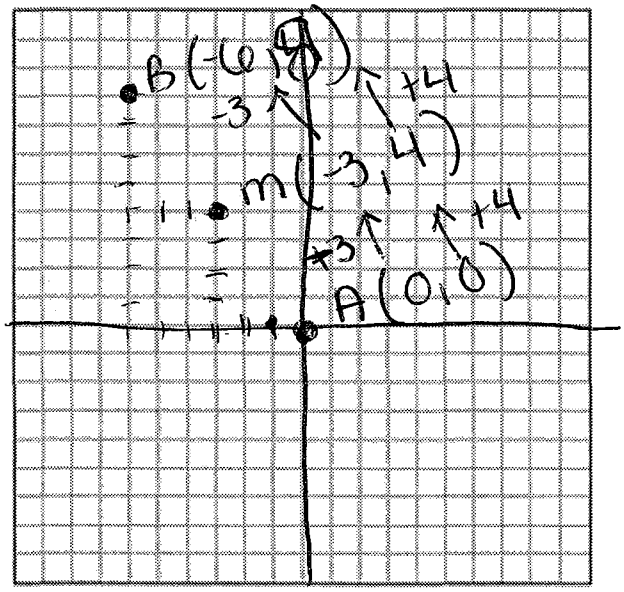
$x_1 y_1 \quad x_2 y_2$

3. In circle O, a diameter has endpoint $(-5, 4)$ and $(3, -6)$. What is the length of the diameter, to the nearest tenth?

$d = \sqrt{(-6-4)^2 + (3-5)^2}$

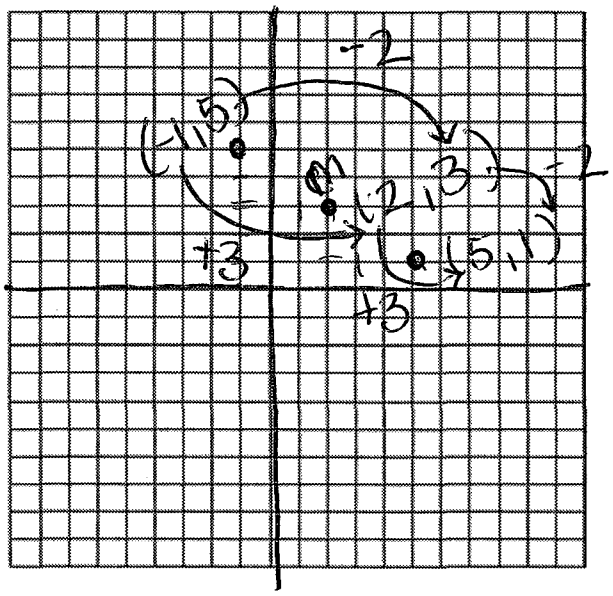
$d = \sqrt{104} \xrightarrow{\text{calc.}} \boxed{d = 12.8}$

4. The midpoint M of line segment AB has coordinates $(-3, 4)$. If point A is the origin, $(0, 0)$, what are the coordinates of point B? [The use of the accompanying grid is optional.]



$\boxed{B = (-6, 8)}$

5. In a circle whose center is $(2, 3)$, one endpoint of a diameter is $(-1, 5)$. Find the coordinates of the other endpoint of that diameter. [The use of the accompanying grid is optional.]



$\boxed{(5, 1)}$

x y

6. What is the equation of a line that passes through the point $(4, 5)$ and is:

same slope!

