GEOMETRY

Chapter 3: Parallel & Perpendicular Lines

Name:_____

Teacher:_____

Pd: _____

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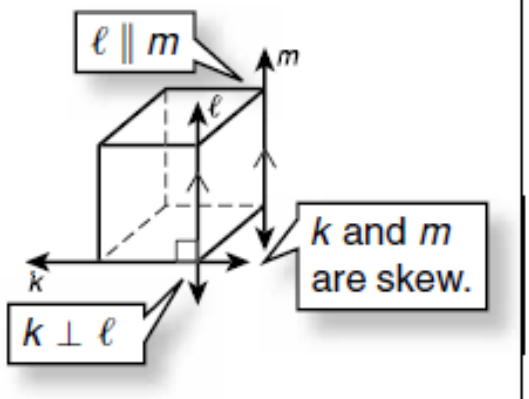
3-1 & 3-2: Lines and Angles

SWBAT: Identify parallel, perpendicular, and skew lines.
Identify the angles formed by two lines and a transversal.

Warm – Up: Matching Column

supplementary angles	• points that lie in the same plane
point	• two angles whose sum is 180°
coplanar points	• the intersection of two distinct intersecting lines
linear pair	• a pair of adjacent angles whose non-common sides are opposite rays

Example 1: Lines

Lines	Description	Examples
parallel	lines that lie in the same plane and do not intersect **symbol:** ‖	
perpendicular	lines that form 90° angles **symbol:** ⊥	
skew	lines that do not lie in the same plane and do not intersect	

Parallel planes are planes that do not intersect. For example, the top and bottom of a cube represent parallel planes.

Practice:

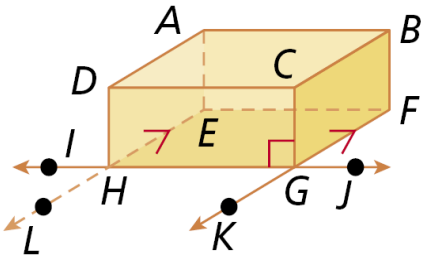
Identify each of the following:

a. A pair of parallel segments

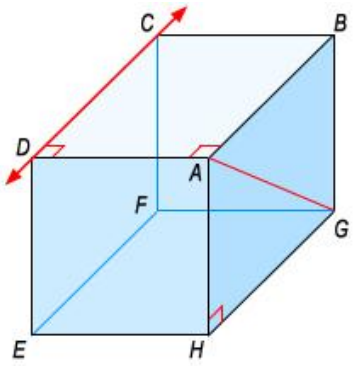
b. A pair of skew segments

c. A pair of perpendicular segments

d. A pair of parallel planes



Identify each of the following:



a. A pair of parallel segments

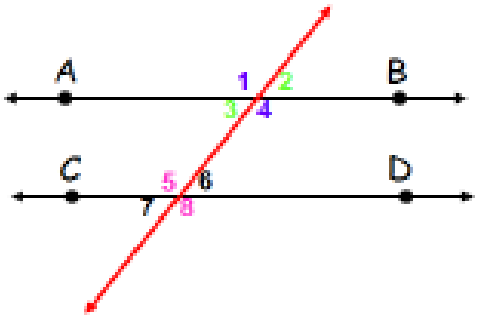
b. A pair of skew segments

c. A pair of perpendicular segments

d. A pair of parallel planes

Example 2: Angles

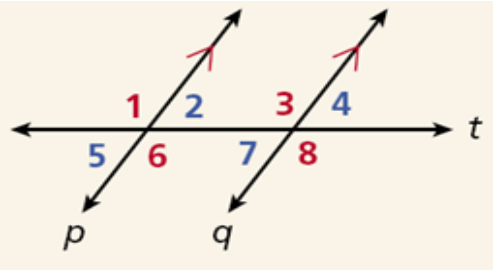
A transversal is a line that intersects two lines in a plane at different points. Eight angles are formed. Line *t* is a transversal of lines *a* and *b*.



Angle Pairs Formed by a Transversal		
Angles	**Description**	**Examples**
corresponding	angles that lie on the same side of the transversal and on the same sides of the other two lines	
alternate interior	angles that lie on opposite sides of the transversal, between the other two lines	
alternate exterior	angles that lie on opposite sides of the transversal, outside the other two lines	
same-side interior	angles that lie on the same side of the transversal, between the other two lines; also called *consecutive interior angles*	

Practice

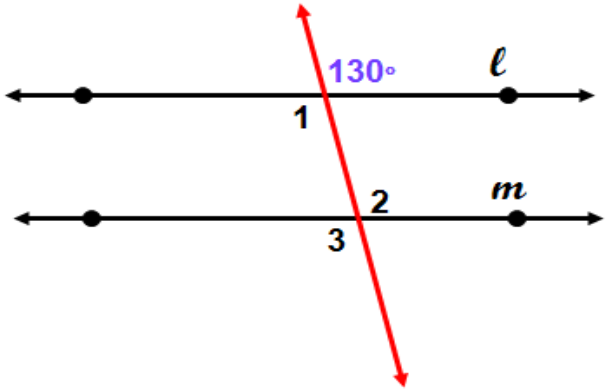
Identify each of the following:



- **a.** A pair of alternate interior angles
- **b.** A pair of corresponding angles
- **c.** A pair of alternate exterior angles
- **d.** A pair of same-side interior angles

Example 3:

Line l and Line m are parallel. Find each missing angle.

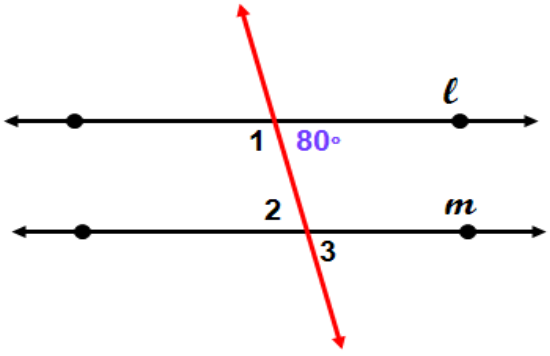


m ∠1 =

m ∠2 =

m ∠3 =

Line l and Line m are parallel. Find each missing angle.



m ∠1 =

m ∠2 =

m ∠3 =

Challenge Problem

1. Describe the type of lines suggested by the paths of two people at a fair when one person is riding the aerial ride from one end of the fair to the other, and the other person is walking in a different direction on the ground.

F intersecting **H** perpendicular

G parallel **J** skew

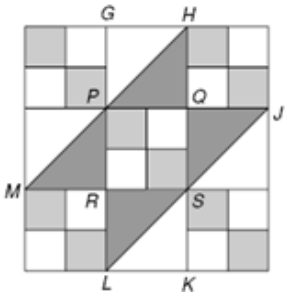
2. In the quilt pattern, which is a true statement about the angles formed by the transversal $\overline{HK}$ and $\overline{HM}$ and $\overline{JL}$?

A $\angle LSK$ and $\angle PHQ$ are corresponding angles.

B $\angle JSQ$ and $\angle JQH$ are corresponding angles.

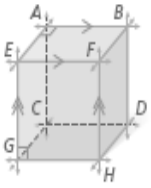
C $\angle LSK$ and $\angle QSJ$ are same-side interior angles.

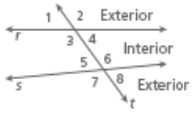
D $\angle PHQ$ and $\angle RLS$ are same-side interior angles.



Summary

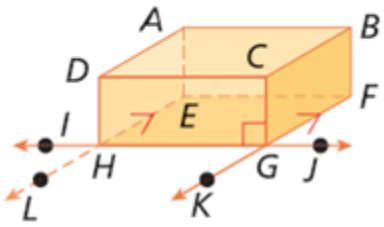
Parallel, Perpendicular, and Skew Lines (p. 146):

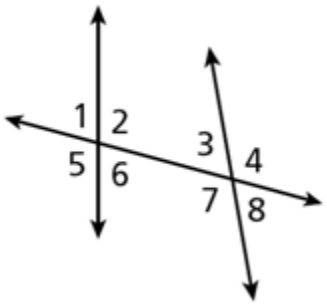
Parallel lines (∥) are coplanar and do not intersect. In the figure $\overleftrightarrow{AB} \parallel \overleftrightarrow{EF}$ and $\overleftrightarrow{EG} \parallel \overleftrightarrow{FH}$	 Arrows are used to show that $\overleftrightarrow{AB} \parallel \overleftrightarrow{EF}$ and $\overleftrightarrow{EG} \parallel \overleftrightarrow{FH}$.
Perpendicular lines (⊥) intersect at 90° angles. In the figure, $\overleftrightarrow{AB} \perp \overleftrightarrow{AE}$ and $\overleftrightarrow{EG} \perp \overleftrightarrow{GH}$	
Skew lines are not coplanar. Skew lines are not parallel and do not intersect. In the figure, $\overleftrightarrow{AB}$ and $\overleftrightarrow{EG}$ are skew.	
Parallel planes are planes that do not intersect. In the figure, plane *ABE* ∥ plane *CDG*.	

TERM	EXAMPLE
A transversal is a line that intersects two coplanar lines at two different points. The transversal *t* and the other two lines *r* and *s* form eight angles.	
Corresponding angles lie on the same side of the transversal *t*, on the same side of lines *r* and *s*.	∠1 and ∠5
Alternate interior angles lie on opposite sides of the transversal *t*, between lines *r* and *s*.	∠3 and ∠6
Alternate exterior angles lie on opposite sides of the transversal *t*, and outside lines *r* and *s*.	∠1 and ∠8
Same-side interior angles or consecutive interior angles lie on the same side of the transversal *t*, between lines *r* and *s*.	∠3 and ∠5

Exit Ticket

Identify each of the following.





1. Skew Lines

(1) DH and CG

(2) AD and BF

(3) AE and EF

(4) CG and AE

2. Corresponding Angles

(1) ∠4 and ∠5

(2) ∠2 and ∠3

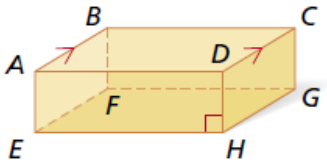
(3) ∠2 and ∠7

(4) ∠2 and ∠4

Homework:

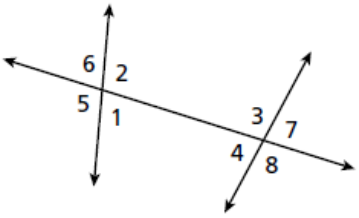
Identify each of the following.

2. one pair of perpendicular segments
3. one pair of skew segments
4. one pair of parallel segments
5. one pair of parallel planes



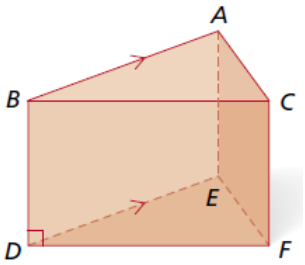
Give an example of each angle pair.

6. alternate interior angles
7. alternate exterior angles
8. corresponding angles
9. same-side interior angles

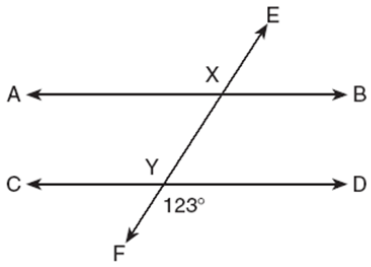


Identify each of the following.

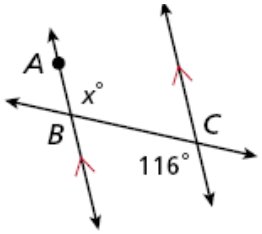
14. one pair of parallel segments
15. one pair of skew segments
16. one pair of perpendicular segments
17. one pair of parallel planes



18. **In the diagram, parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are intersected by a transversal $\overleftrightarrow{EF}$ at points X and Y, m∠FYD = 123. Find ∠AXY.**



19. Find the m∠ABC.

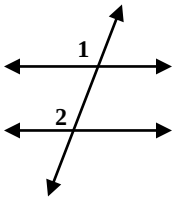


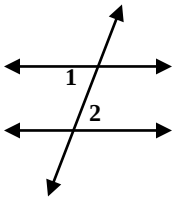
Chapter 3 – 2 Angles and Parallel Lines

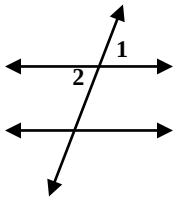
SWBAT: Calculate for missing angles when parallel lines are cut by a transversal

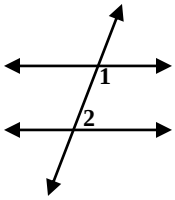
Warm – Up

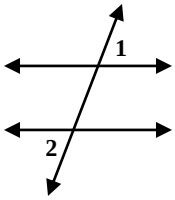
Classify each pair of angles as alternate interior angles, alternate exterior angles, same-side interior angles, corresponding angles, or vertical angles.

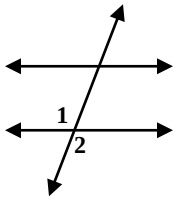
1) 

2) 

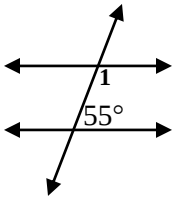
3) 

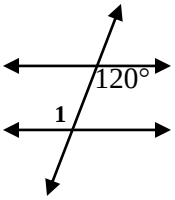
4) 

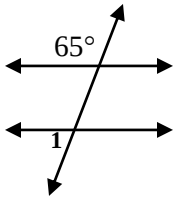
5) 

6) 

Find the m∠1 and explain the angle relationship.

7. 

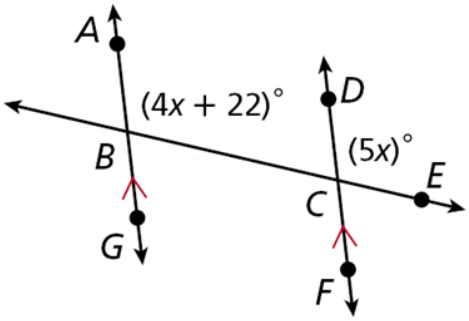
8. 

9. 

Example Problem:

In the accompanying diagram, m ∠ABC = $(4x + 22)°$ and m ∠DCE = $(5x)°$.

Part a: Which relationship describes ∠ ABC and ∠ DCE?



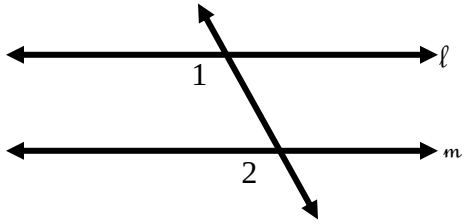
Part b: What is the value of x and what is m ∠ DCE?

Practice Problems - Algebra

1) In the accompanying diagram, l ll m and m $\angle 1 = (3x + 40)^\circ$ and m $\angle 2 = (5x - 30)^\circ$.

Part a: Which relationship describes $\angle 1$ and $\angle 2$?

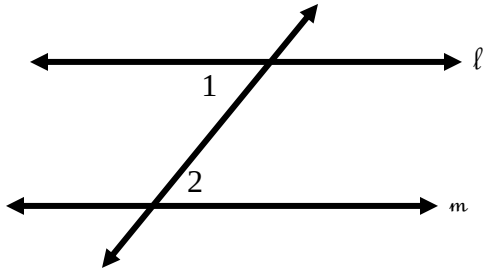
Part b: What is the value of x and what is m $\angle 1$?



2) In the accompanying diagram, l ll m and m $\angle 1 = (9x - 8)^\circ$ and m $\angle 2 = (x + 72)^\circ$.

Part a: Which relationship describes $\angle 1$ and $\angle 2$?

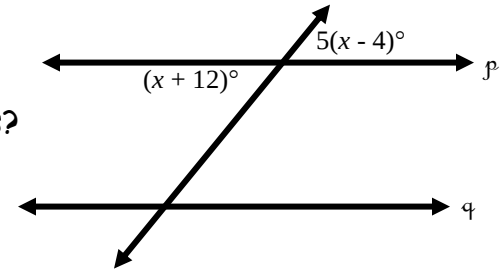
Part b: What is the value of x and what is m $\angle 2$?



