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.

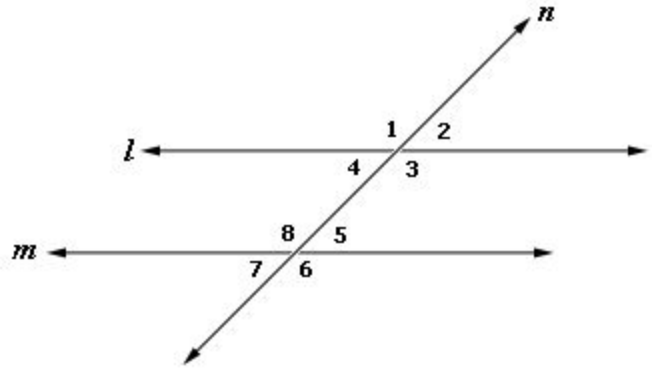
a) ∠1 & ∠8

b) ∠5 & ∠7

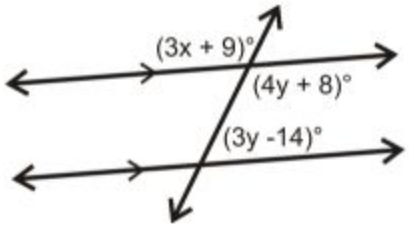
c) ∠4 & ∠5

d) ∠4 & ∠8

e) ∠5 & ∠8



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



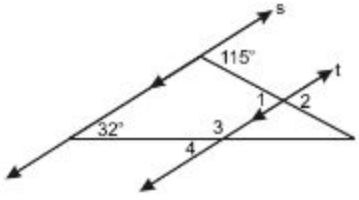
3.) (2.5 pts each, 10 pts total) Find the angle measure of each of the indicated angles.

a) ∠1

b) ∠2

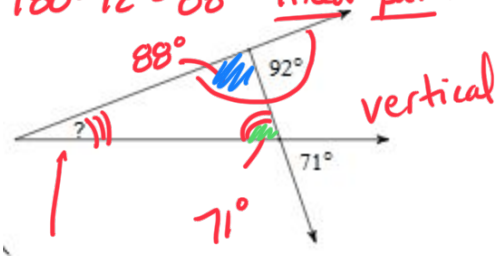
c) ∠3

d) ∠4



4.) (5 pts each, 10 pts total) Use the properties of triangles to find the missing angles and/or variables.

a) Find "?"



180-92 = 88 linear pairs

vertical

sum of interior angles of a triangle = 180°

180°

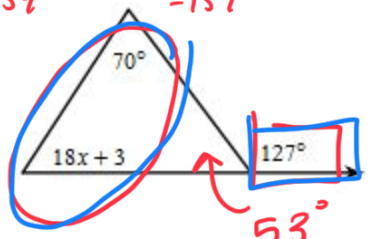
88° + 71° + ? = 180°

159° + ? = 180°

-159° -159°

? = 21°

b) Find x



180-127

53°

18x + 3 + 70 + 53 = 180°

-53 -53

18x + 3 + 70 = 127

18x + 73 = 127

-73 -73

18x = 54

18 18

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) n = # of sides

180(15-2)

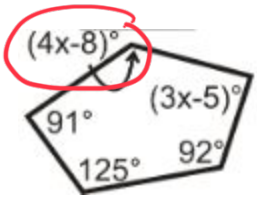
180(13) = 2340°

Regular = all sides equal

180(n-2) / n

180(15-2) / 15 = 2340 / 15 = 156°

b) Find x.



180(n-2)

180(5-2)

180(3) = 540

540 = 4x - 8 + 3x - 5 + 92 + 125 + 91

540 = 7x + 295

-295 -295

245 = 7x

7 7

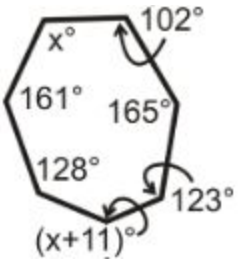
x = 35

300 = 2x

-2 -2

298 = x

c) Find x.



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

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

x x y y

$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3-(-5)}{5-7} = \frac{3+5}{5-7} = \frac{8}{-2}$

-4

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

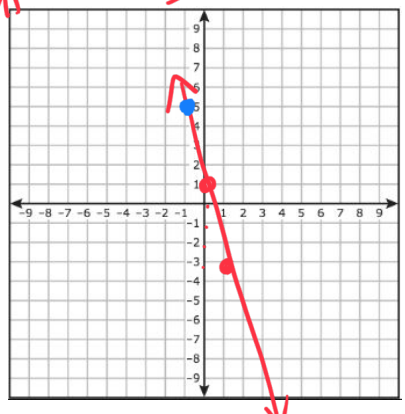
$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2-10}{8-2} = \frac{-12}{6} = -2$

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)

$m = -4$ $(-1, 5)$ (x y)

$-4 \rightarrow \frac{\text{up/down}}{\text{right}} = \frac{4 \text{ down}}{1 \text{ right}}$



$y = mx + b$

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

$5 = 4 + b$

$-4 \quad -4$

$b = 1$

$y = -4x + 1$

graph first!

