☐ **DO NOW – Geometry Regents Lomac 2014-2015 Date ____. due ____.** **Coordinate Plane: Linear Equations** **8.2**

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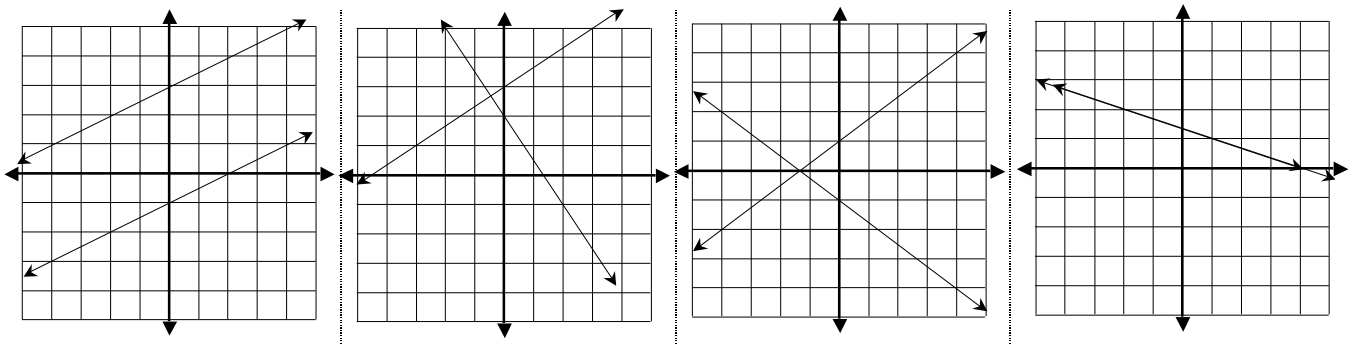
Name _____**Per**_____

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

☐ (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 _____

_____

_____

The slopes of the two lines _____

_____

_____

and the y-intercepts of the two lines _____

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The slopes of the two lines _____

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and the y-intercepts of the two lines _____

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The slopes of the two lines _____

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and the y-intercepts of the two lines _____

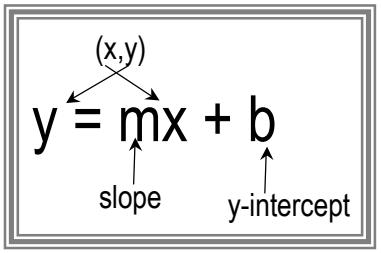
_____

_____

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 $y=-2x+17$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m = 0
m = 5/8
m = -7/4
m = undefined
m = -1/2
m = .82
m = 17
Tyler started to wish he had paid more attention in Algebra.

Exit Ticket **Name**_____ **Date** _____ **Per**_____ **8.2**

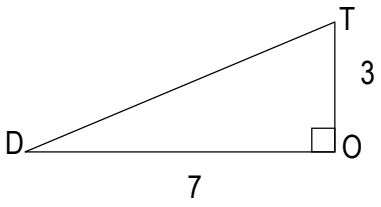
(1) On a grid, two lines are parallel when . . .

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

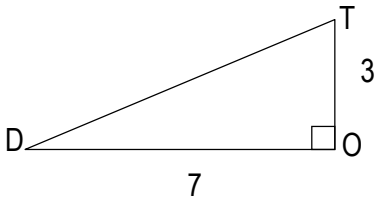
(3) Write an equation for the line parallel to $3x + 2y = 8$ that passes through the point $(-4,1)$ in $y = mx + b$ form.

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

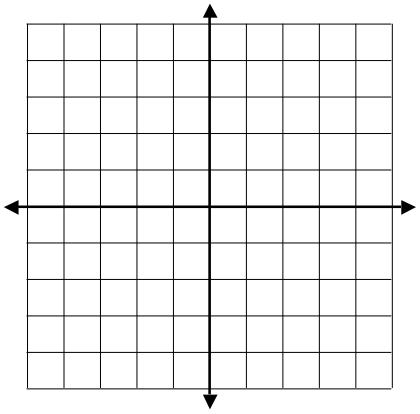
(1) Write an equation we can use to find the length of $\overline{DT}$. DO NOT SOLVE THE EQUATION.



(2) Write an equation we can use to find the measure of $\angle D$. DO NOT SOLVE THE EQUATION.



(3) Graph, label, and connect the points D(–2, –1) and T(5,2).



(4) In problem #3, can we find the length of DT and the measure of angle D in the same way that we did in problems 1 and 2? How?