T-G Geometry   Week 16 $^1/_{10}$

Graph.

$$3x-6y=12$$
$$-3x \qquad -3x$$

$$3x-6y=12$$

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

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

$$slope = \frac{1}{2} = \frac{up\ 1}{2\ right}$$

$$3x-6y=12$$

$\boxed{X=0}$ o $(0,-2)$
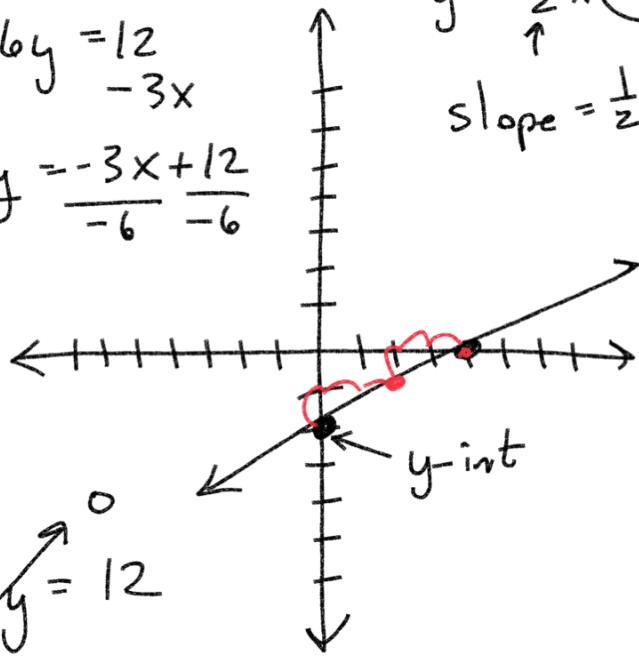
$\cancel{3x}-6y=12$ $\qquad$ $y=0$

$$-6y=12$$
$$\frac{-6y}{-6} = \frac{12}{-6}$$
$$\boxed{y=-2}$$

$3x-\cancel{6y}=12$

$(4,0)$ $\frac{3x}{3}=\frac{12}{3}$ $x=4$

← y-int

Find the linear equation for a line parallel
to $\quad 3x-6y=12$ that goes through
the point $\boxed{(1,2)}$

$$3x-6y=12$$
$$-3x \qquad -3x$$

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

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

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

parallel lines have same slope

$\boxed{m=\frac{1}{2}}$ $\qquad (1,2)$

$$y=mx+b \qquad b=2-\frac{1}{2}$$

$$2=\left(\frac{1}{2}\right)(1)+b \qquad \frac{4}{2}-\frac{1}{2} \boxed{\frac{3}{2}}$$

$$2=\frac{1}{2}+b$$

$$-\frac{1}{2} \quad -\frac{1}{2} \qquad \boxed{y=\frac{1}{2}x+\frac{3}{2}}$$

Determine the linear equation for a line
perpendicular to $y = \frac{-3}{4}x + 8$ that goes
through the point $(6, -9)$

Given slope: $-\frac{3}{4}$ perpendicular lines

                                        opposite   inverse

$y = \left(-\frac{3}{4}\right)x + 8$ $-\frac{3}{4} \rightarrow \left(\frac{3}{4}\right) \rightarrow \frac{4}{3}$

$y = mx + b$

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

              new $m = \frac{4}{3}$ $(6, -9)$

                                                          $b = -17$

$y = mx + b$
$\downarrow \quad \downarrow \downarrow$ $y = mx + b$
$-9 = \left(\frac{4}{3}\right)(6) + b$ $\downarrow \qquad \downarrow$
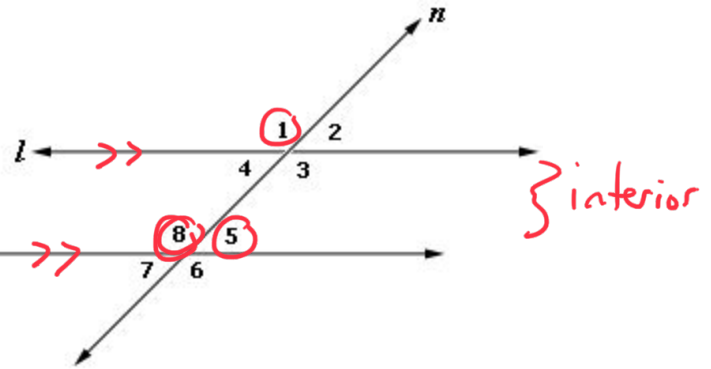 $y = \frac{4}{3}x - 17$
$-9 = 8 + b$ $b = -17$
$-8 \quad -8$

Geometry Chapter 3 Pre-Test

1.) (2 pts each, 10 pts total) Use the following illustration to define the relationship between each of the angles listed. Please include both the type of angles and whether they are congruent, supplemental, or complementary.

