

UNIT 3
ASSIGNMENT #11

UNIT 3 Test Review

DIRECTIONS: Complete each of the following questions fully. The answers will be sent to you via **REMIND101**

A. Multiple Choice

1. Use the figure below. (2 points)

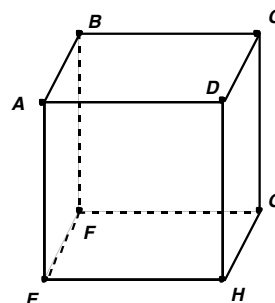
For the cube shown, \overleftrightarrow{AD} and \overleftrightarrow{FG} are _____.

[A] Perpendicular lines

[B] oblique lines

[C] Skew lines

[D] parallel lines



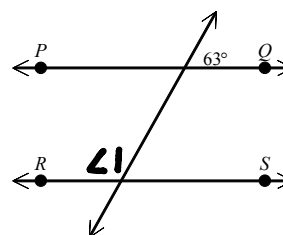
2. Find $m\angle 1$ in the figure below. \overleftrightarrow{PQ} and \overleftrightarrow{RS} are parallel.

[A] 107°

[B] 27°

[C] 63°

[D] 117°



2. Which linear system represents perpendicular lines?

[A] $y = 5x - 1$
 $y = -\frac{1}{5}x + 3$

[B] $5y = 5x - 1$
 $x - y = 3$

[C] $2x - 3y = 21$
 $2y = 3x + 5$

[D] $y = -3x - 1$
 $y = 3x + 3$

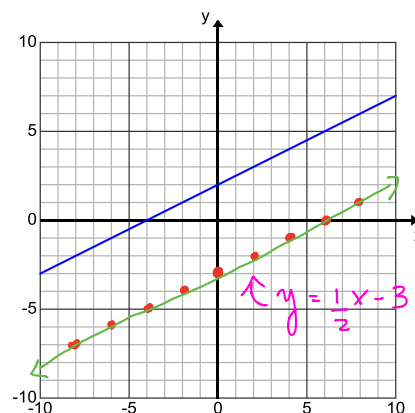
4. Write an equation of line which it is parallel to the given line passing through point $(0, -3)$

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

[B] $y = 2x + 3$

[C] $y = -\frac{1}{2}x + 3$

[D] $y = -\frac{1}{2}x$



5. Find the slope of the line passing through the points $A(-1, -3)$ and $B(-2, -2)$.

[A] $\frac{1}{3}$

[B] -1

[C] $\frac{5}{13}$

[D] 15

$$\begin{aligned} 2x + 3y &= 12 \\ 3y &= -2x + 12 \\ y &= -\frac{2}{3}x + 4 \end{aligned}$$

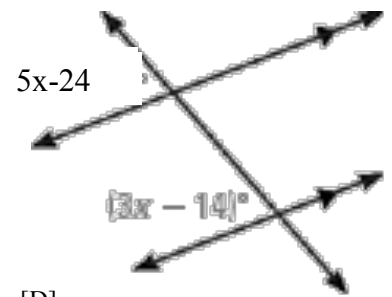
6. Find x .

[A] 10

[B] 19

[C] 5

[D] 27.25



7. A line perpendicular to $2x + 3y = 12$ is _____.

[A] $y = \frac{3}{2}x + 2$

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

[C] $y = -\frac{3}{2}x + 7$

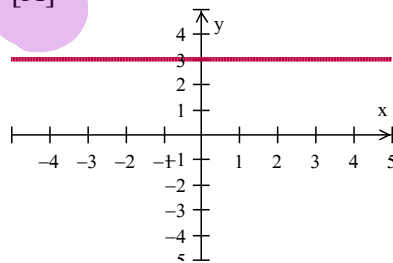
[D]

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

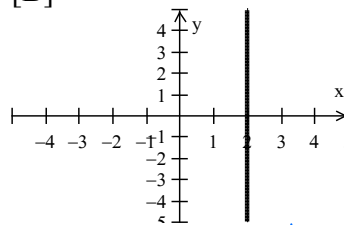
slope = $\frac{2}{3}$

8. Which line has a zero slope?

[A]

