Geometry Regents Lomac 2015-2016 **Date** 3/4 **due** 3/8

Coordinate Plane: Parallel and Perpendicular Linear Equations **8.2R**

Name _____ **Per**_____

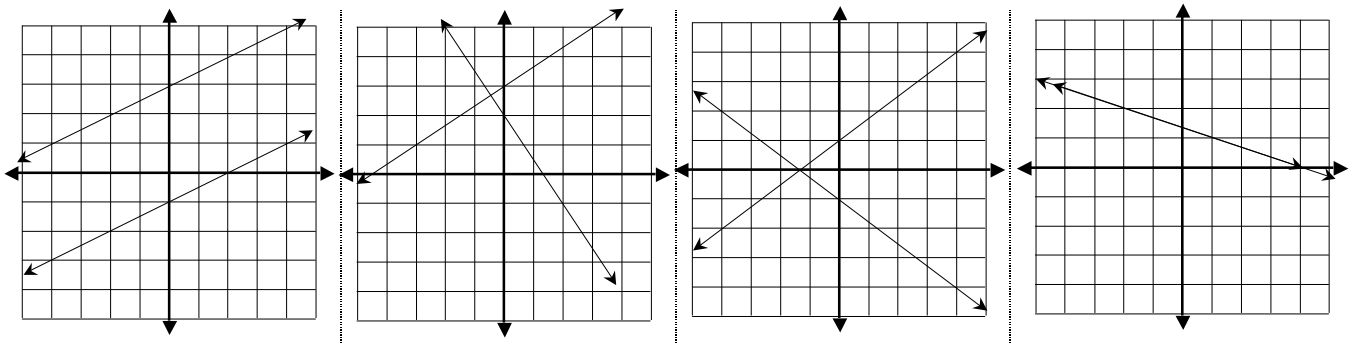
LO: I can determine the relationship between two lines based on their equations and write linear equations given information about a line.

☐ **DO NOW** On the back of this packet

☐ (1) calculator **How can lines be related?**

Two lines can be:

_____ _____ _____ _____



The slopes of the two lines _____ _____ _____ and the y-intercepts of the two lines _____ _____ _____

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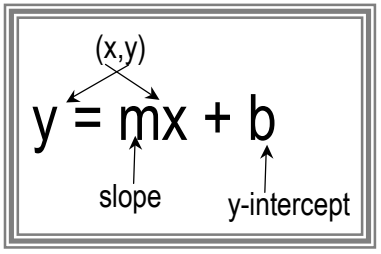
Slopes are easiest to find when equations are in y = mx + b format. ➞
Solve each equation for y and then identify the slope:

(a) 3x – 2y = 14

(b) 3y – x + 4 = 4x – 11



☐ (2) calculator

Slope and y-intercept

4 What is the slope of a line perpendicular to the line whose equation is $y = 3x + 4$?

1 $\frac{1}{3}$

2 $-\frac{1}{3}$

3 3

4 -3

1 What is the slope of a line perpendicular to the line whose equation is $5x + 3y = 8$?

1 $\frac{5}{3}$

2 $\frac{3}{5}$

3 $-\frac{3}{5}$

4 $-\frac{5}{3}$

7 What is the slope of a line that is perpendicular to the line represented by the equation $x + 2y = 3$?

1 -2

2 2

3 $-\frac{1}{2}$

4 $\frac{1}{2}$

9 The slope of line ℓ is $-\frac{1}{3}$. What is an equation of a line that is perpendicular to line ℓ?

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

2 $-2x + 6 = 6y$

3 $9x - 3y = 27$

4 $3x + y = 0$

11 The lines $3y + 1 = 6x + 4$ and $2y + 1 = x - 9$ are

1 parallel

2 perpendicular

3 the same line

4 neither parallel nor perpendicular

☐ (3) calculator

Relationships between lines

14 Which equation represents a line parallel to the line whose equation is $2y - 5x = 10$?

1 $5y - 2x = 25$
2 $5y + 2x = 10$
3 $4y - 10x = 12$
4 $2y + 10x = 8$

16 The lines represented by the equations $y + \frac{1}{2}x = 4$ and $3x + 6y = 12$ are

1 the same line
2 parallel
3 perpendicular
4 neither parallel nor perpendicular

18 The equation of line k is $y = \frac{1}{3}x - 2$. The equation of line m is $-2x + 6y = 18$. Lines k and m are

1 parallel
2 perpendicular
3 the same line
4 neither parallel nor perpendicular

19 Determine whether the two lines represented by the equations $y = 2x + 3$ and $2y + x = 6$ are parallel, perpendicular, or neither. Justify your response.

20 Two lines are represented by the equations $x + 2y = 4$ and $4y - 2x = 12$. Determine whether these lines are parallel, perpendicular, or neither. Justify your answer.

☐ (4) calculator

Relationships between lines

21 What is an equation of the line that passes through the point $(-2, 5)$ and is perpendicular to the line whose equation is $y = \frac{1}{2}x + 5$?

1 $y = 2x + 1$
2 $y = -2x + 1$
3 $y = 2x + 9$
4 $y = -2x - 9$

23 What is an equation of the line that is perpendicular to the line whose equation is $y = \frac{3}{5}x - 2$ and that passes through the point $(3, -6)$?