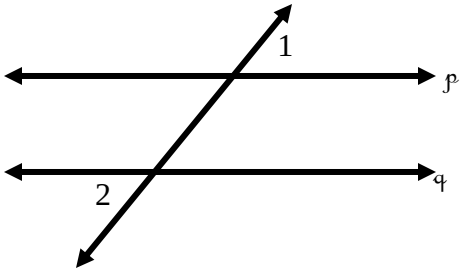
3) In the accompanying diagram, p ll q.

Part a: Which relationship describes the given angles?

Part b: What is the value of x?



4) In the accompanying diagram, p ll q. If m $\angle 1 = (7x + 15)^\circ$ and m $\angle 2 = (10x - 9)^\circ$



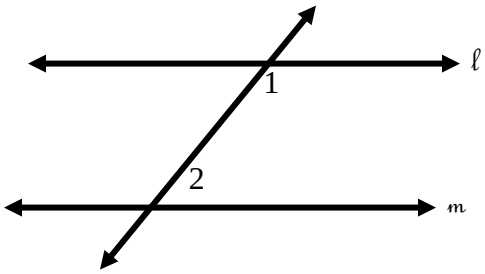
Part a: Which relationship describes $\angle 1$ and $\angle 2$?

Part b: What is the value of x?

Part c: What is the m$\angle 2$?

5) In the accompanying diagram, l ll m. If m $\angle 1 = (3x + 16)^\circ$ and m $\angle 2 = (x + 12)^\circ$

Part a: Which relationship describes $\angle 1$ and $\angle 2$?



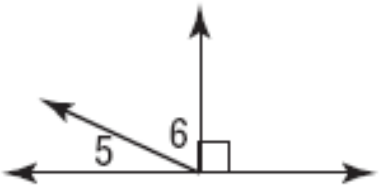
Part b: What is the value of x?

Part c: What is the m$\angle 1$ & m$\angle 2$?

Perpendicular

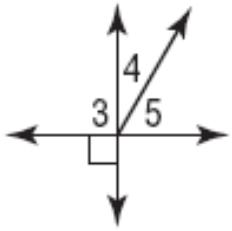
6) Find the m ∠6.

$$m\angle 5 = 22$$

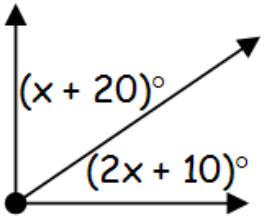


7) Find the measure of ∠3, ∠4, and ∠5.

$$m\angle 4 = 2x - 5$$
$$m\angle 5 = 4x - 13$$

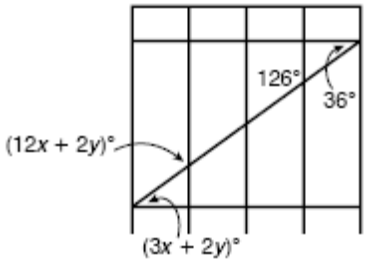


8) Two complementary angles measure (2x+10) and (x+20) degrees.
What is the value of x?



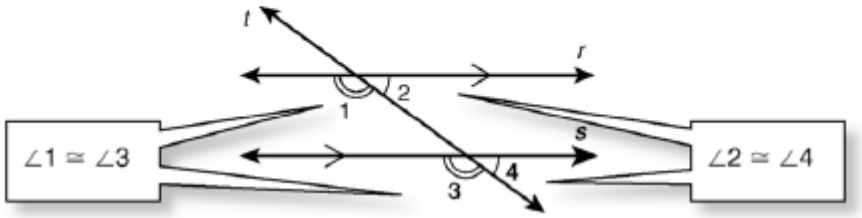
Challenge Problem

In the diagram of the gate, the horizontal bars are parallel and the vertical bars are parallel. Find x and y.

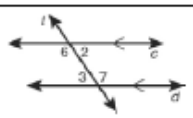
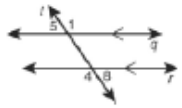


Summary

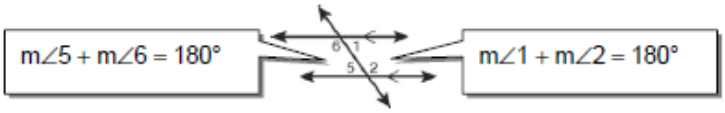
According to the **Corresponding Angles Postulate**, if two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent.



If two parallel lines are cut by a transversal, then the following pairs of angles are also congruent.

Angle Pairs	Hypothesis	Conclusion
alternate interior angles		∠2 ≅ ∠3 ∠6 ≅ ∠7
alternate exterior angles		∠1 ≅ ∠4 ∠5 ≅ ∠8

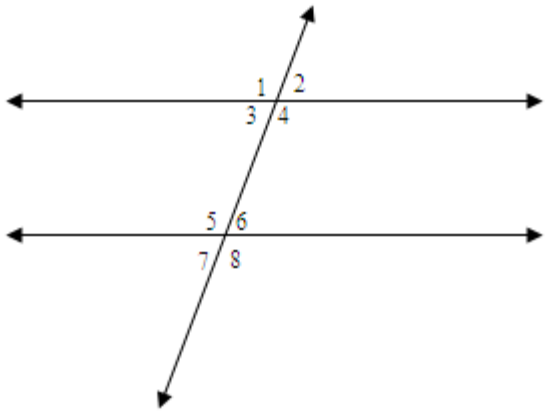
If two parallel lines are cut by a transversal, then the pairs of same-side interior angles are supplementary.



Exit Ticket

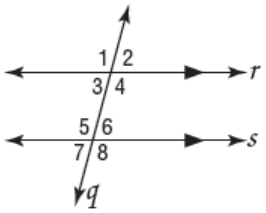
Using the diagram to the right to determine which statement is true:

(1) $\angle 1 \cong \angle 6$ (2) $\angle 5 + \angle 8 = 180$
(3) $\angle 5 \cong \angle 7$ (4) $\angle 3 + \angle 5 = 180$



Angles and Parallel Lines

In the figure, $m\angle 2 = 70$. Find the measure of each angle.

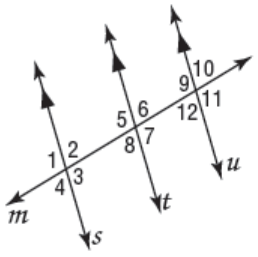


1. $\angle 3$ **2.** $\angle 5$

3. $\angle 8$ **4.** $\angle 1$

5. $\angle 4$ **6.** $\angle 6$

In the figure, $m\angle 7 = 100$. Find the measure of each angle.

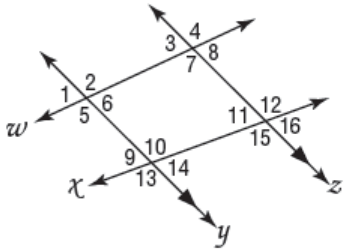


7. $\angle 9$ **8.** $\angle 6$

9. $\angle 8$ **10.** $\angle 2$

11. $\angle 5$ **12.** $\angle 11$

In the figure, $m\angle 3 = 75$ and $m\angle 10 = 105$. Find the measure of each angle.



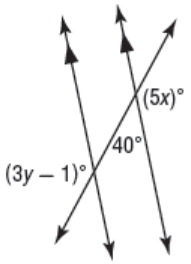
13. $\angle 2$ **14.** $\angle 5$

15. $\angle 7$ **16.** $\angle 15$

17. $\angle 14$ **18.** $\angle 9$

Find the value of the variable(s) in each figure. Explain your reasoning.

19.



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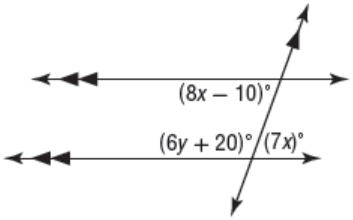

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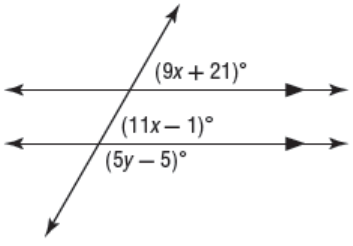

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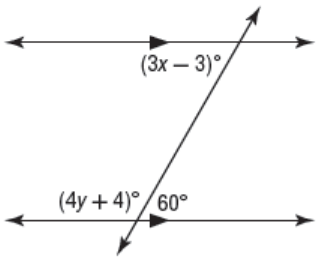
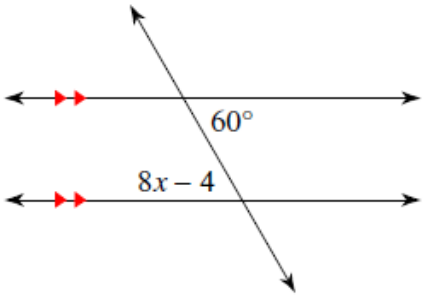


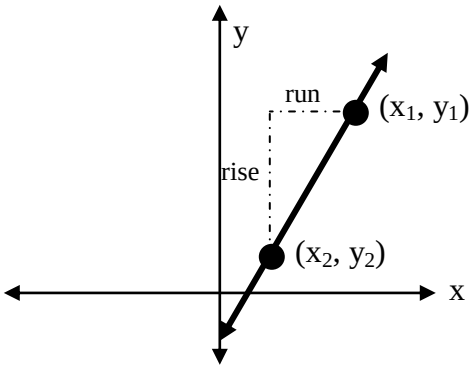
Chapter 3-5 Slope of a Line/Slope Intercept Form

SWBAT: Calculate the slope of a line using the slope formula.
Write and Graph a linear equation in Slope – Intercept Form

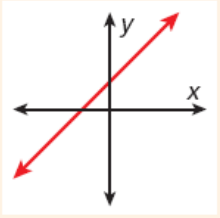
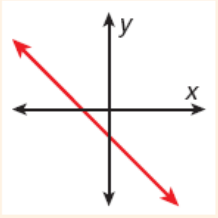
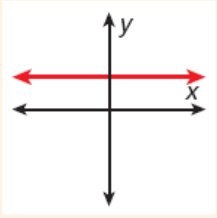
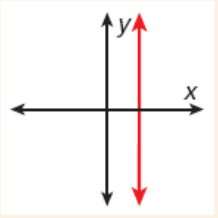
Warm – Up
Solve for *x*.



The Slope "m" of a line passing through points (x_1, y_1) and (x_2, y_2) is the ratio of the difference in the y-coordinates to the corresponding difference in the x-coordinates.



Symbols: m =

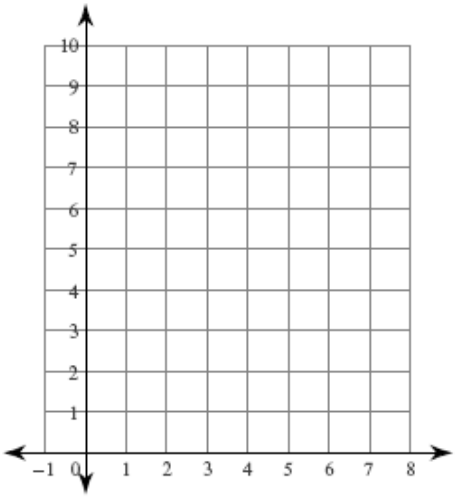
Summary: Slope of a Line			
Positive Slope	Negative Slope	Zero Slope	Undefined Slope
			

Example 1: Calculating the slope from a set up points

a) Find the slope of the line that passes through the points $(8, 7)$ and $(4, 5)$.

$\underbrace{(8,7)}_{x1,y1}$ and $\underbrace{(4,5)}_{x2,y2}$

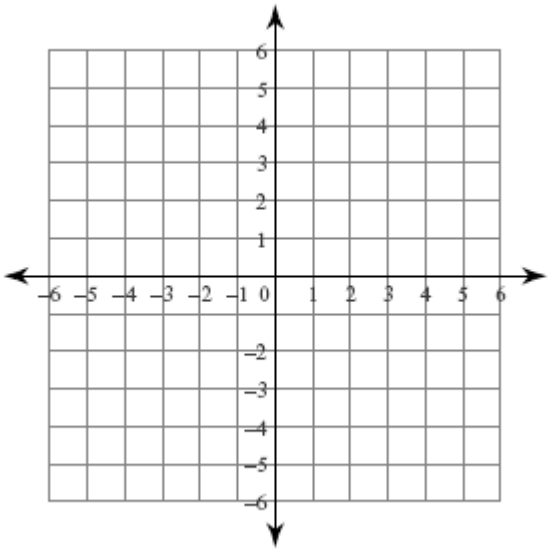
$$m = \frac{Y_2 - Y_1}{X_2 - X_1} =$$



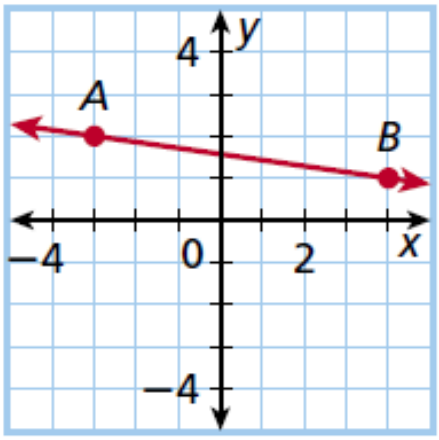
Practice 1:
Find the slope of the line that passes through the points (4, 3) and (–5, –2).

$\underbrace{(4,3)}_{x1,y1}$ and $\underbrace{(-5,-2)}_{x2,y2}$

$$m = \frac{Y_2 - Y_1}{X_2 - X_1} =$$



Practice 2: Find the slope of the line below.



rise = _____ run = _____

$$\text{slope} = m = \frac{\Delta y}{\Delta x} =$$

Slope-Intercept Form An equation of the form $y = mx + b$, where m is the slope and b is the y-intercept, is in **slope-intercept** form. m and b are called *parameters* of the equation. Changing either value changes the equation's graph.

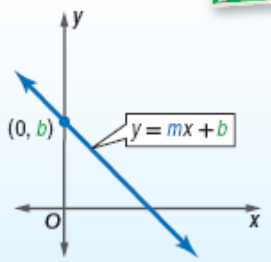
Key Concept — **Slope-Intercept Form** — For Your FOLDABLE

Words The slope-intercept form of a linear equation is $y = mx + b$, where m is the slope and b is the y-intercept.

Example $y = mx + b$

$y = 2x + 6$

slope — y-intercept



Math *in Motion*, BrainPOP® glencoe.com

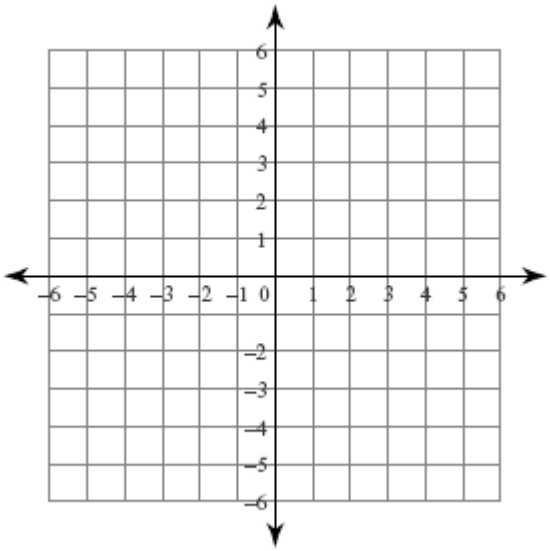
Example 2: Graphing by using slope and y-intercept

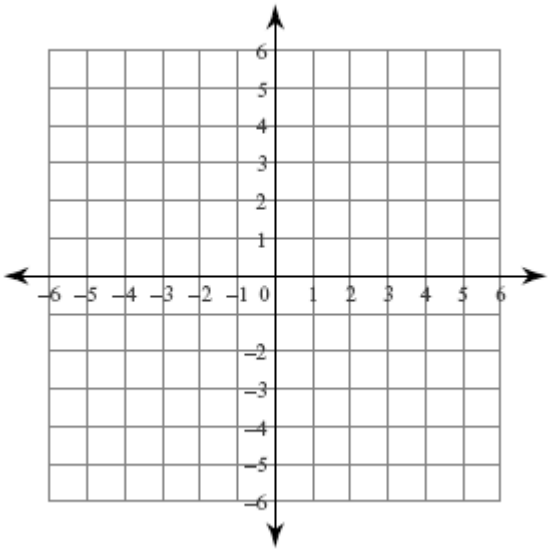
$y = \frac{3}{4}x - 2$ $m =$ _____

y-intercept = b = (0, ____)

Practice 3) $y = -2x + 4$ $m =$ _____

y-intercept = b = (0, ____)





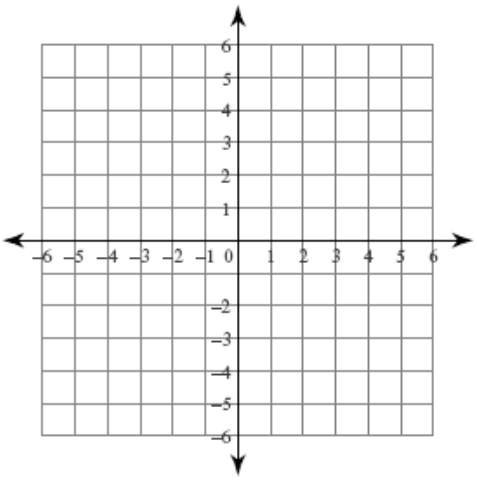
Example 3: Horizontal and Vertical lines.