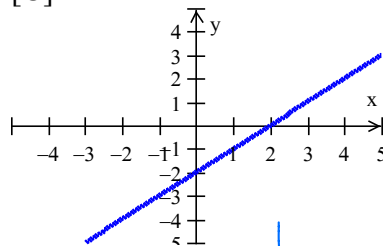


[B]



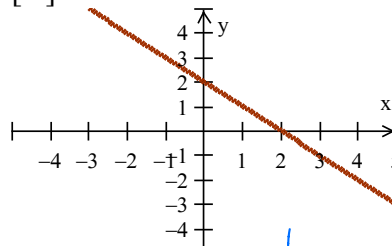
slope = undefined

[C]



slope = 1

[D]

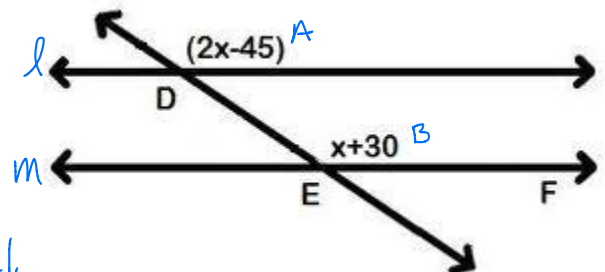


slope = -1

B. Short Answers.

1.a. Find the value of x for which lines l and m are parallel. Show work of the solving.

$$\begin{aligned} 2x - 45 &= x + 30 \\ x &= 75 \end{aligned}$$



b. Explain your answer using geometry concept.

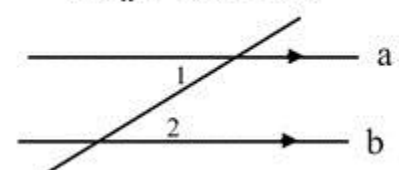
Since line l and m are parallel,
then angle D and E are

corresponding, so $m\angle D = m\angle E$, therefore
 $m\angle A = m\angle B$ b/c $\angle D + \angle A$ are vertical and $\angle E = \angle B$ also vertical

2. State the type of angle pair given in the diagram.

alternate interior angles, so
 $m\angle 1 = m\angle 2$

If $a \parallel b \rightarrow \angle 1 \cong \angle 2$



3. Write an equation of the line passing through the point $(10, 3)$ and **perpendicular** to the line $y = 2x - 3$

perpendicular slope $= -\frac{1}{2}$

$$y = mx + b$$

$$3 = \left(-\frac{1}{2}\right)(10) + b$$

$$3 = -5 + b$$

$$8 = b$$

New perpendicular equation

$$y = -\frac{1}{2}x + 8$$

4. Write the slope-intercept form of the equation of the line passing through the point $(3, 1)$ and **parallel** to the line

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

parallel slope $= \frac{1}{3}$

$$y = mx + b$$

$$1 = (3)\left(\frac{1}{3}\right) + b$$

$$1 = 1 + b$$

$$0 = b$$

new parallel equation

$$y = \frac{1}{3}x + 0$$

5. Line l is parallel to line n . $m\angle 1 = (x)^\circ$ and $m\angle 7 = (9x - 32)^\circ$ Find the value x . Show work.

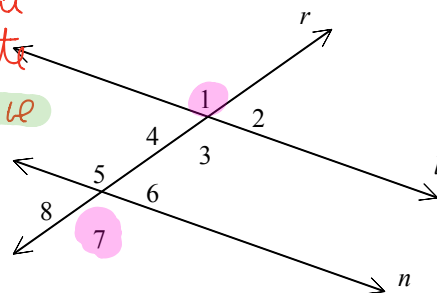
$$m\angle 1 = m\angle 7$$

$$x = 9x - 32$$

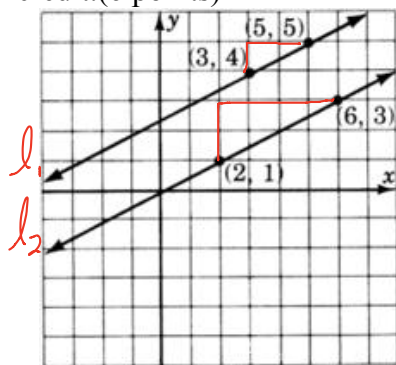
$$-8x = -32$$

$$x = 4$$

$m\angle 7 = m\angle 1$ are equal
b/c they are alternate exterior angles, since
You know $l \parallel n$



