Name:_____ **Algebra II E Prerequisite Packet 1**

1. Consider the following numbers: $0, -8, -\frac{2}{3}, 0.\overline{7}, 4.3, \pi, \sqrt{2}, \sqrt{-4}, \sqrt{81}$

Identify the numbers which are

a. rational numbers _____

b. integers _____

c. real numbers _____

2. Match each with the name of the property

_____1. $a(b+c) = ab + ac$	a. commutative property for multiplication
_____2. $a(b+c) = a(c+b)$	b. symmetric property
____ 3. $a(b+c) = (b+c)a$	c. transitive property
_____4. If $a = b$, *then* $b = a$	d. associative property for multiplication
_____5. $a(bc) = (ab)c$	e. commutative property for addition
_____6. If $a = b$ *and* $b = c$ *then* $a = c$	f. Inverse for multiplication
_____ 7. $a \cdot \frac{1}{a} = 1$	g. distributive property
_____ 8. $a \cdot 1 = a$	h. identity for multiplication

3. Simplify the following expressions. (Do not use a calculator)

a. $8a^2(5a^3 - 2a - 7) =$ _____ b. $\left(\frac{2}{3}p\right)\left(\frac{6}{7}q\right) =$ _____ c. $\frac{12m^2n}{9mn^4} =$ _____

d. $(a-5)(4a-9)$ e. $(2x+5y)^2$ f. $(2x^2 - 3x + 5) - (7x^2 + 8x + 11)$ g. $7(5-2x) - (1-x)$

d. _____ e. _____ f. _____ g. _____

4. Find the value of each expression. (Do not use a calculator)

a. $(-5)^2$ _____ b. -7^2 _____ c. $2 - 3 \cdot 2^2$ _____ d. $-2(5+3)^2$ _____

e. 4^{-2} _____ f. $5 \cdot 3^0 + 10^0$ _____ g. $12 - (5-8) - [-4 - (-18)]$ _____

5. Simplify each radical expression (no decimal approximations and no calculators)

a. $8\sqrt{12}$ _____ b. $\left(3\sqrt{2}\right)^2$ _____ c. $4\sqrt{5}\cdot 2\sqrt{10}$ _____

d. $\dfrac{12\sqrt{20}}{\sqrt{5}}$ _____ e. $5\sqrt{2}+\sqrt{3}+8\sqrt{2}$ _____ f. $\sqrt{98}+\sqrt{18}$ _____

6. Factor each of the following expressions:

a. $3x^2+6x=$ _____ b. $9x^2-25=$ _____ c. x^2+7x+6 _____

d. $2x^2-18=$ _____ e. $x^3-3x^2-10x=$ _____

7. a. If $2x=5y$ *and* $y=3z$ *and* $z=\frac{1}{2}w$, write ***x*** in terms of ***w*** _____

b. Express the amount of money : 3 one-dollar bills and ***x*** five dollar bills _____

c. The ratio of three angles of a triangle is 3:4:5. Define variables and write an equation to be used to find the measure of the largest angle. Solve it and state the measure of the largest angle.

Equation:_____ Largest $\angle$ _____

8. Solve the following equations. Show work.

a. $2x(x-5)=16-x(13-2x)$

b. $a-6=-6-(3a-7)-2a$

c. $\frac{2}{3}(y-9)=\frac{3}{4}(y+8)$

d. $\frac{x}{180-x}=\frac{7}{5}$

e. $x^2-x=6$

f. $3x^2-5x=0$

g. $x^2=4x+21$

h. $x^2+5x+3=0$ *(show & use quadratic formula)*

i. $\frac{x}{x+3}=\frac{x-4}{3}$

j. $3(2x-2)=5x-(6-x)$

k. $3x^2=75$

l. $3(x+4)-(x+2)=2(x+8)$

9. Solve each of the following literal equations for ***x.*** Show appropriate work in space provided.

a. $a + bx = c$ b. $2a - x = b$ c. $\frac{a}{x} = b$ d. $a + bx = c$

e. $ax + bx = c + d$ f. $ax + b = cx + d$

g. $P = 2l + 2x$ h. $A = \frac{1}{2}h(b + x)$

10. Write an equation of each line described below. Write answers c & d in $y = mx + b$ form and answers e & f in point slope form : $y - y_1 = m(x - x_1)$. Show appropriate work.

a. vertical line thru $(5,2)$ _____ b. horizontal line thru $(-2,6)$ _____

c. line thru $(15,-1)$ with slope $\frac{2}{3}$ d. line thru $(2,3)$ *and* $(-2, 5)$

e. line thru $(-3,9)$ and parallel to $y = \frac{2}{3}x + 1$ f. line thru $(6, 2)$ $\perp$ to $5x + 2y = 12$