	Horizontal	Vertical
Looks like		
Equation		
Example & Graph		

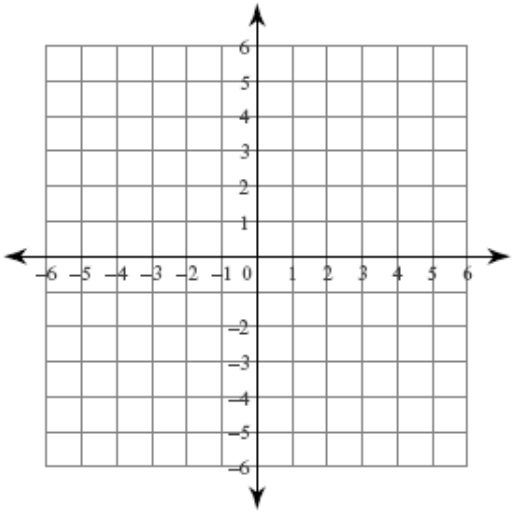
Practice

Graph each vertical or horizontal line.

d) $y = -4$



e) $x = 2$



Slope-Intercept Form

$y = mx + b$

slope | *y*-intercept

$y = 4x + 7$

Example 4: Writing Equations of Lines

Write the equation that describes each line in slope-intercept form.

1. slope $= \frac{1}{4}$, *y*-intercept $= 3$ _____

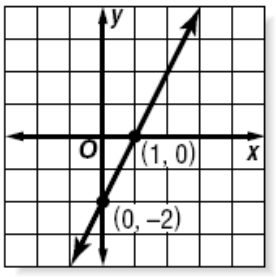
2. slope $= -5$, *y*-intercept $= 0$ _____

3. slope $= 7$, *y*-intercept $= -2$ _____

Example 5: Writing Equations of Lines from Graphs

Write an equation of the line shown in each graph.

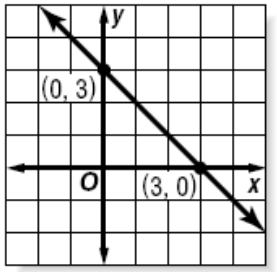
4.



m: _____ *b*: _____

Equation: y = _____

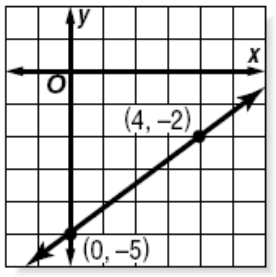
5.



m: _____ *b*: _____

Equation: y = _____

6.



m: _____ *b*: _____

Equation: y = _____

Example 6: Identifying Slope and Y-intercept from Linear Equations

Write the equation in slope–intercept form. Identify the slope and y-intercept.

3x + 2y = 4

m: _____ *b*: _____

Practice: Write the equation in slope–intercept form. Identify the slope and y-intercept.

4x - 2y = 14

m: _____ *b*: _____

Challenge

What value of n in the equation $nx + 5 = 3y$ would give a line with slope -2?

SUMMARY

You can use the slope and *y*-intercept to graph a line.

Write $2x + 6y = 12$ in slope-intercept form. Then graph the line.

Step 1: Solve for *y*.

$2x + 6y = 12$ *Subtract 2x from both sides.*

$-2x \quad -2x$

$6y = -2x + 12$

$\frac{6y}{6} = \frac{-2x + 12}{6}$ *Divide both sides by 6.*

$y = -\frac{1}{3}x + 2$ *Simplify.*

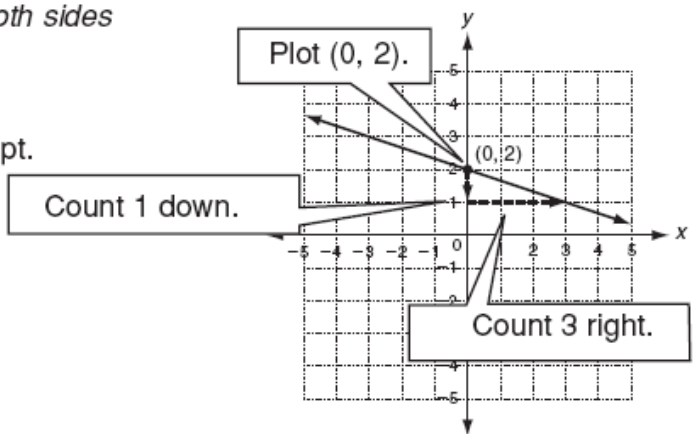
Step 2: Find the slope and *y*-intercept.

slope: $m = -\frac{1}{3} = \frac{-1}{3}$

y-intercept: $b = 2$

Step 3: Graph the line.

- Plot (0, 2).
- Then count 1 **down** (because the rise is **negative**) and 3 **right** (because the run is **positive**) and plot another point.
- Draw a line connecting the points.



Exit Ticket

Which equation describes the line with slope -4 and *y*-intercept 2?

A $y = -4x + 2$ **C** $y = 4x - 2$

B $y = -4x - 2$ **D** $y = 4x + 2$

Day 3 – Homework

Slope and Slope – Intercept Form

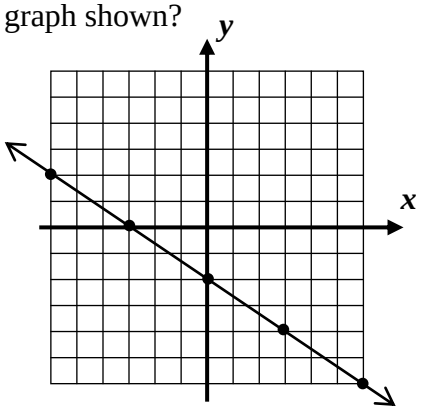
1) Which of the following lines has a slope of 5 and a *y*-intercept of -3?

(1) $y = 5x - 3$ (3) $y = -3x + 5$

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

_____

2) Which of the following equations represents the graph shown?



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

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

_____

3) Find the slope of the line passing through the points (3, 2) and (–1, –8).

[A] $\frac{2}{5}$ [B] $-\frac{1}{3}$ [C] $\frac{5}{2}$ [D] -3

_____

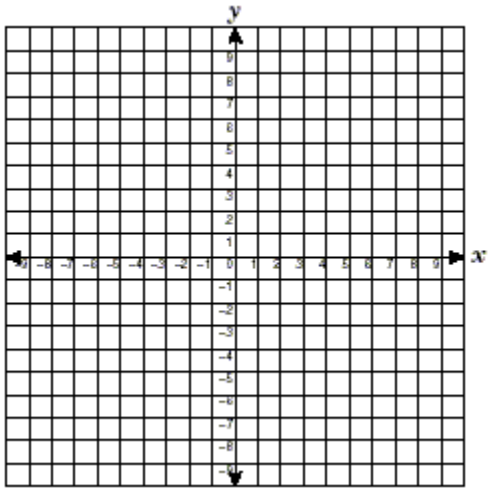
4) Find the slope of the line passing through the points (–2, 3) and (–8, –7).

[A] $\frac{2}{5}$ [B] $\frac{5}{2}$ [C] $\frac{3}{5}$ [D] $\frac{5}{3}$

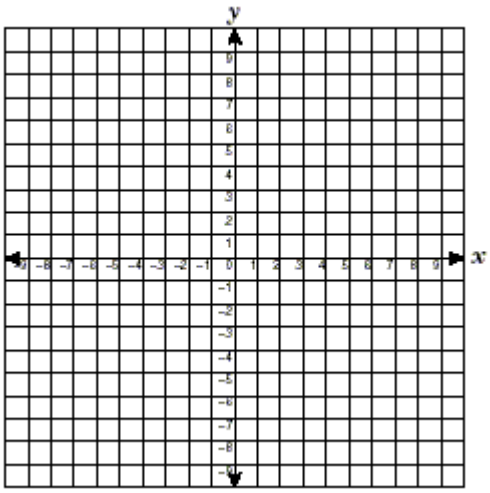
_____

5) Graph each line.

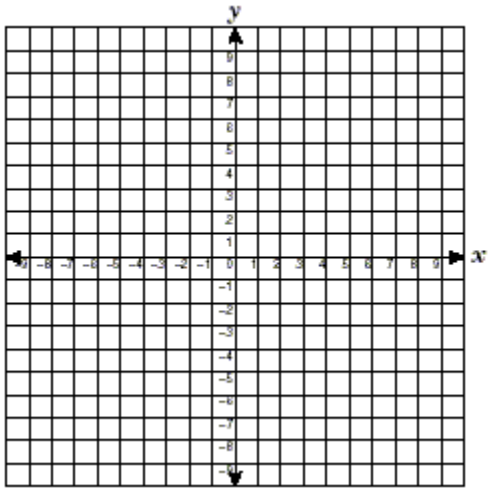
(a) $y = -3x + 2$



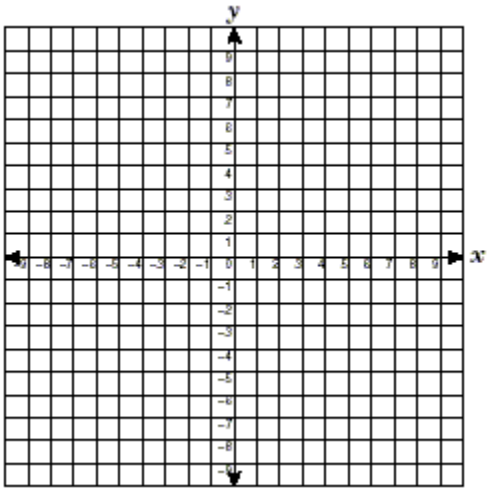
(b) $y = -\frac{1}{2}x + 0$



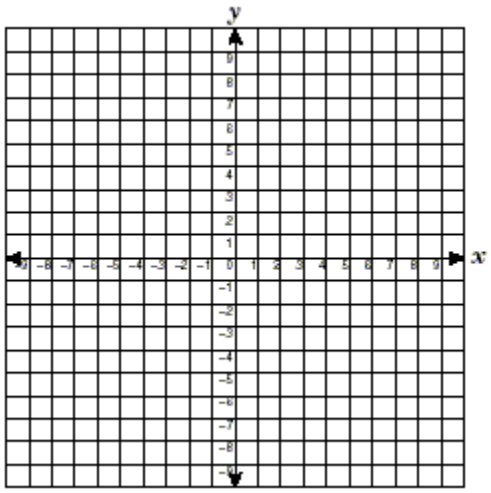
(c) $y = 6x + 3$



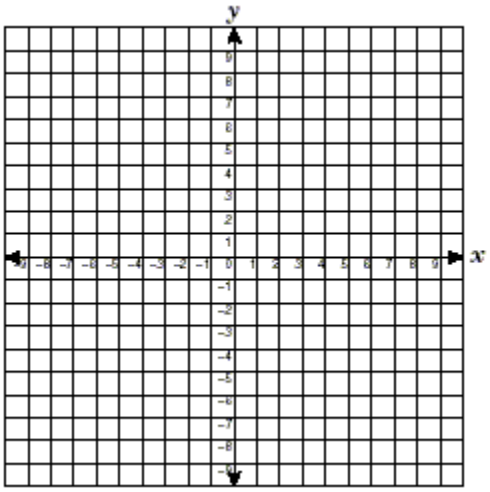
(d) $y = \frac{2}{3}x + 9$



(e) $y = -1$



(f) $x = -5$



6) Write an equation of each line in slope – intercept form. Identify the slope and y-intercept.

a. $-2x+2y=4$

m: _____ *b*: _____

b. $5x+y=7$

m: _____ *b*: _____

---

c. $6x + 2y = 8$

m: _____ *b*: _____

d. $-10+5y=15$

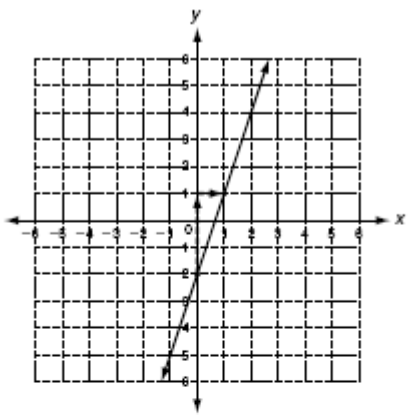
m: _____ *b*: _____

Day 4 – Writing Equations of Lines given Slope and Points

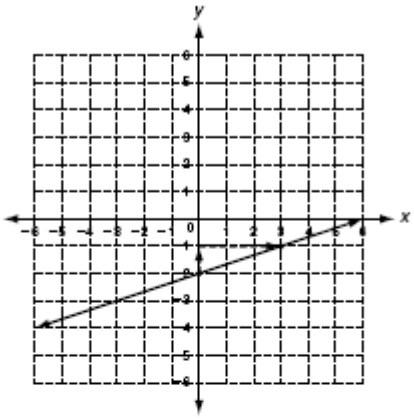
Warm – Up

Which graph shows how to graph a line with a slope of 3 and *y*-intercept of −2?

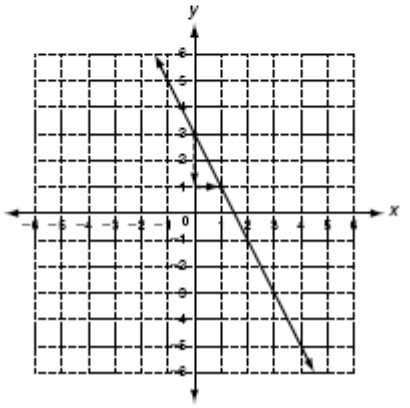
A



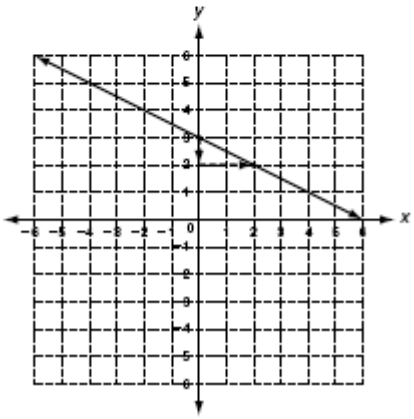
C



B



D

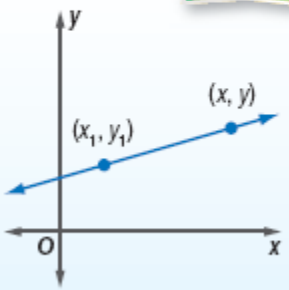


Point-Slope Form An equation of a line can be written in **point-slope form** when given the coordinates of one known point on a line and the slope of that line.

Key Concept — **Point-Slope Form** — For Your FOLDABLE

Words The linear equation $y - y_1 = m(x - x_1)$ is written in point-slope form, where (x_1, y_1) is a given point on a non-vertical line and m is the slope of the line.

Symbols $y - y_1 = m(x - x_1)$



Yesterday, we learned how to graph equations using the slope and the y-intercept. Today we are going to write equations of lines.