a) Parallel to $3x + 2y = 12$

$-3x \quad -3x$

$\frac{2y}{2} = \frac{-3x}{2} + \frac{12}{2}$

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

$m = \frac{-3}{2}$

$y = mx + b$

$5 = \frac{-3}{2}(4) + b$

$5 = -6 + b$

$+6 \quad +6$

$b = 11$

$y = -\frac{3}{2}x + 11$

b) Perpendicular to $4x + 3y = 12$

$-4x \quad -4x$

$\frac{3y}{3} = \frac{-4x}{3} + \frac{12}{3}$

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

$m = -\frac{4}{3}$

$+m = \frac{3}{4}$

$y = mx + b$

$5 = \frac{3}{4}(4) + b$

$5 = 3 + b$

$-3 \quad -3$

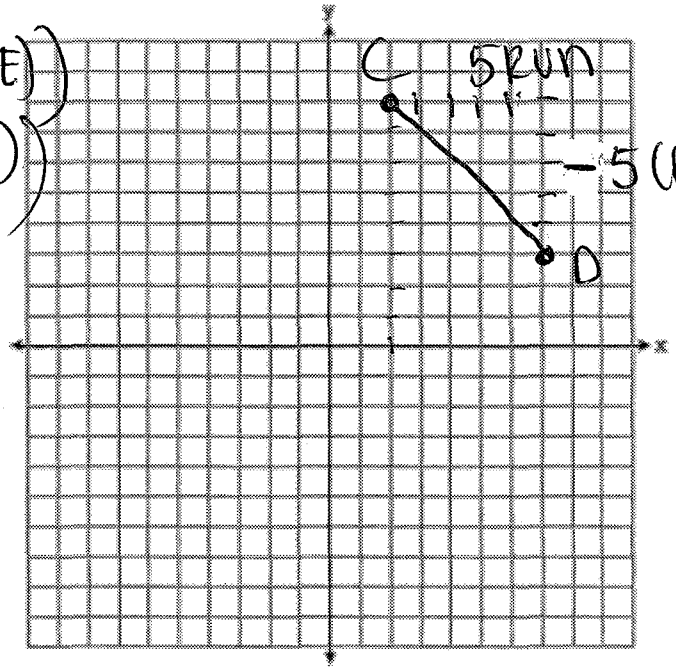
$b = 2$

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

7. What are the coordinates of the point that would divide the segment with endpoints $C(2, 8)$ and $D(7, 3)$ into two segments with a ratio of 4:1? *The use of the accompanying graph is optional.*

$x_1 = 2$
$y_1 = 8$
$K = \frac{4}{5}$
Rise $= -5$
Run $= 5$

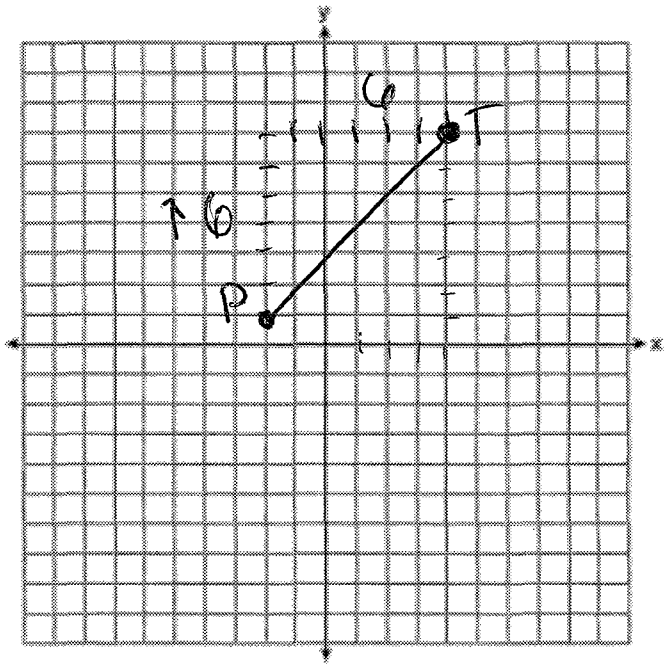
$(x_1 + K(\text{RUN}), y_1 + K(\text{RISE}))$
$(2 + \frac{4}{5}(5), 8 + \frac{4}{5}(-5))$
$(2 + 4, 8 + -4)$
$\boxed{(6, 4)}$



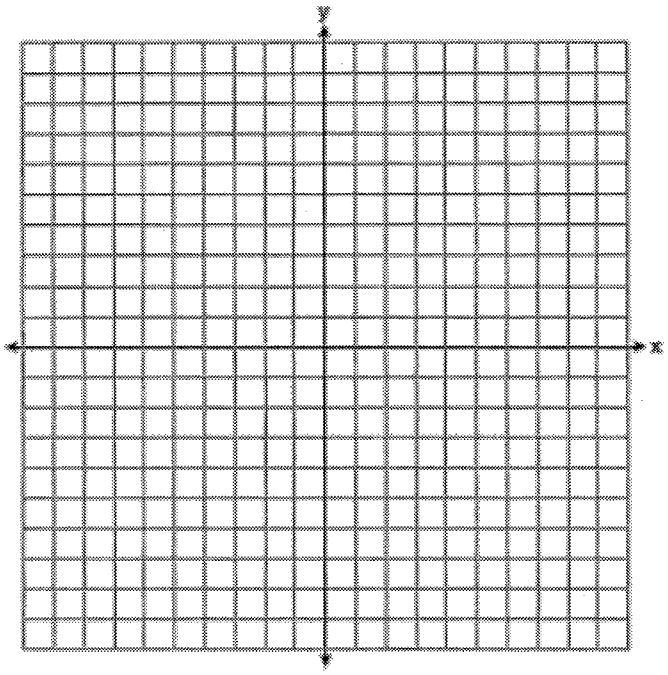
8. Directed line segment $\overline{PT}$ has endpoints whose coordinates are $P(-2, 1)$ and $T(4, 7)$. Determine the coordinates of point J that divides the segment into a ratio of 2 to 1. *The use of the accompanying grid is optional.*

$x_1 = -2$
$y_1 = 4$
$K = \frac{2}{3}$
Rise $= 6$
Run $= 6$

$(-2 + \frac{2}{3}(6), 4 + \frac{2}{3}(6))$
$(-2 + 4, 4 + 4)$
$\boxed{(2, 8) = J}$



9. Write an equation of the perpendicular bisector of $\overline{AB}$ if the coordinates of the endpoints of $\overline{AB}$ are $A(-1,-2)$ and $B(7,6)$. *The use of the accompanying grid is optional.*



① midpoint

$\left(\frac{7+-1}{2}, \frac{-2+6}{2}\right) = \left(\frac{6}{2}, \frac{4}{2}\right)$

$(3,2)$

x y

② slope

$\frac{6--2}{7--1} = \frac{8}{8} = 1$

m

③ $y = mx+b$

$2 = 1(3)+b$

$2 = 3+b$

$-3 \quad -3$

$b = -1$

$y+2 = 1(x+1)$

$y+2 = x+1$

$-2 \quad -2$

$y = x-1$

④ $y = 1x-1$

EXTRA PRACTICE!