−linear pair
Supplemental

a) ∠1 & ∠8 corresponding congruent

−vertical angle congruent

b) ∠5 & ∠7

c) ∠4 & ∠5 alt. interior congruent

−corresponding congruent

d) ∠4 & ∠8

−alt. interior congruent

e) ∠5 & ∠8 linear pair supplemental

−same−side interior supplemental

} interior

3x+9 = 4(26.57)+8
3x+9 = 106.28+8
3x+9 = 114.28
  −9   −9
3x = 105.28
─3   ─3
X = 35.1

2.) (10 pts) Find the value of x and y.

Same−side interior
{ 4y + 8 + 3y −14 = 180
7y + 8 −14 = 180

7y −6 = 180
   +6   +6
7y = 186
─7   7

(3x + 9)
(4y + 8)°
(3y −14)°

y = 26.57

vertical
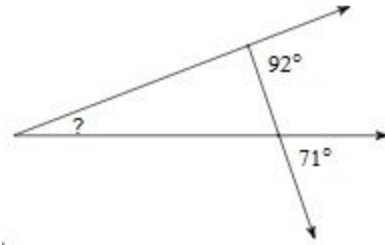
3.) (2.5 pts each, 10 pts total) Find the angle measure of each of the indicated angles.

a) ∠1 = 115

b) ∠2 = 115

c) ∠3 = 148

d) ∠4 = 32

Alternate interior

Alt. interior

vertical

115°
115 1   2 115
32°   3
       4
       148

Same−side interior
∡3 + 32 = 180
    −32   −32
∡3 = 148

32°

Interior Sum of angles
Triangle = 180°
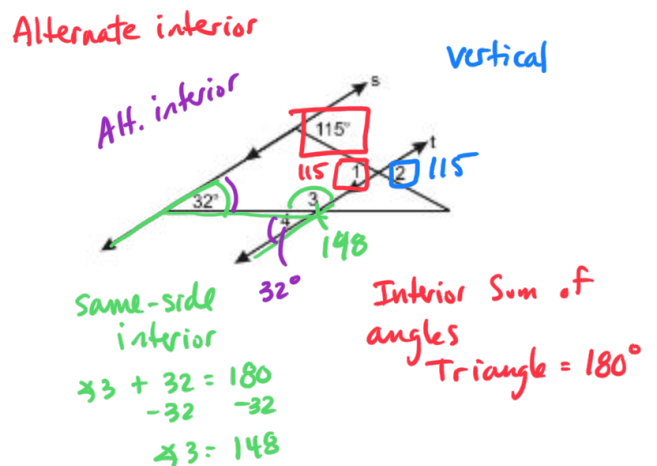
4.) (5 pts each, 10 pts total) Use the properties of triangles to find the missing angles and/or variables.

a) Find "?"

92°

?

71°

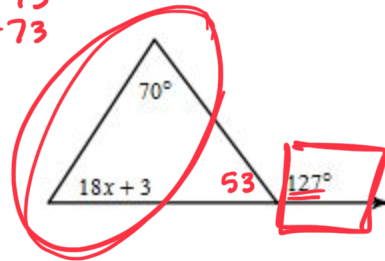$127 = 18x + 3 + 70$

$127 = 18x + 73$

$-73 \qquad -73$

b) Find x

70°

$\dfrac{54}{18} = \dfrac{18x}{18}$
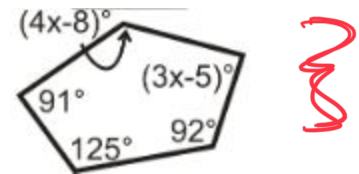
18x + 3   53   127°

$X = 3$

5.) (5 pts each, 15 pts total) Answer each of the following using your understanding of polygons.

a) What is the total interior angle measure of a 15-sided regular polygon? What is the measure of each angle within the 15-sided regular polygon?
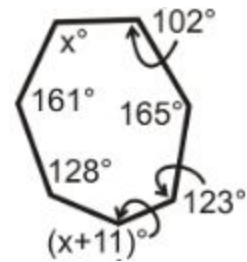
$180(n-2) \qquad n = 15$

$180(15-2)$

$\dfrac{180(n-2)}{n} \qquad \dfrac{180(15-2)}{15}$

b) Find x.