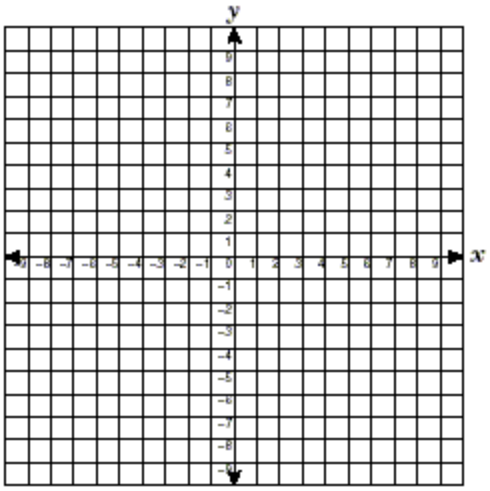
First, let's see how to use the equation.

Example 1: Graph the linear equation.

$y - 1 = 2(x - 3)$

m = _____

pt = (___, _____)

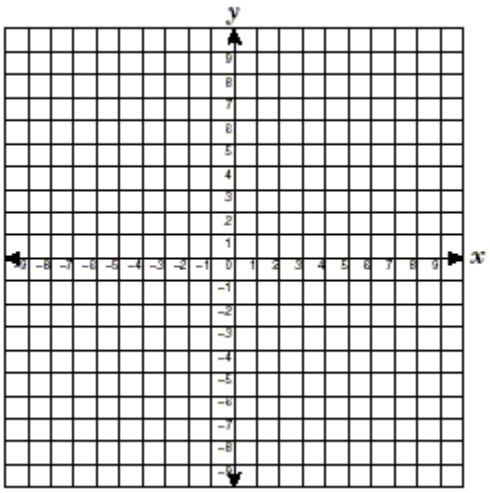


Practice: Graph the linear equation.

$y + 4 = -\frac{1}{4}(x - 8)$

m = _____

pt = (___, _____)



Equations of Lines

When a linear equation is written in certain forms, relevant information about the line can be gathered from the equation.

Slope-Intercept Form	Point-Slope Form	Standard Form
$y = mx + b$	$y - y_1 = m(x - x_1)$	$Ax + By = C$
where m represents the slope, and b represents the y-intercept	where m represents the slope, and x_1 and y_1 are the coordinates of a point on the line	where A, B, and C are real numbers, and A and B are **not both** 0

Example 2: Converting Point-Slope to Slope-Intercept Form and Standard Form.

Write $y - 1 = \frac{4}{5}(x + 5)$ **in Slope-Intercept form and Standard Form.**

Practice: Converting Point-Slope form to Slope intercept Form

Write $y + 6 = -3(x - 4)$ in slope-intercept form.

Writing Equations of Lines

Example 3: Write the equation of a line given the slope and a point.
(-3, -4); m = –3

1)_____SI

2)_____PS

Practice: Write the equation of a line given the slope and a point.

(1, 2); m = –3

1)_____SI

2)_____PS

Example 4: Write the equation of a line passing through the two points given.

(10, 20) and (20, 65)

Step 1: $m = \frac{Y_2 - Y_1}{X_2 - X_1} =$

Step 2: plug m, and point into equation.

$$y - y_1 = m(x - x_1)$$

1)_____SI

2)_____PS

Practice: Write the equation of a line passing through the two points given.

(2, –5) and (–8, 5)

Step 1: $m = \frac{Y_2 - Y_1}{X_2 - X_1} =$

Step 2: plug m, and point into equation.

$$y - y_1 = m(x - x_1)$$

1)_____SI

2)_____PS

Challenge

Write the equation of a line in point-slope form passing through the two points given.

(f, g) (h, j)

SUMMARY

Write an equation of the line that passes through points $(2, 5)$ and $(4, 11)$.

Solution Let $A(2, 5)$ and $B(4, 11)$ be the two given points on the line and $P(x, y)$ be any point on the line. Use the fact that the slope of $\overline{PA}$ equals the slope of $\overline{AB}$ to write an equation.

How to Proceed

(1) Set slope of $\overline{PA}$ equal to slope of $\overline{AB}$: $\mathbf{m} = \frac{5-11}{2-4} = \frac{-6}{-2} = 3$

(2) Solve the resulting equation for y:

$$y - 5 = 3(x - 2)$$
$$y - 5 = 3x - 6$$
$$y = 3x - 1$$

Check Do the coordinates of the second point, $(4, 11)$, satisfy the equation $y = 3x - 1$?

$$11 \stackrel{?}{=} 3(4) - 1$$
$$11 = 11 \checkmark$$

Exit Ticket

Identify the equation in slope-intercept form for the line with the given slope that contains the given point.

Slope = 4; (6, −5)

(1) $y = 6x - 4$

(2) $y = -6x + 5$

(3) $y = -4x + 30$

(4) $y = 4x - 29$

Day 4 – Writing Equations of Lines - HW

1) Which equation describes the line through (–5, 1) with the slope of 1?

(a) $y = x - 6$ (c) $y = -5x + 6$

(b) $y = -5x - 6$ (d) $y = x + 6$

2) A line contains (4, 4) and (5, 2). What is the slope and y – intercept?

(a) slope = –2; y – intercept = 2 (c) slope = –2; y – intercept = 12

(b) slope = 1.2; y – intercept = –2 (d) slope = 12; y – intercept = 1.2

Write an equation for the line with the given slope and point in slope-intercept form.

3) slope = 3; (–4, 2)

Equation: _____

4) slope = –1; (6, –1)

Equation: _____

5) slope = 0; (1, –8)

Equation: _____

6) slope = –9; (–2, –3)

Equation: _____

Write an equation for the line through the two points in slope intercept form.

7) (2, 1); (0, –7)

Equation: _____

8) (–6, –6); (2, –2)

Equation: _____

9) (–2, –3); (–1, –4)

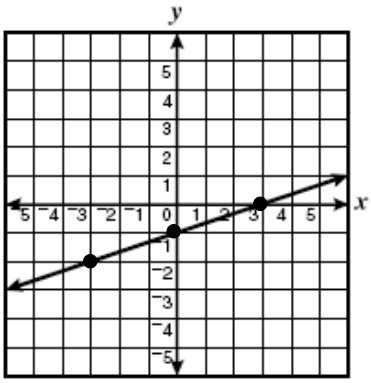
Equation: _____

10) (6, 12); (0, 0)

Equation: _____

Write an equation for the line for each graph.

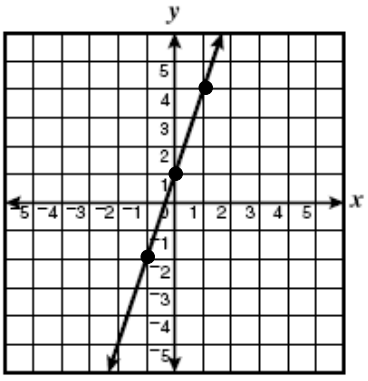
11)



m: _____ *b*: _____

Equation: y = _____

12)



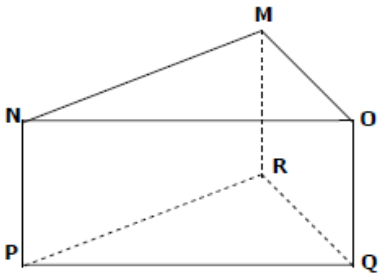
m: _____ *b*: _____

Equation: y = _____

Review of Day 1 – Day 4

Parallel Lines and Transversals

Name _____ Period _____



I. Refer to the figure at right.

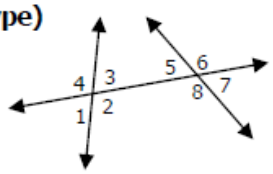
1) Name two more pairs of parallel segments.

2) Name two more segments skew to NM

3) Name two transversals for parallel lines NO and PQ

4) Name a segment that is parallel to plane MRQ.

II. Identify the angles that go with the following types. (give all angles for each type)



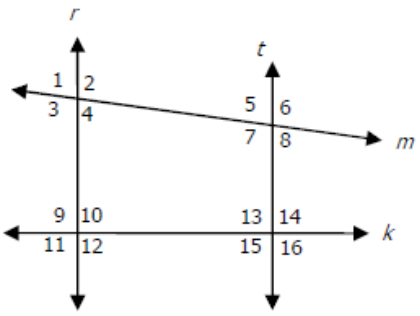
5) Corresponding angles

6) Alternate exterior angles

7) Consecutive interior angles

8) Alternate interior angles

III. Using the figure below, state the transversal that forms each pair of angles. Then identify the special name for the angle pair.



9) ∠1 and ∠12 transversal = _____ special name = _____

10) ∠2 and ∠10 transversal = _____ special name = _____

11) ∠4 and ∠9 transversal = _____ special name = _____

12) ∠6 and ∠3 transversal = _____ special name = _____

13) ∠14 and ∠10 transversal = _____ special name = _____

14) ∠7 and ∠13 transversal = _____ special name = _____

IV. The three-dimensional figure shown below is called a right pentagonal prism.

15) Identify all segments in plane JIH that appear to be skew to EB.

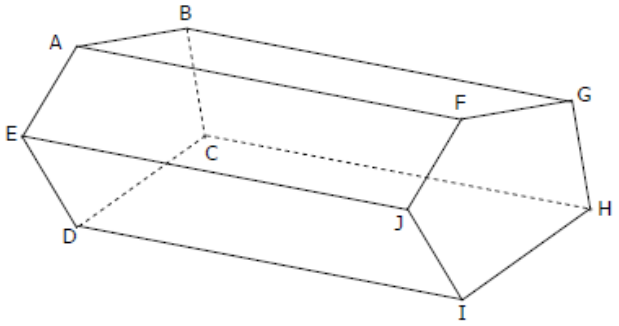
16) Which segments seem parallel to BG?

17) Which segments seem parallel to GH?

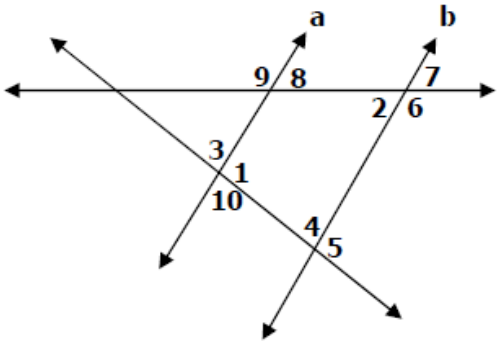
18) Identify all planes that appear parallel to plane FGH.

19) Name four segments skew to CD.

20) Name four segments skew to DI.



In figure below $a \parallel b$, $m\angle 1 = 78°$, and $m\angle 2 = 47°$.
Find measure of each angle.



21) ∠3 22) ∠4

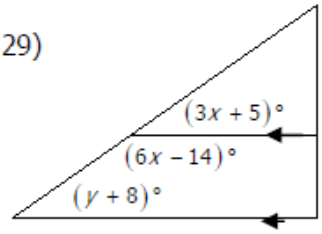
23) ∠5 24) ∠6

25) ∠7 26) ∠8

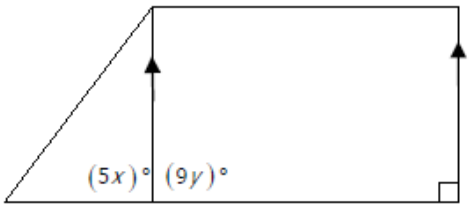
27) ∠9 28) ∠10

Find the missing values of x and y.

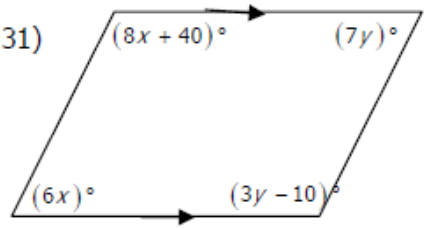
29)



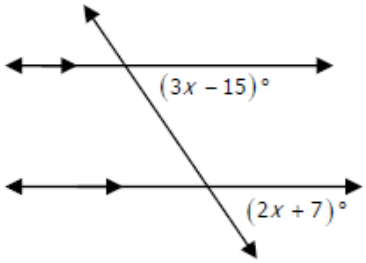
30)



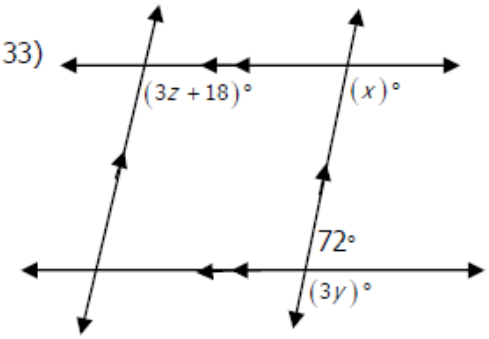
31)



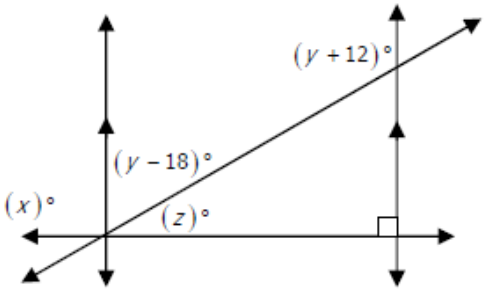
32)



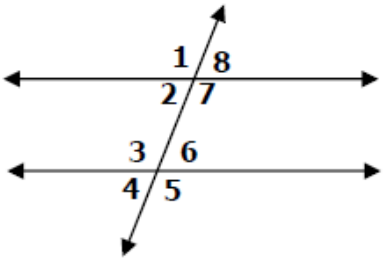
33)



34)



In the figure, $l \parallel m$. Find the measure of each angle. Each problem is different.



35) If $m\angle 7 = 100°$, then $m\angle 3 =$ _____

36) If $m\angle 7 = 175°$, then $m\angle 6 =$ _____

37) If $m\angle 7 = 120°$, then $m\angle 5 =$ _____

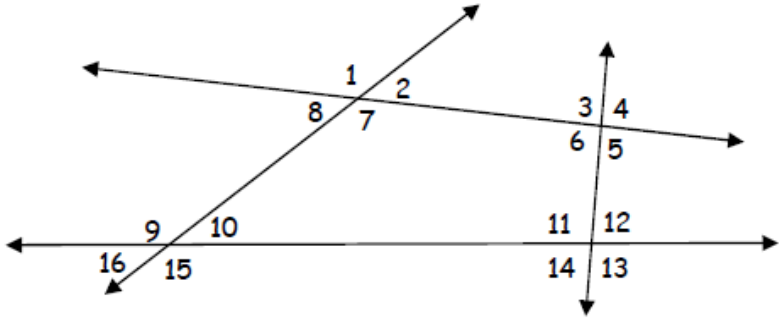
38) If $m\angle 4 = 20°$, then $m\angle 7 =$ _____

39) If $m\angle 3 = 140°$, then $m\angle 8 =$ _____

40) If $m\angle 4 = 30°$, then $m\angle 1 =$ _____

41) If $m\angle 4 = 40°$, then $m\angle 2 =$ _____

42) If $m\angle 7 = 125°$, then $m\angle 4 =$ _____



Use the picture above to identify the special name for the angle pairs.