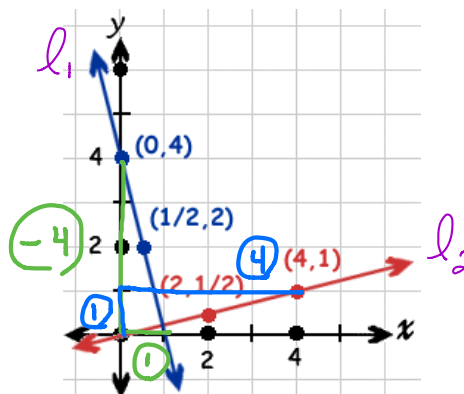
6. Determine if the lines are parallel, perpendicular or neither. Show work in order to get full credit. (6 points)



Slope of line l_1 : $\frac{1}{2}$

Slope of line l_2 : $\frac{2}{4} = \frac{1}{2}$

Conclusion: Slopes are equal, so **PARALLEL**



Slope of l_1 : $-\frac{4}{1}$

Slope of l_2 : $\frac{1}{4}$

Conclusion: Slopes are negative reciprocals so **PERPENDICULAR**

7. Give the **slope** and list the coordinates of **1 point** for the following linear equations:

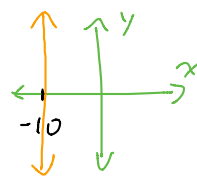
a. $y - 8 = \frac{1}{2}(x - 3)$ $\Rightarrow y - 8 = \frac{1}{2}(x - 3)$
 $m = \frac{1}{2}$ $y = \frac{1}{2}x - \frac{3}{2} + 8$

b. $y + 2 = 2(x - 4)$ $y + 2 = 2x - 8$
 $m = 2$ $y = 2x - 10$

c. $x = -10$
 no slope, vertical line \Rightarrow
 undefined

d. $y = 3$
 zero slope \Rightarrow
 $m = 0$

e. $6x - 3y = 12$
 $m = 2$



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

B. Open Response

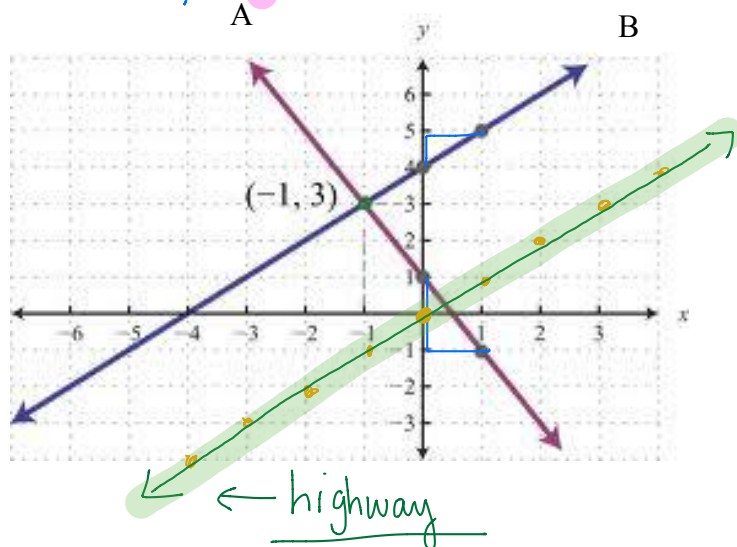
1. Refer to the diagram on the right.

The diagram is a map of two streets A and B

a) Find the slopes of Street A and B.

A: slope = $-\frac{2}{1} = -2$

B: slope = $\frac{1}{1} = 1$



b) Are these streets perpendicular? Why or why not? **Explain with math calculations and geometry concepts.**

these two streets are not perpendicular
 b/c their slopes are not negative
 reciprocals or $(-2)(1) \neq -1$

c) The city plans to construct a highway **parallel** to street B through the location (0, 0).

i) What would the slope of the highway be? (1 point)

Slope of the highway is 1 (one)

ii) Give the **equation** that would represent the new highway. **Explain or show work.**

$$y = 1x + 0 \quad \text{or} \quad y = x$$

the work is on the graph