(4x-8)°

91°   (3x-5)°

125°   92°

c) Find x.

$102°$
$x°$
$161°$ $165°$
$128°$
$123°$
$(x+11)°$

6.) (5 pts each, 10 pts total) Find the slope of each of the following sets of ordered pairs.

$\overset{x\ y}{} \overset{x\ y}{}$

a) (5, 3) (7, -5)

$m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{-5 - 3}{7 - 5} = \dfrac{-8}{2} = \boxed{-4}$

b) (8, -2) (2, 10)

7.) (5 pts) Write an equation for the line with the given slope that contains the given point. Graph the line.
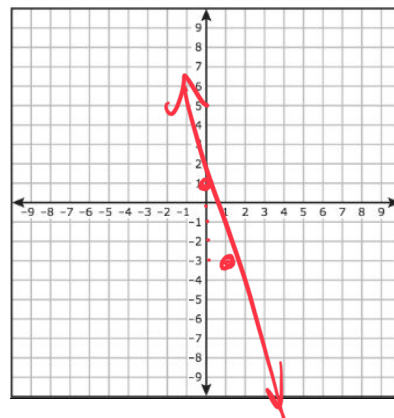
slope -4, (-1, 5)

$y = -4x + 1$

$y = mx + b$

$5 = (-4)(-1) + b$

$5 = 4 + b$

$\underline{-4 \quad -4}$
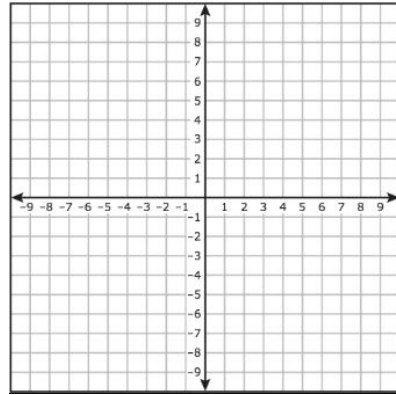
$\boxed{1 = b}$

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8.) (5 pts each, 10 pts total) Write the equation for the line containing the given points in both point-slope and slope-intercept forms. Graph each line.
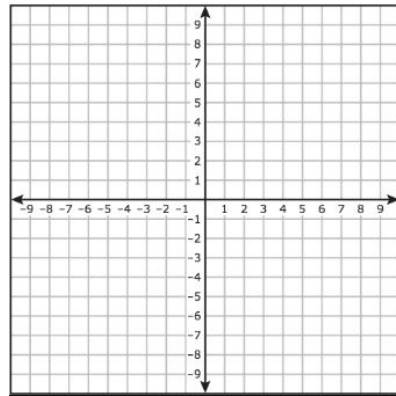
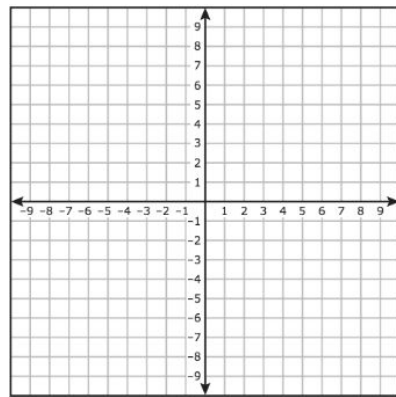a) (-3,4) (6,1)

Find slope

then equation

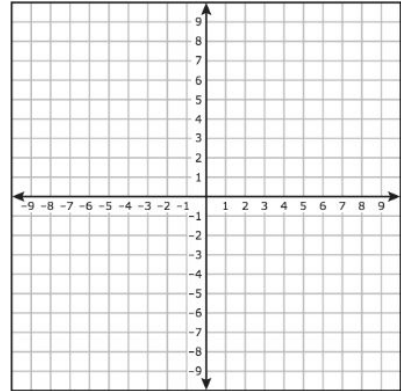$y = mx + b$

b) (7,-2) (-1, 2)

9.) (5 pts each, 10 pts total) Graph each line.

a) $2x - 4y = 12$

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

10.)   (5pts each, 10 pts total) Write the specified equation.

a) Write an equation for the line perpendicular to the line $y = \frac{3}{2}x + 5$ that contains the point (-6,3).

b) Write an equation for the line parallel to the line $12x + 3y = 6$ that contains the point (1,-2).

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