43) ∠2 and ∠6 _____

44) ∠1 and ∠9 _____

45) ∠9 and ∠6 _____

46) ∠9 and ∠13 _____

47) ∠14 and ∠16 _____

48) ∠10 and ∠16 _____

49) ∠2 and ∠1 _____

50) ∠10 and ∠14 _____

51) ∠11 and ∠6 _____

52) ∠15 and ∠11 _____

53) ∠4 and ∠13 _____

54) ∠3 and ∠11 _____

I. If $m\angle 2 = 58°$ and $m\angle 13 = 111°$, then find the missing angle measures. x ll m, z ll y

55) $m\angle 1 =$ _____

56) $m\angle 2 =$ _____

57) $m\angle 3 =$ _____

58) $m\angle 4 =$ _____

59) $m\angle 5 =$ _____

60) $m\angle 6 =$ _____

61) $m\angle 7 =$ _____

62) $m\angle 8 =$ _____

63) $m\angle 9 =$ _____

64) $m\angle 10 =$ _____

65) $m\angle 11 =$ _____

66) $m\angle 12 =$ _____

67) $m\angle 13 =$ _____

68) $m\angle 14 =$ _____

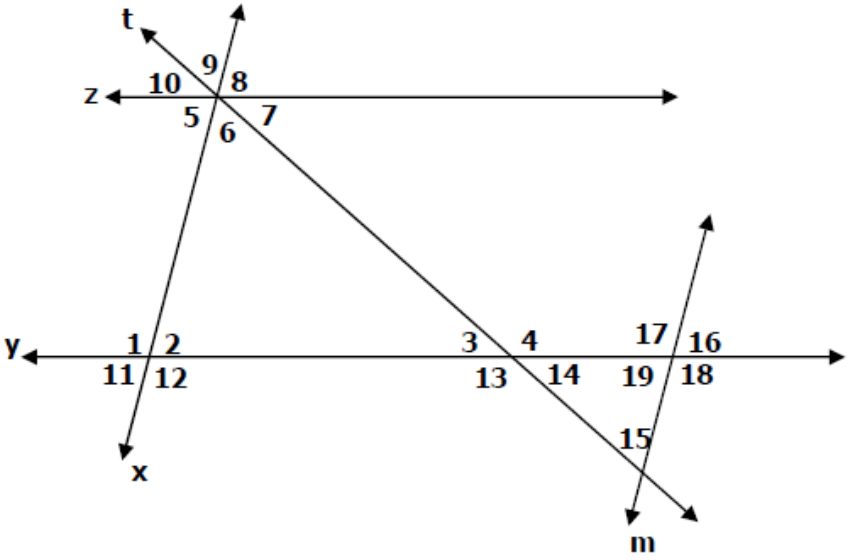
*69) $m\angle 15 =$ _____

70) $m\angle 16 =$ _____ (16-19 look at line x and m)

71) $m\angle 17 =$ _____

72) $m\angle 18 =$ _____

73) $m\angle 19 =$ _____



Find the slope between each set of points

1. (2, -8) (3, 10)

2. (-1, -5) (-3, 9)

3. (12, -4) (18, 4)

4. (-1,4) (-1, -6)

5. (-3, 2) (8, 2)

6. (7, 5) (-8, 0)

7. (-6, 2) (1, -2)

8. (0, 3) (0, 4)

1. _____

2. _____

3. _____

4. _____

5. _____

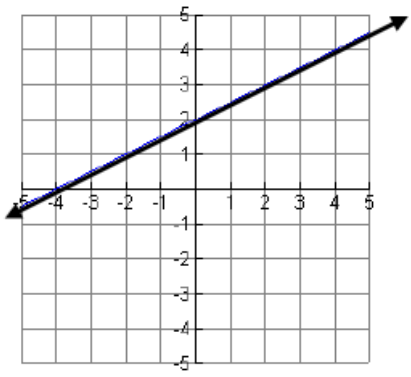
6. _____

7. _____

8. _____

Determine the slope of each line graphed. Then write an equation of the line in slope-intercept form

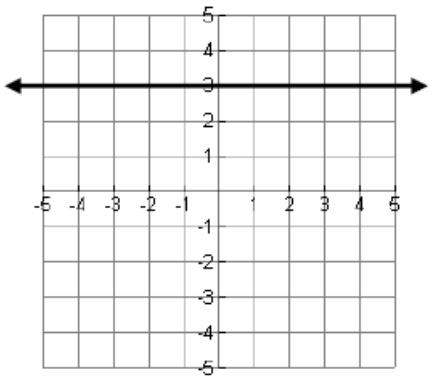
9.



m: _____ *b*: _____

Equation: y = _____

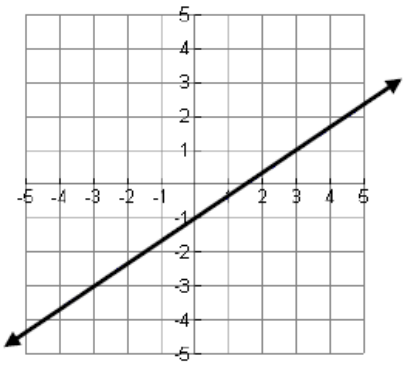
10.



m: _____

Equation: = _____

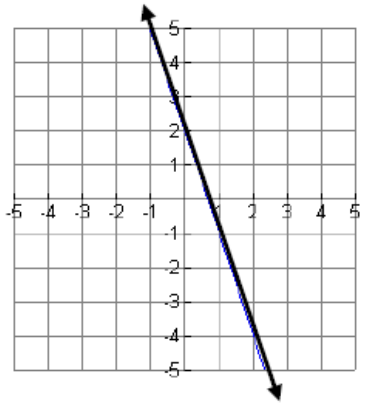
11.



m: _____ *b*: _____

Equation: y = _____

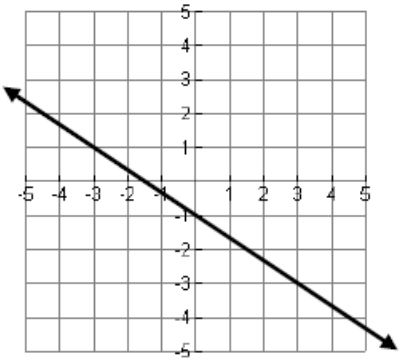
12.



m: _____ *b*: _____

Equation: y = _____

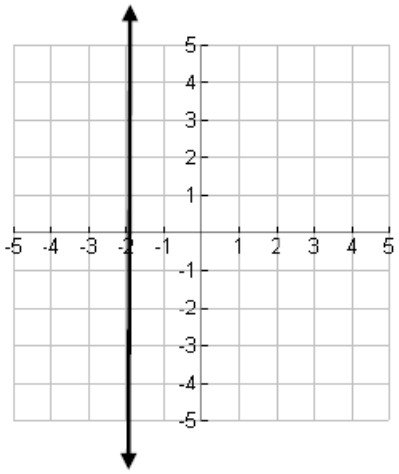
13.



m: _____ *b*: _____

Equation: y = _____

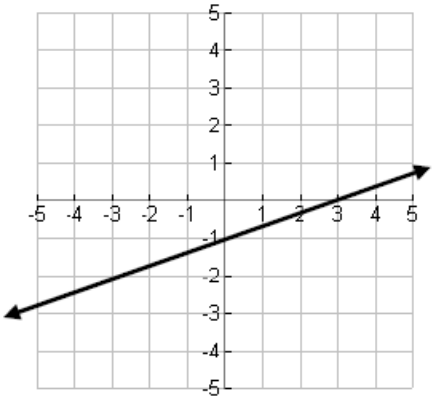
14.



m: _____

Equation: = _____

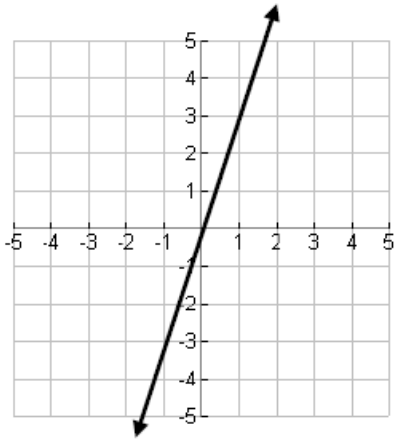
15.



m: _____ *b*: _____

Equation: y = _____

16.

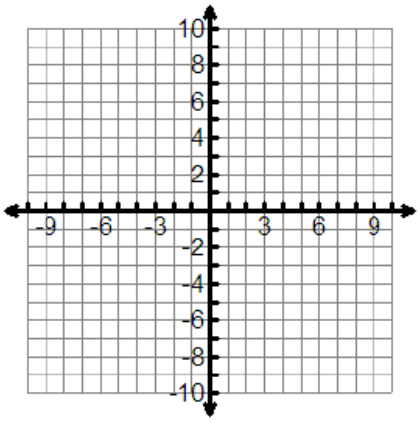


m: _____ *b*: _____

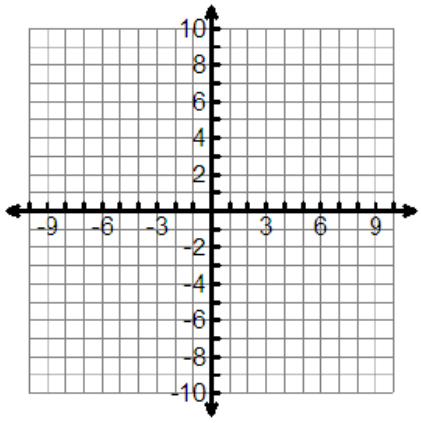
Equation: y = _____

Graph each line

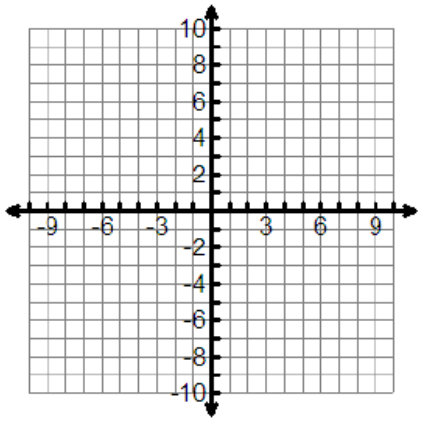
25. $y+2x=5$



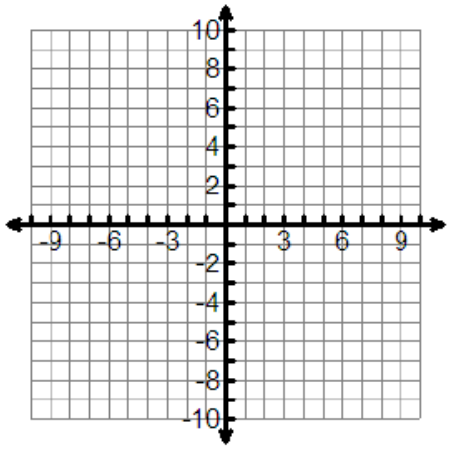
26. $2x+4y=16$



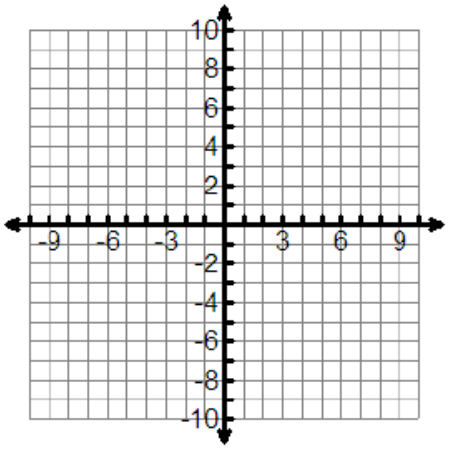
27. $x=-6$



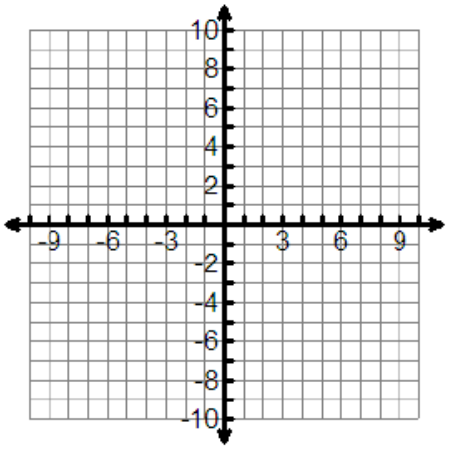
28. $(y-3)=-\frac{3}{5}(x+1)$



29. $y=\frac{4}{5}x+1$



30. $3y-4x+12=-6$



Write the equation of the lines below. Write your answer in slope-intercept form.

1) $m = \frac{1}{2}, b = 6$

2) $m = \frac{3}{4}, (-8, 2)$

3) $(5, -3)$ and $(6, 1)$

4) $m =$ undefined, $(2, 6)$

5) $(2, -1)$ and $(0, 5)$

6) $m = \frac{2}{3}, (4, -1)$

7) $(0, 2)$ and $(-4, 2)$

8) x-intercept is 6,
y-intercept is -3

Day 5 – Slopes of Parallel and Perpendicular Lines

Warm Up

Directions: Find the reciprocal.

1) 2 2) $\frac{1}{3}$ 3) $-\frac{5}{9}$

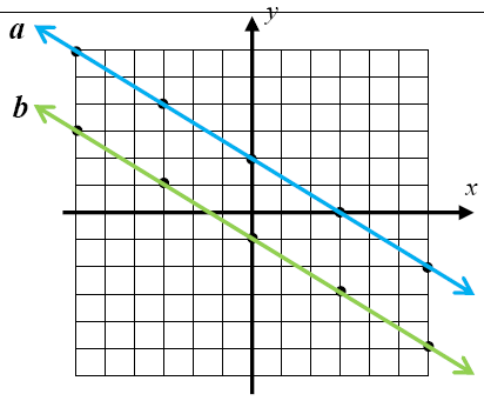
Directions: Find the slope of the line that passes through each pair of points.

4) (2, 2) and (–1, 3) 5) (3, 4) and (4, 6) 6) (5, 1) and (0, 0)

Calculate the slopes of both lines. $m = \frac{y_2 - y_1}{x_2 - x_1}$

1) Line a Line b

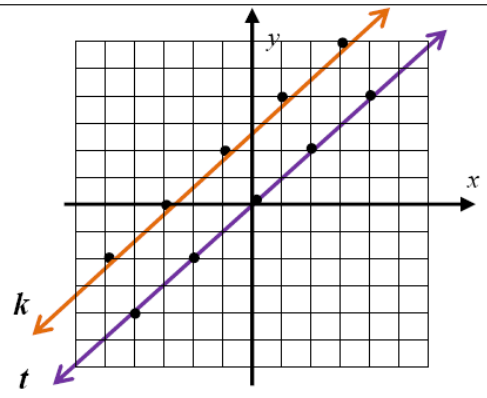
m = m =



What do you notice about the slope of Line a and the slope of Line b? _____

2) Line k Line t

m = m =



What do you notice about the slope of Line k and the slope of Line t? _____

CONCLUSION

What do you call lines which never intersect? _____

What can you conclude about the slope of such lines? Look back at each example above, what do they all have in common?

The graphs of two lines are shown below. These lines intersect at a 90° angle at one point.

Calculate the slopes of both lines. $m = \frac{y_2 - y_1}{x_2 - x_1}$

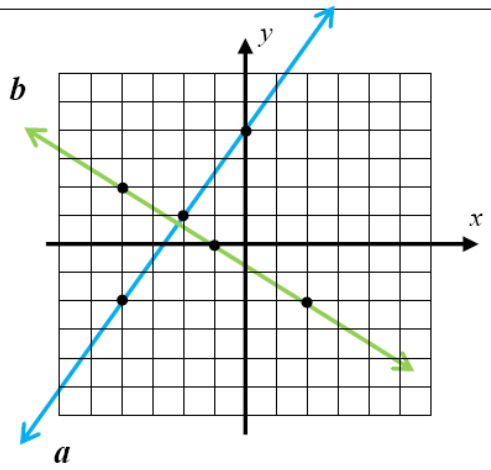
1)

Line *a*

m =

Line *b*

m =



What do you notice about the slope of Line *a* and the slope of Line *b*? _____

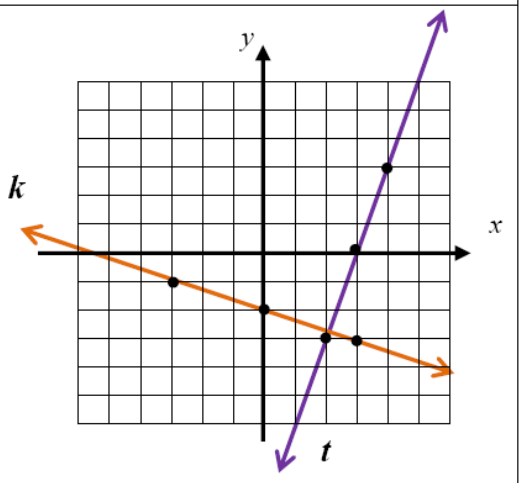
2)

Line *k*

m =

Line *t*

m =



What do you notice about the slope of Line *k* and the slope of Line *t*? _____

CONCLUSION

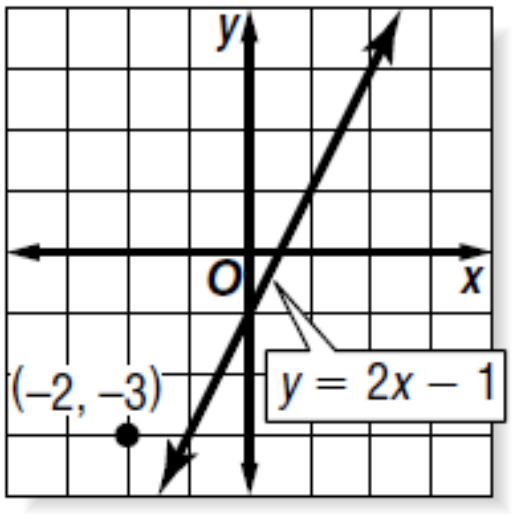
What do you call lines which intersect at 90° angles? _____

What can you conclude about the slope of such lines? Look back at each example above, what do they all have in common?

