

Name: _____

Algebra II E Prerequisite Packet 1

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

Identify the numbers which are

a. rational numbers _____

b. integers _____

c. real numbers _____

2. Match each with the name of the property

- | | |
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| _____ 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. $(3\sqrt{2})^2$ _____ c. $4\sqrt{5} \cdot 2\sqrt{10}$ _____

d. $\frac{12\sqrt{20}}{\sqrt{5}}$ _____ 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 $5x + 2y = 12$