1 $y = \frac{5}{3}x - 11$
2 $y = -\frac{5}{3}x + 11$
3 $y = -\frac{5}{3}x - 1$
4 $y = \frac{5}{3}x + 1$

25 Which equation represents the line that is perpendicular to $2y = x + 2$ and passes through the point $(4, 3)$?

1 $y = \frac{1}{2}x - 5$
2 $y = \frac{1}{2}x + 1$
3 $y = -2x + 11$
4 $y = -2x - 5$

27 What is the equation of a line that passes through the point $(-3, -11)$ and is parallel to the line whose equation is $2x - y = 4$?

1 $y = 2x + 5$
2 $y = 2x - 5$
3 $y = \frac{1}{2}x + \frac{25}{2}$
4 $y = -\frac{1}{2}x - \frac{25}{2}$

☐ (5) calculator **Exit Ticket**

ON THE LAST PAGE

☐ (6) calculator **Homework**

Provide sufficient evidence for each response.

☐ (1)

2 What is the slope of a line perpendicular to the line whose equation is $y = -\frac{2}{3}x - 5$?

1 $-\frac{3}{2}$

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

3 $\frac{2}{3}$

4 $\frac{3}{2}$

6 What is the slope of a line that is perpendicular to the line whose equation is $3x + 5y = 4$?

1 $-\frac{3}{5}$

2 $\frac{3}{5}$

3 $-\frac{5}{3}$

4 $\frac{5}{3}$

5 What is the slope of a line perpendicular to the line whose equation is $2y = -6x + 8$?

1 -3

2 $\frac{1}{6}$

3 $\frac{1}{3}$

4 -6

☐ (6) calculator **Homework**

12 Which equation represents a line perpendicular to the line whose equation is $2x + 3y = 12$?

1 $6y = -4x + 12$
2 $2y = 3x + 6$
3 $2y = -3x + 6$
4 $3y = -2x + 12$

13 What is the equation of a line that is parallel to the line whose equation is $y = x + 2$?

1 $x + y = 5$
2 $2x + y = -2$
3 $y - x = -1$
4 $y - 2x = 3$

15 Two lines are represented by the equations $-\frac{1}{2}y = 6x + 10$ and $y = mx$. For which value of m will the lines be parallel?

1 -12
2 -3
3 3
4 12

16 The lines represented by the equations $y + \frac{1}{2}x = 4$ and $3x + 6y = 12$ are

1 the same line
2 parallel
3 perpendicular
4 neither parallel nor perpendicular

17 The two lines represented by the equations below are graphed on a coordinate plane.

$$x + 6y = 12$$

$$3(x - 2) = -y - 4$$

Which statement best describes the two lines?

1 The lines are parallel.
2 The lines are the same line.
3 The lines are perpendicular.
4 The lines intersect at an angle other than 90°.

☐ (6) calculator **Homework**

22 What is an equation of the line that contains the point $(3,-1)$ and is perpendicular to the line whose equation is $y=-3x+2$?

1 $y=-3x+8$

2 $y=-3x$

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

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

24 What is the equation of the line that passes through the point $(-9,6)$ and is perpendicular to the line $y=3x-5$?

1 $y=3x+21$

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

3 $y=3x+33$

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

26 Find an equation of the line passing through the point $(6,5)$ and perpendicular to the line whose equation is $2y+3x=6$.

28 What is an equation of the line that passes through the point $(7,3)$ and is parallel to the line $4x+2y=10$?

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

2 $y=-\frac{1}{2}x+\frac{13}{2}$

3 $y=2x-11$

4 $y=-2x+17$

Exit Ticket Name_____ Date _____ Per_____ 8.2R

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

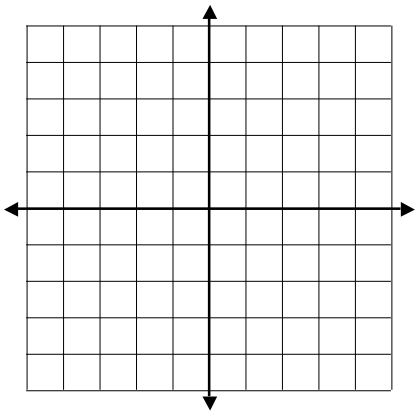
(1) On a grid, two lines are parallel when . . .

(2) On a grid, two lines are perpendicular when . . .

(3) Write an equation for the line parallel to $3x + 2y = 8$ that passes through the point $(-4,1)$ in $y = mx + b$ form.

DO NOW **Name**_____ **Date** _____ **Per**_____ **8.2R**

(1) Graph and connect the points A(–4, –3) and B(1, 5).



(2) Find the slope of segment AB.

(3) Write an equation we can use to find the measure of AB. DO NOT SOLVE THE EQUATION.

(4) Find the midpoint of AB.

(5) What about the cartoon below is supposed to make people smile?

http://tube.geogebra.org/student/m149362

http://tube.geogebra.org/student/m7358
http://tube.geogebra.org/student/m21284
http://tube.geogebra.org/student/m126542
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