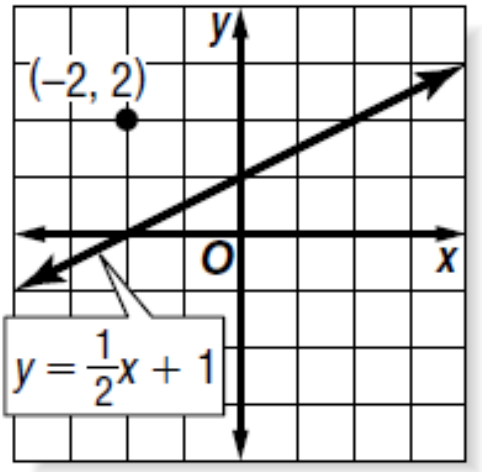
_____

Example 3:

Graph a line *parallel* to the given line and passing through the given point.



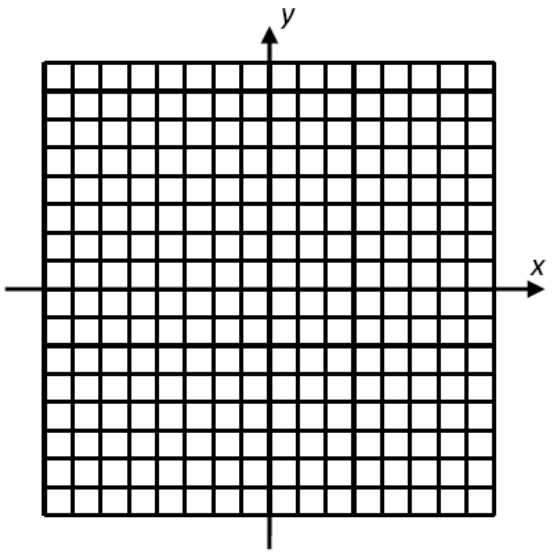
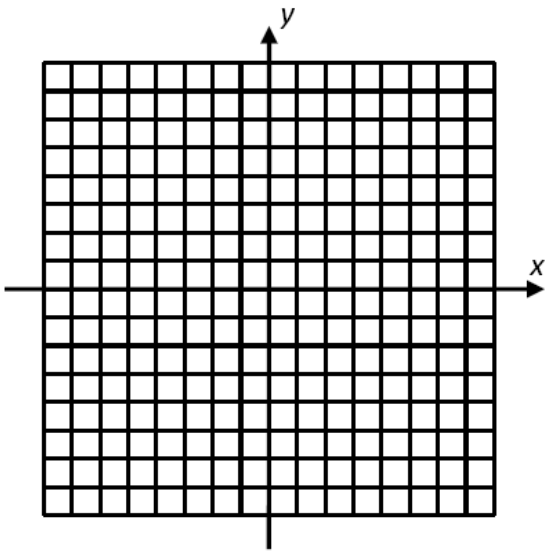
Graph a line *perpendicular* to the given line and passing through the given point.



Summarize

(a) Provide an example of what parallel/perpendicular lines look like

(b) What do you know about parallel/perpendicular lines and their slopes

PARALLEL LINES	PERPENDICULAR LINES
 Slopes are: _____	 Slopes are: _____

Fill in the following table.

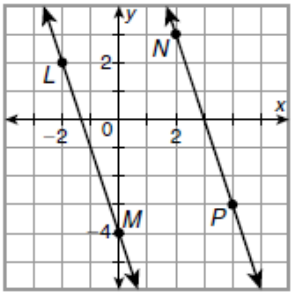
Slope of a Line	Slope of a Line Parallel $m_{\parallel}$	Slope of a Line Perpendicular $m_{\perp}$
$m = \frac{1}{2}$	$m_{\parallel} =$	$m_{\perp} =$
$m = -5$	$m_{\parallel} =$	$m_{\perp} =$
$m = undefined$	$m_{\parallel} =$	$m_{\perp} =$
$m = 0$	$m_{\parallel} =$	$m_{\perp} =$
$m = -\frac{3}{4}$	$m_{\parallel} =$	$m_{\perp} =$
$m = 7$	$m_{\parallel} =$	$m_{\perp} =$

Challenge

If $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$ and the slope of $\overleftrightarrow{PQ} = \frac{x-1}{4}$ and the slope of $\overleftrightarrow{RS}$ is $\frac{6}{8}$, then find the value of *x*. Justify algebraically or numerically.

SUMMARY

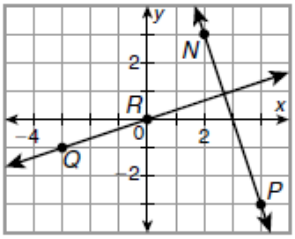
Slopes of Parallel and Perpendicular Lines



slope of $\overleftrightarrow{LM} = -3$

slope of $\overleftrightarrow{NP} = -3$

Parallel lines have the same slope.



slope of $\overleftrightarrow{NP} = -3$

slope of $\overleftrightarrow{QR} = \frac{1}{3}$

product of slopes:

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

Perpendicular lines have slopes that are *opposite reciprocals*. The product of the slopes is -1.

Exit Ticket

1. Given a line with a slope of 2, what is the slope of a line parallel to the given line?

A -2 **C** $\frac{1}{2}$

B $-\frac{1}{2}$ **D** 2

2. Lines *l* and *m* are perpendicular. If the slope of line *m* is $-\frac{4}{3}$, what is the slope of line *l*?

1. $-\frac{4}{3}$
2. $-\frac{3}{4}$
3. $\frac{4}{3}$
4. $\frac{3}{4}$

Day 5 – Slopes of Parallel and Perpendicular Lines HW

Determine the slope of the line passing through the following points. Also find the slope of a line parallel and perpendicular to the slope of the original points.

1) $(3,4),(4,6)$

$m =$ _____

$m_{||} =$ _____

$m_{\perp} =$ _____

2) $(11,-1),(14,-6)$

$m =$ _____

$m_{||} =$ _____

$m_{\perp} =$ _____

3) $(7,-4),(9,-1)$

$m =$ _____

$m_{||} =$ _____

$m_{\perp} =$ _____

---

4) $(14,3),(-11,3)$

$m =$ _____

$m_{||} =$ _____

$m_{\perp} =$ _____

5) $(-4,-6),(-3,-8)$

$m =$ _____

$m_{||} =$ _____

$m_{\perp} =$ _____

6) $(2,5),(2,1)$

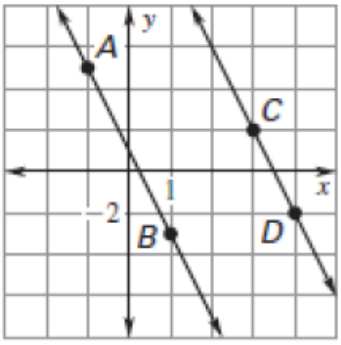
$m =$ _____

$m_{||} =$ _____

$m_{\perp} =$ _____

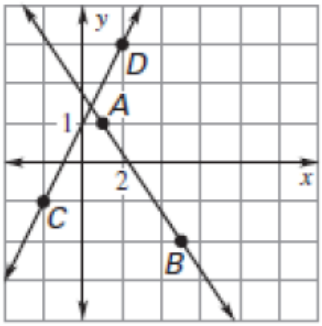
Find the slope of each line. Are the lines parallel?

7)



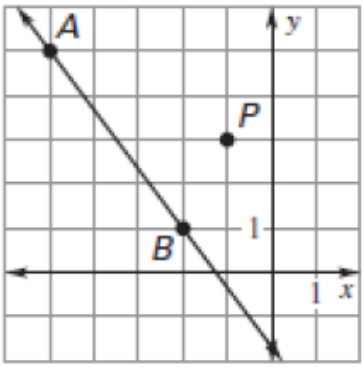
Find the slope of each line. Are the lines perpendicular?

8)



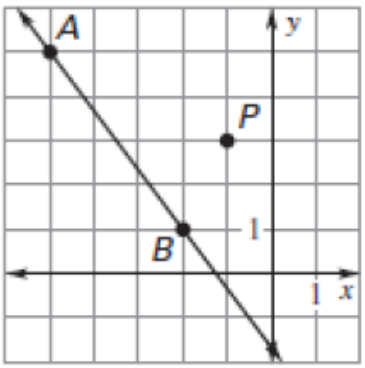
Graph the line parallel to line AB that passes through point P.

9)



Graph the line perpendicular to AB that passes through point P.

10)



Day 6 – Equations of Parallel and Perpendicular Lines

Warm Up

Determine the equation of the line that passes through the two points $(4,\ 2)$ and $(0,\ 8)$.

---

1) Write an equation for the line that passes through (4, 10) and is parallel to the line described by $y = 3x + 8$.

Step 1: $m_{\parallel}$ = _____

Step 2: plug in the point into $y - y_1 = m(x - x_1)$ and solve for y.

Equation: _____

2) Write an equation for the line that passes through (–2 , 5) and is parallel to the line described by $y = \frac{1}{2}x - 7$.

Step 1: $m_{\parallel}$ = _____

Step 2: plug in the point into $y - y_1 = m(x - x_1)$ and solve for y.

Equation: _____

3) Write an equation for the line that passes through (2, –1) and is perpendicular to the line described by $y = 2x - 5$.

Step 1: $m\perp$ = _____

Step 2: plug in the point into $y - y_1 = m(x - x_1)$ and solve for y.

Equation: _____

4) Write an equation for the line that passes through (2, 6) and is perpendicular to the line described by $y = -\frac{1}{3}x + 2$.

Step 1: $m\perp$ = _____

Step 2: plug in the point into $y - y_1 = m(x - x_1)$ and solve for y.

Equation: _____

Regents Practice

5) What is the slope of a line parallel to the line whose equation is y = -4x + 5?

6) What is the slope of a line parallel to the line whose equation is 3x + 6y = 6?

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

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

Challenge

Line m contains $(6, 8)$ and $(-1, 2)$. Line n contains $(-1, 5)$ and $(5, y)$.

What is the value of y if line m is perpendicular to line n? _____

SUMMARY

Given that the line is parallel to $y = 4x + 5$ and passes through the point (-2,4), write the equation of the line.

Parallel lines have equal slopes, so m = 4.
The point $(x_1, y_1) = (-2,4)$
Use the form: $y - y_1 = m(x - x_1)$

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

$y - 4 = 4(x + 2)$ ANS.

Exit Ticket

1. Which is an equation of a line parallel to the line whose equation is $3y = 2x + 3$?

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

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

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

Day 6 – Equations of Parallel and Perpendicular Lines - HW

1) Which equation represents a line parallel to the x-axis?

(a) $y=-5$ (c) $x=3$

(b) $y=-5x$ (d) $x=3y$

2) Which equation represents a line parallel to the line $y = 2x - 5$?

(a) $y = 2x + 5$ (c) $y = 5x - 2$

(b) $y = -x - 5$ (d) $y = -2x - 5$

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

(a) $6y-4x=2$ (c) $4x-6y=2$

(b) $6y+4x=2$ (d) $6x+4y=-2$

4) Which equation represents a line that is parallel to the line $y=3-2x$?

(a) $4x+2y=5$ (c) $y=3-4x$

(b) $2x+4y=1$ (d) $y=4x-2$

5) Find the equation of the line parallel to the line whose equation is $2y - 4x = 10$ and which passes through the point (1, 2).

6) Find the equation of the line perpendicular to the line whose equation is $y = \frac{5}{6}x - 4$ and which passes through the point (5, 3).

7) Write an equation of a line that is parallel to $y = -5x - 15$ and passes through (1, 8).

8) Write an equation of a line that is perpendicular to $y = -\frac{2}{5}x + 6$ and passes through (10, –17).

9) Write an equation of a line that is parallel to $y = -2x + 7$ whose *y*- intercept is –3.

10) Write an equation of a line that is perpendicular to $y = -3x - 5$ whose *y*- intercept is –3.

11) Write an equation of a line that is parallel to: $y = \frac{2}{3}x - 9$.

12) Write an equation of a line that is perpendicular to the line below. $y = -\frac{5}{6}x + 10$

SWBAT: Graph the Solutions to Quadratic Linear Systems

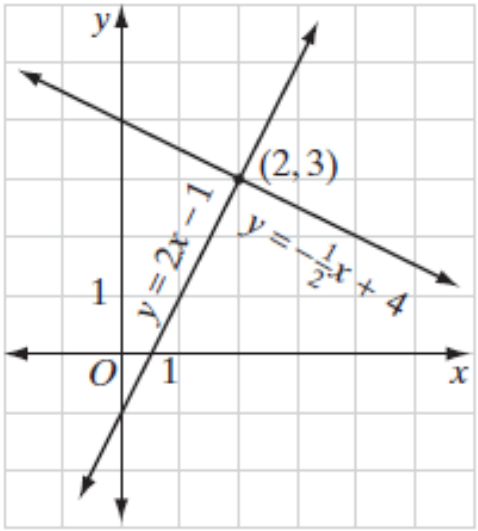
Warm – Up

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

In **Algebra** you learned how to solve a *system of linear equations* by graphing. For example, the graphic solution of the given system of linear equations is shown below.

$$y = -\tfrac{1}{2}x + 4$$
$$y = 2x - 1$$

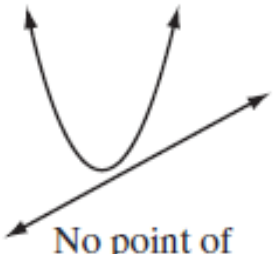


Since the point of intersection, , is a solution of both equations, the common solution of the system is $x =$ and $y =$

A **quadratic-linear system** consists of a quadratic equation and a linear equation. The solution of a quadratic-linear system is the set of ordered pairs of numbers that make both equations true. As shown below, the line may intersect the curve in two, one, or no points. Thus the solution set may contain two ordered pairs, one ordered pair, or no ordered pairs.

Two points of intersection

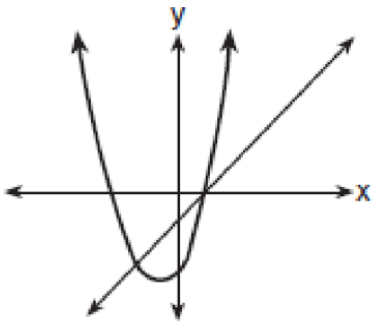
One point of intersection



No point of intersection

Example:

1 The accompanying diagram shows the graphs of a linear equation and a quadratic equation.

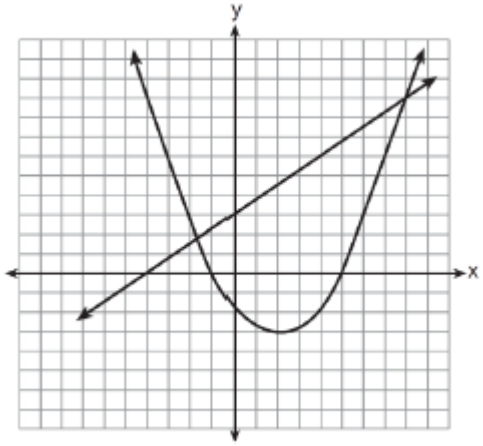


How many solutions are there to this system of equations?

1) 1
2) 2
3) 3
4) 0

Explain your answer below.

2. Two equations were graphed on the set of axes below.



Which point is a solution of the system of equations shown on the graph?