10. What is an equation of the line that passes through the point (2,4) and is perpendicular to the line whose equation is $3y = 6x + 3$?

1) $y = -\frac{1}{2}x + 5$
2) $y = -\frac{1}{2}x + 4$
3) $y = 2x - 6$
4) $y = 2x$

$\frac{3y}{3} = \frac{6x}{3} + \frac{3}{3}$

$y = 2x + 1$

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

$y = mx + b$

$4 = -\frac{1}{2}(2) + b$

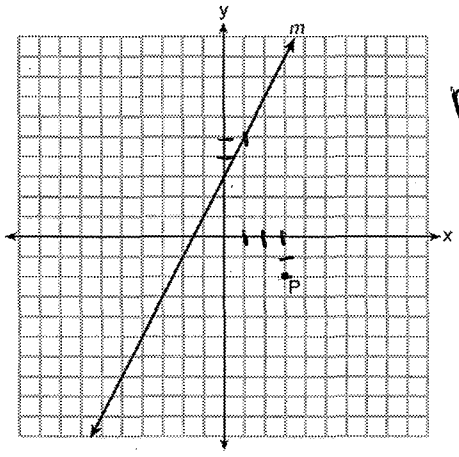
$4 = -1 + b$

$+1 \quad +1$

$5 = b$

$y = -\frac{1}{2}x + 5$

11. Line *m* and point *P* are shown in the graph below.



$m = \frac{2}{1}$

$P = (3, -2)$

Which equation represents the line passing through *P* and parallel to line *m*?

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

$y - -2 = 2(x - 3)$

12. The equations of lines k, p, and m are given below:

$k: x + 2y = 6$

$p: 6x + 3y = 12$

$m: -x + 2y = 10$

Which statement is true?

1) $p \perp m$
2) $m \perp k$
3) $k \parallel p$
4) $m \parallel k$

k: $\frac{2y}{2} = \frac{6}{2} - \frac{x}{2}$

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

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

p: $\frac{3y}{3} = \frac{12}{3} - \frac{6x}{3}$

$y = 4 - 2x$

$m = -2$

m: $\frac{2y}{2} = \frac{10}{2} + \frac{x}{2}$

$y = 5 + \frac{1}{2}x$

$m = \frac{1}{2}$

13. What is an equation of the line that passes through the point $(-2, 1)$ and is parallel to the line whose equation is $4x - 2y = 8$?

x y

1) $y = \frac{1}{2}x + 2$
2) $y = \frac{1}{2}x - 2$
3) $y = 2x + 5$
4) $y = 2x - 5$

$\frac{-2y}{-2} = \frac{8}{-2} - \frac{4x}{-2}$

$y = -4 + 2x$

$m = 2$

$y = mx + b$

$1 = 2(-2) + b$

$1 = -4 + b$

$+4 \quad +4$

$b = 5$

14. The lines represented by the equations $4x + 6y = 6$ and $y = \frac{2}{3}x - 1$ are

1) Parallel
2) The same line
3) Normal line
4) Intersecting, but *not* perpendicular

$\frac{6y}{6} = \frac{6}{6} - \frac{4x}{6}$

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

$m = -\frac{2}{3}$

$m = \frac{2}{3}$

15. A student wrote the following equations:

$$3y + 6 = 2x$$
$$2y - 3x = 6$$

The lines represented by these equations are

1) parallel
2) the same line
3) perpendicular
4) intersecting, but *not* perpendicular

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

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

$m = \frac{2}{3}$

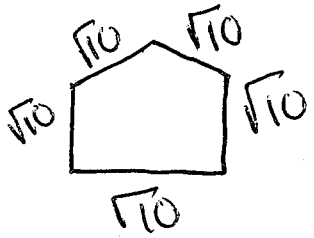
$\frac{2y}{2} = \frac{6}{2} + \frac{3x}{2}$

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

$m = \frac{3}{2}$

16. The endpoints of one side of a regular pentagon are $(-1, 4)$ and $(2, 3)$. What is the perimeter of the pentagon?

1) $\sqrt{10}$
2) $5\sqrt{10}$
3) $5\sqrt{2}$
4) $25\sqrt{2}$



$d = \sqrt{(3-4)^2 + (2-1)^2}$

$d = \sqrt{10}$

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

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

$y = mx + b$

$1 = (2)(-1) + b$

$1 = -2 + b$

$+2 \quad +2$

$b = 3$

$y = -1x + 3$