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)

1.) Find slope
2.) Find y-int
3.) Find y=mx+b
4.) Graph

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1-4}{6-(-3)} = \frac{1-4}{6+3} = \frac{-3}{9} = -\frac{1}{3}$

$y = mx + b$

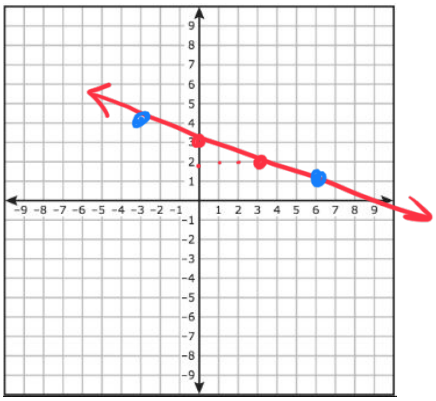
$4 = (-\frac{1}{3})(-3) + b$

$4 = 1 + b$

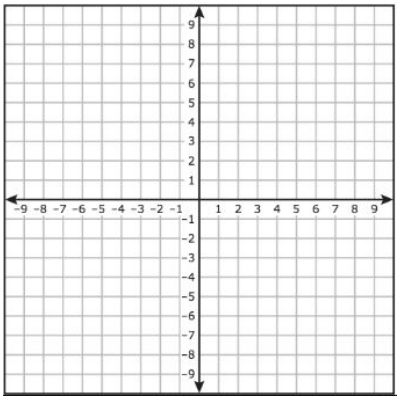
$-1 \quad -1$

$3 = b$

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



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



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

a) $2x - 4y = 12$

$y = 0$

$2x - 4(0) = 12$

$\frac{2x}{2} = \frac{12}{2}$

$x = 6$

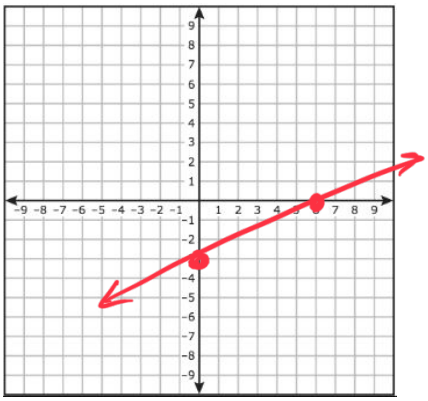
$(6, 0)$

$-4y = 12$

$\frac{-4y}{-4} = \frac{12}{-4}$

$y = -3$

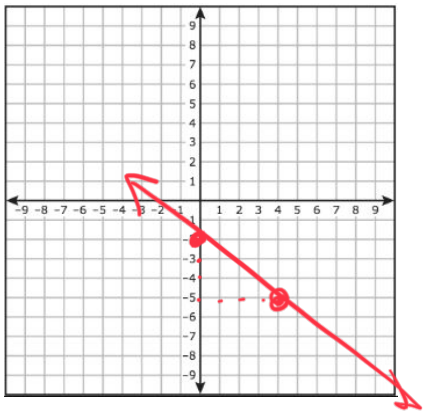
$(0, -3)$



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

slope ↓ y-intercept

1.) Plot y-int
2.) Use slope $\frac{-3}{4}$ down 3 right 4



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).

perpendicular lines have opposite inverse slopes!

given: $y = \frac{3}{2}x + 5$

given slope: $\frac{3}{2}$

opposite inverse (flip)

$\frac{3}{2} \rightarrow \frac{-3}{2} \rightarrow \frac{-2}{3} = m$

$y = mx + b$

$3 = \left(\frac{-2}{3}\right)(-6) + b$

$3 = 4 + b$

$-4 \quad -4$

$b = -1$

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

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

parallel lines have ~~same~~ equal slopes

$Ax + By = C$

$12x + 3y = 6$

$-12x \quad -12x$

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

$y = -4x + 2$

$m = -4$

$\text{slope} = \frac{-A}{B} = -\left(\frac{12}{3}\right) = -4$

$y = mx + b$

$-2 = (-4)(1) + b$

$-2 = -4 + b$

$+4 \quad +4$

$2 = b$

$y = mx + b$

$y = -4x + 2$