1) (8,9)
2) (5,0)
3) (0,3)
4) (2,–3)

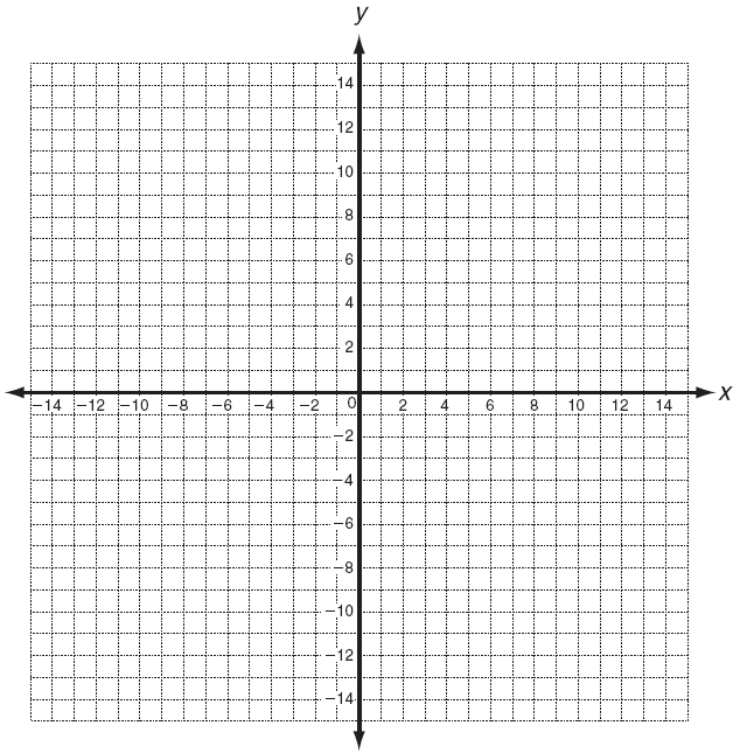
Explain your answer below.

Quadratic Linear System of Equations

1. $y = x^2 - 4x + 3$

$y = x + 3$

Quadratic Equation	Linear Equation
Vertex = (,) x | y Vertex	y = x + 3 m = _____ b = _____

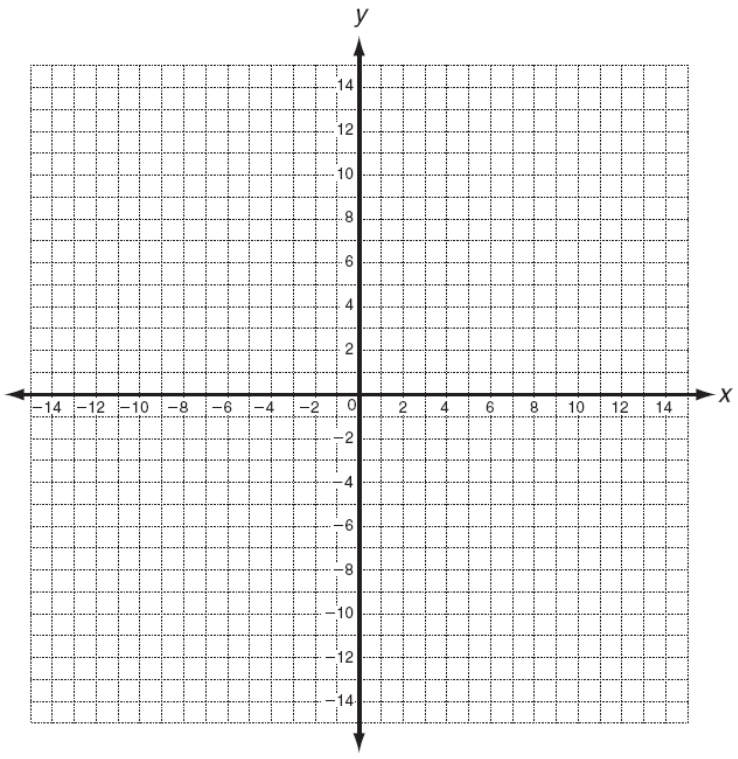


SOLUTION =

2. $y = -x^2 + 2x + 4$

$x + y = 4$

Quadratic Equation	Linear Equation
Vertex = (,) x | y Vertex	m = _____ b = ____

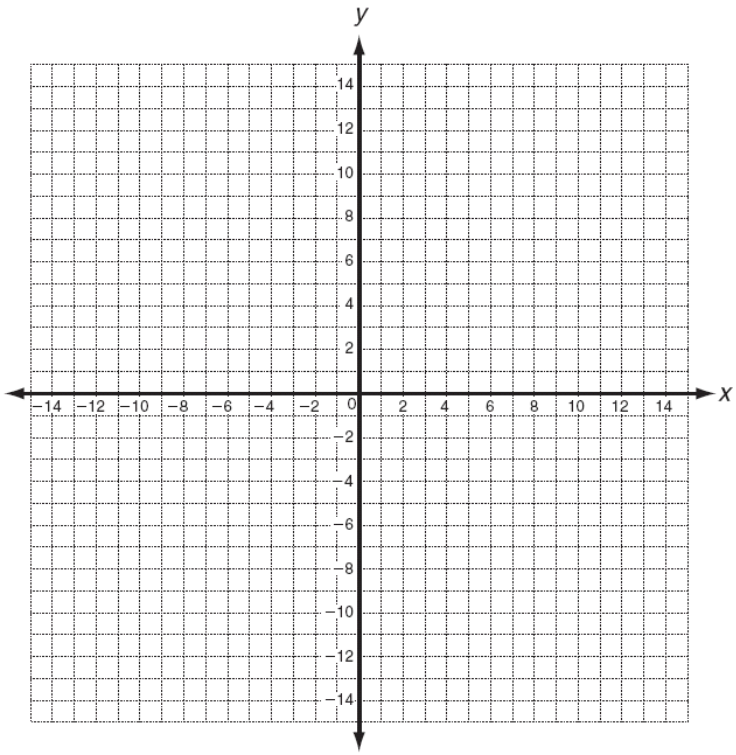


SOLUTION =

3. $y = (x+3)^2 - 4$

$y = 2x + 5$

Quadratic Equation	Linear Equation
Vertex = (,) x | y | | | | | | | | | | ← Vertex | | | | | | | |	m = _____ b = ____

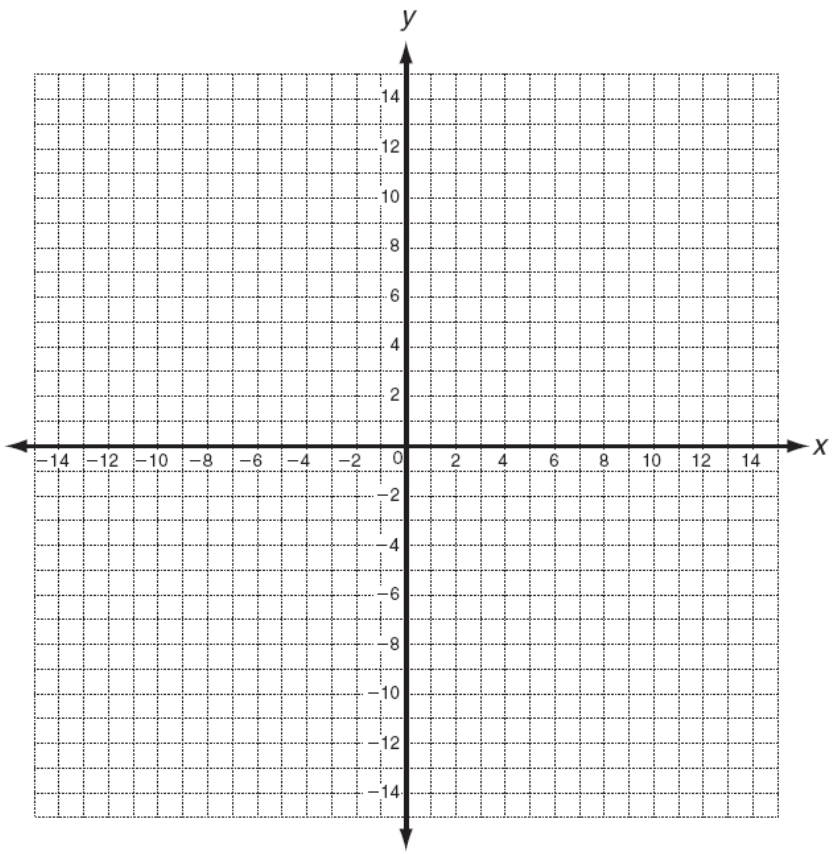


SOLUTION =

4. $y = x^2 - 9$

$y = -5$

Quadratic Equation	Linear Equation
Vertex = (,) x | y Vertex	m = _____ b = _____



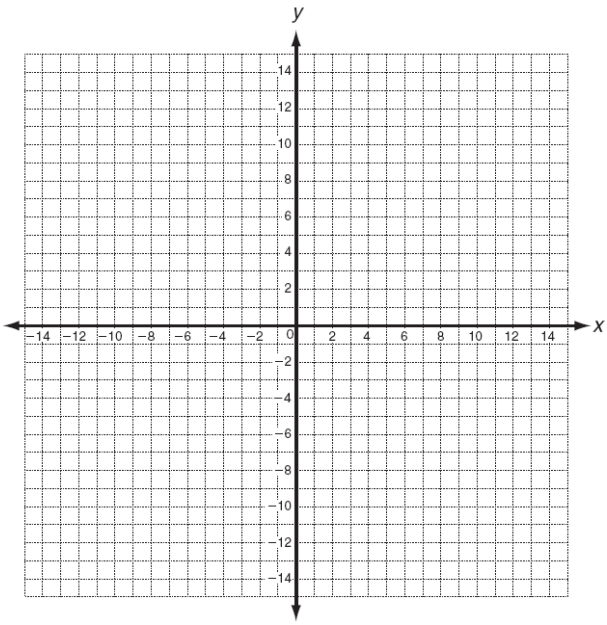
SOLUTION =

Challenge

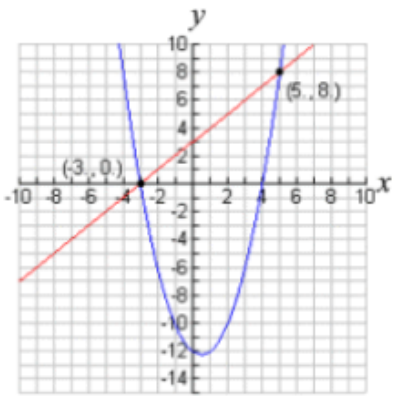
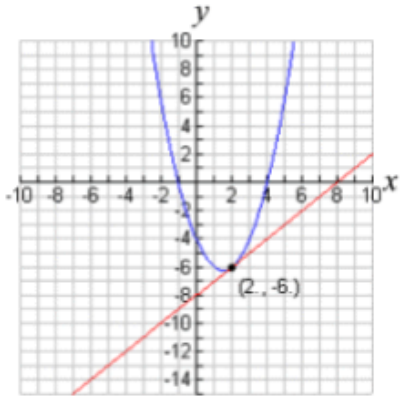
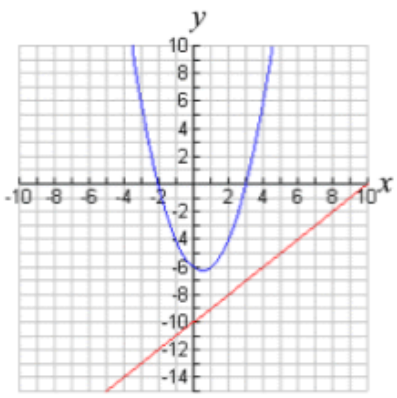
Solve the sytem of equations below.

$x^2 + y^2 = 40$

y = 3x



Summary

		
The equations will intersect in two locations. Two real solutions.	The equations will intersect in one location. One real solution.	The equations will not intersect. No real solutions.

Exit Ticket

Which ordered pair is a solution to the system of equations $y = x$ and $y = x^2 - 2$?

1) $(-2,-2)$
2) $(-1,1)$
3) $(0,0)$
4) $(2,2)$

x	Y1	Y2

Day 7 – HW

1. When solved graphically, what is the solution to the following system of equations?

$$y = x^2 - 4x + 6$$

$$y = x + 2$$

1) $(1,4)$
2) $(4,6)$
3) $(1,3)$ and $(4,6)$
4) $(3,1)$ and $(6,4)$

x	Y1	Y2

2. Given the equations: $y = x^2 - 6x + 10$

$$y + x = 4$$

What is the solution to the given system of equations?

1) $(2,3)$
2) $(3,2)$
3) $(2,2)$ and $(1,3)$
4) $(2,2)$ and $(3,1)$

x	Y1	Y2

3. Which of the following sets of points represents the solution set of the given linear-quadratic system?

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

(1) $\{(2,7)\}$
(2) $\{(1,0)\}$
(3) $\{(1,0),(2,-5)\}$
(4) $\{(2,7),(-3,-8)\}$

x	Y1	Y2

4. How many solutions does the following system of equations have?

$y = 3x^2 + 2x + 5$

$y = -x - 2$

(1) 1 (2) 2 (3) 3 (4) 0

x	Y1	Y2

5. How many solutions does the following system of equations have?

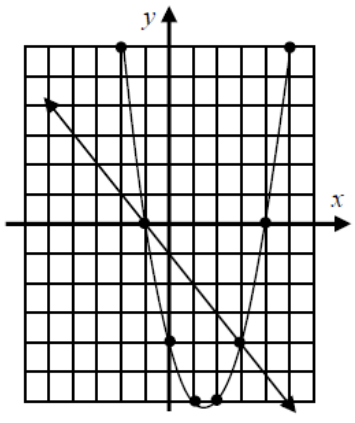
$y = -2x^2 + 2x + 7$

$y = x + 3$

(1) 1 (2) 2 (3) 3 (4) 0

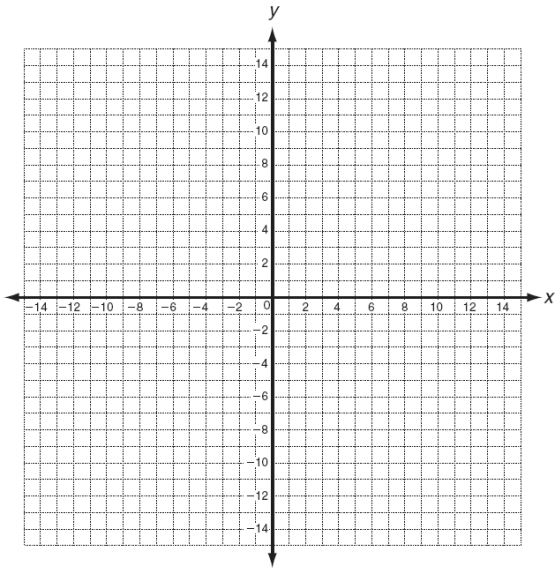
x	Y1	Y2

6. Given the graphs of the linear function and quadratic function shown, state the solution set of the system.



Graph the system and find the points of intersection.

7. $y = 3x - 1$
   $y = -x^2 + 4x + 1$



Solution =

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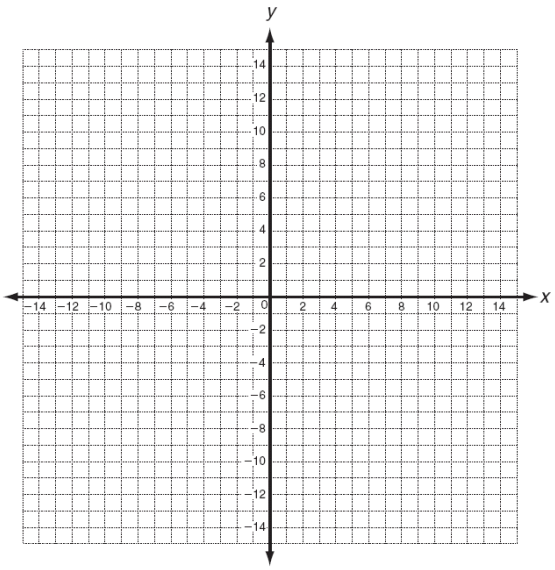
8. $y = x - 4$
   $y = 2x^2 + 4x$



Solution =

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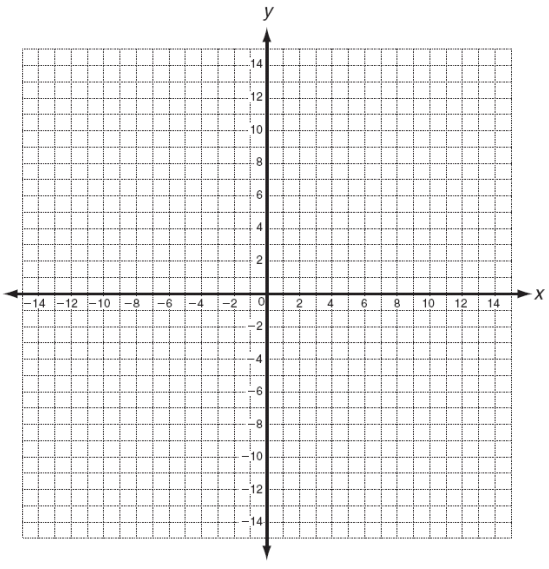
9. $y = (x-2)^2 - 3$
   $2y + 16 = 4x$



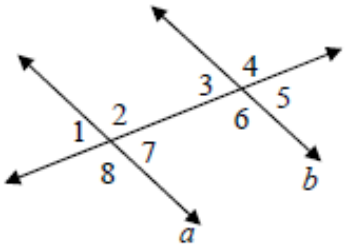
Solution =

REVIEW SECTION

Name _____Date _____ **Chapter 3 Test REVIEW**

Section I: Angles formed by Parallel and Perpendicular Lines

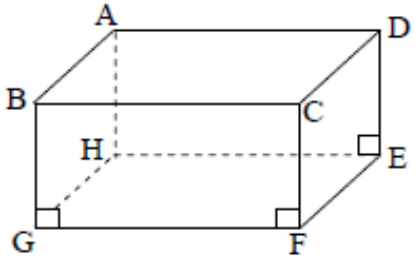
Use the given diagram to list all pairs of angles that apply.



1. Alternate Interior Angles — 1. _____
2. Alternate Exterior Angles — 2. _____
3. Same-side Interior Angles (Consecutive Interior) — 3. _____
4. Same-side Exterior Angles (Consecutive Exterior) — 4. _____
5. Corresponding Angles — 5. _____
6. Vertical Angles — 6. _____
7. Linear Pair — 7. _____

8. If lines are parallel, then…
   a. Alternate Interior Angles are _____.
   b. Alternate Exterior Angles are _____.
   c. Corresponding Angles are _____.
   d. Same-side (Consecutive) Interior Angles are _____.
   e. Same-side (Consecutive) Exterior Angles are _____.

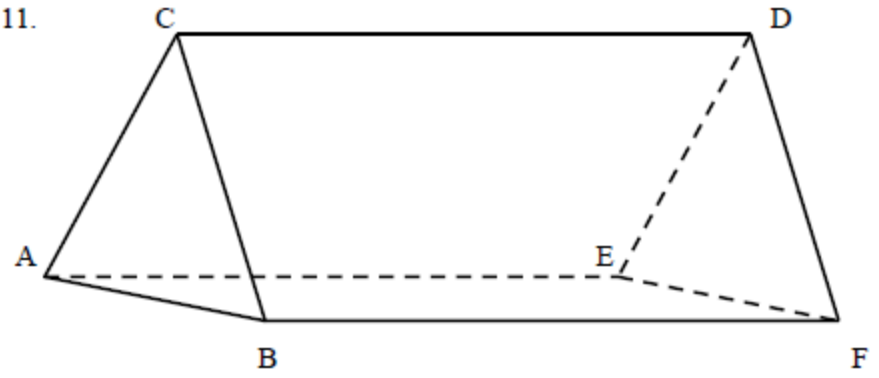
9. Given the diagram below, determine if the segments are parallel, perpendicular, skew, or neither. All segments intersect to make right angles.



   a. $\overline{BG}, \overline{AD}$ _____
   b. $\overline{BC}, \overline{AD}$ _____
   c. $\overline{CF}, \overline{FE}$ _____
   d. $\overline{AB}, \overline{FE}$ _____

10. Using the diagram above list three pairs of parallel planes. Be sure to label them properly by using three points per plane.
    a. _____
    b. _____
    c. _____

11.



a. Name all pairs of parallel segments. _____

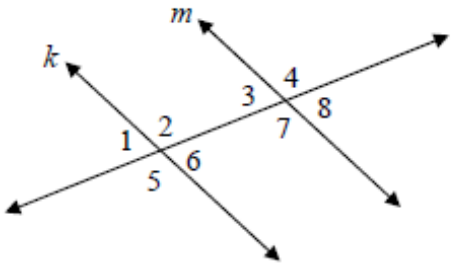
b. Name two skew lines _____

c. Name two parallel planes _____

d. Name all segments skew to $\overline{CD}$ _____

e. Name all segments parallel to $\overline{CD}$ _____

State the postulate or theorem that can be used to prove $k \parallel m$. If there is not enough information then say "none".



12. $\angle 1 \cong \angle 3$ 12. _____

13. $m\angle 3 + m\angle 4 = 180^\circ$ 13. _____

14. $\angle 2 \cong \angle 7$ 14. _____

15. $m\angle 6 + m\angle 7 = 180^\circ$ 15. _____

16. $\angle 4 \cong \angle 5$ 16. _____

17. $\angle 4 \cong \angle 7$ 17. _____

18. In the diagram, parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are cut by transversal $\overleftrightarrow{EF}$ at R and S, respectively. If m$\angle ERB = 72$, find m$\angle RSC$.

1. 18 3. 180
2. 72 4. 108

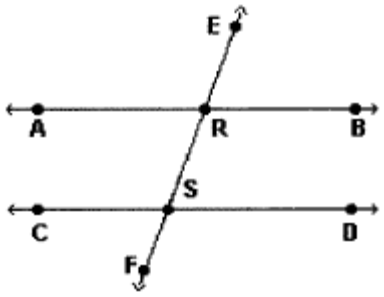
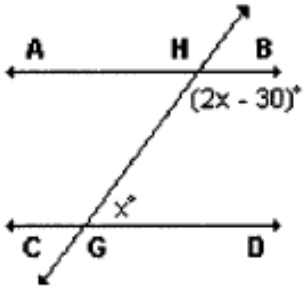


Figure 1

19.

In the diagram, transversal $\overleftrightarrow{GH}$ intersects parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$, m$\angle DGH = x$, and m$\angle BHG = 2x - 30$. Find the value of x.

1. 30 3. 70
2. 50 4. 110



20.

In the diagram, parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are intersected by transversal $\overleftrightarrow{EF}$ at G and H, respectively. If m$\angle CHG = x + 20$ and m$\angle DHG = 3x$, find the value of x.

1. 17.5 3. 50
2. 40 4. 90

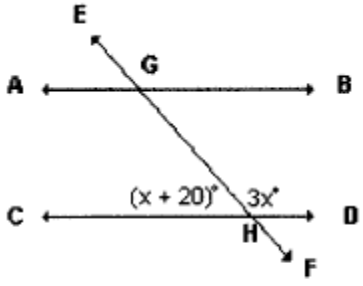


Figure 3

21.

In the diagram, parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are intersected by transversal $\overleftrightarrow{EF}$ at G and H, respectively. If $m\angle AGH = 4x + 30$ and $m\angle GHD = 7x - 9$, what is the value of x?

1. 3
2. 10
3. 13
4. 18

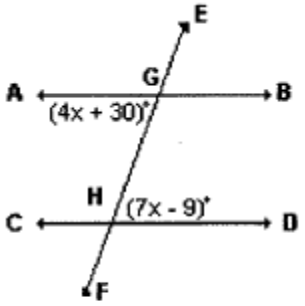


Figure 4

22.

In the diagram, transversal $\overleftrightarrow{RS}$ intersects parallel lines $\overleftrightarrow{MN}$ and $\overleftrightarrow{PQ}$ at A and B, respectively. If $m\angle RAN = 3x + 24$ and $m\angle RBQ = 7x - 16$, find the value of x.

1. 5
2. 8.2
3. 10
4. 16.4

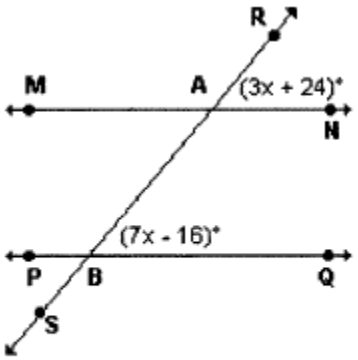


Figure 5

23.

In the diagram, transversal $\overleftrightarrow{MN}$ intersects parallel lines $\overleftrightarrow{RS}$ and $\overleftrightarrow{TU}$ at P and Q, respectively. If $m\angle RPM = 50$, find m $\angle PQU$.

1. 40
2. 50
3. 130
4. 140

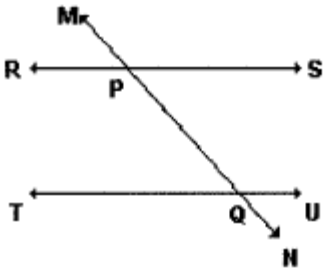
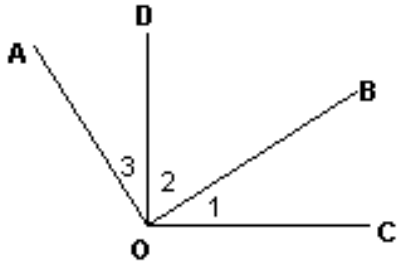


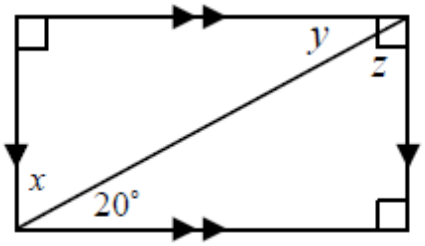
Figure 6

24.

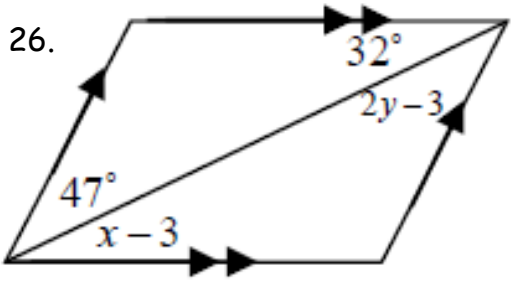


In the diagram: $\overline{OA} \perp \overline{OB}$ and $\overline{OD} \perp \overline{OC}$. If $m\angle 3 = 39$, what is $m\angle 1$?

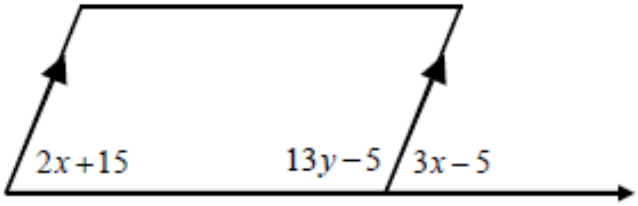
25. Solve for x, y, and z.



26.



27.



Section II: Coordinate Geometry

Given each set of lines determine if they are parallel, perpendicular, or neither.

17) $4y = 2x - 8$
$3x - 6y = 10$

18) $3x - 6y = 12$
$8y = -4x + 10$

17)_____

18)_____

19) $y = -2$
$x = 1$

20) $(y - 4) = \frac{1}{3}(x + 5)$
$y = -3x + 8$

19)_____

20)_____

21) $6x - 4y = 24$
$-2x + 8y = 16$

22) $x = -8$
$x = 6$

21)_____

22)_____

23) $y = 2$
$y = 6$

24) $y = 6x - 6$
$y + 6x = 10$

23)_____

24)_____

Write the equation of each line described below. You need to put your answer in the form specified: Slope-Intercept (SI), or Point Slope (PS). If no form is specified, then you may choose.

25) $m = \frac{1}{2}$, $b = 6$

26) $m = \frac{3}{4}$, $(-8,2)$

25) _____SI

26) _____PS

27) (5, -3) and (6, 1)

28) m = undefined, (2, 6)

27) _____PS

28) _____

29) $(2,-1)$ and $(0,5)$

30) $m = \frac{2}{3}$, $(4,-1)$

29) _____SI

30) _____SI

Parallel and Perpendicular Lines

a) If lines are parallel, then their slopes are: _____

b) If lines are perpendicular, then their slopes are: _____

Write the equation of each line described below. You need to put your answer in the form specified: Slope-Intercept (SI), or Point Slope (PS). If no form is specified, then you may choose.

31) Parallel to $y = 3x - 5$, through $(2, -1)$ _____ SI

32) Parallel to $4x - 2y = 5$, through $(-3, 7)$ _____ PS

33) Perpendicular to $y = -2x + 1$, through $(-8, 6)$

PS

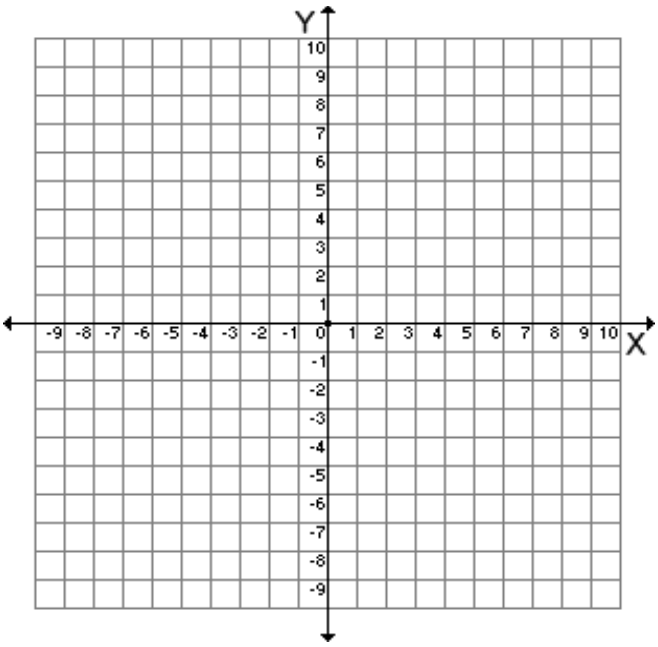
34) Perpendicular to $3x + 4y = 12$, through $(-2, 8)$

Systems of Linear and Non-Linear Functions

35.

Solve the quadratic-linear system graphically: $y = x^2 - 6x + 6$

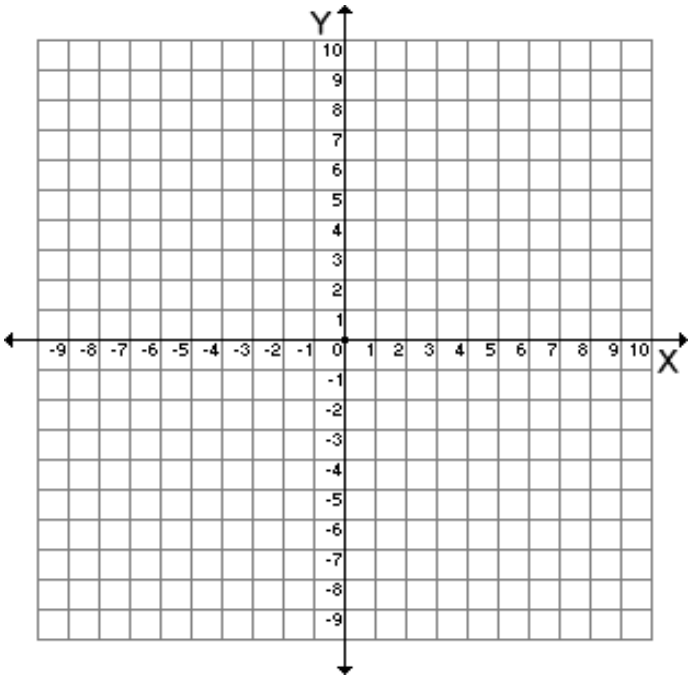
$y = x - 4$



36.

Solve the quadratic-linear system graphically: $y = (x - 2)^2 - 1$

$x = 2$



37. Given the system of equations: $y = x^2 - 4x$

$$x = 4$$

The number of points of intersection is

1) 1
2) 2
3) 3
4) 0

38. When solved graphically, what is the solution t the following system of equations?

$$y = x^2 - 4x + 6$$

$$y = x + 2$$

1) $(1,4)$
2) $(4,6)$
3) $(1,3)$ and $(4,6)$
4) $(3,1)$ and $(6,4)$

39. What is the solution of the following system of equations?

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

$$y = 2x + 5$$

1) $(0,-4)$
2) $(-4,0)$
3) $(-4,-3)$ and $(0,5)$
4) $(-3,-4)$ and $(5,0)$