# Review for Test #1 - Relationships and Reasoning in Quantities, Equations, and Graphs

Name: _____ Class: _____

For 1- 4, identify the property shown in the following examples.

1.) $6 + (3 + 1) = (6 + 3) + 1$

2.) $9(x + 3) = 9x + 27$

3.) $2 \bullet 123 = 123 \bullet 2$

4.) $a + (b + c) = a + (c + b)$

Simplify.

5.) $(3x^2 + 2x - 9) + (4x^2 - 7x + 13)$

6.) $(7x^2 + 4) + (x^2 - 2x - 4)$


7.) $(3x^2 + 2x - 9) - (4x^2 - 7x + 13)$

8.) $(7x^2 + 4) - (x^2 - 2x - 4)$

9.) $4x(x + 8) - 3x^2(2x - 5)$

10.) $(x + 5)(2x + 1) - 2x(x + 5)$

Multiply.

11.) $(x + 2)(x - 8)$

12.) $(a - 3)(a + 3)$

13.) $(x+2)^2$

14.) $(2x+3)(x^2+5x+3)$

15.) $\left(4x-5\right)^2$

16.) $\left(4x^2-3x+7\right)^2$

17.) The length of a side of a square window is (5x + 3). Find the area of the window in terms of x.

18.) When $5x^2 + 8x - 1$ is subtracted from $3x^2 + 2x - 7$, what is the result?

Simplify the radicals below.

19.) $4\sqrt{32}$

20.) $8\sqrt{45}$

21.) $\sqrt{100}$

22.) $-7\sqrt{98}$

23.) Draw an example of each type of function below.

a.) Linear

b.) Quadratic

c.) Exponential

24.) In an elevation vs. time graph, what does a horizontal, flat line represent?

25.) Eric walks into a hospital to go to a doctor's appointment. He takes the elevator to the $4^{th}$ floor. After walking around a bit, Eric realized he was on the wrong floor and takes the elevator again to the $11^{th}$ floor. Eric has his check up and is sent to the basement of the building where the lab is to get some x-rays done. When the x-rays are done, he takes the elevator back to the main floor and leaves. Draw an elevation-versus-time graph that represents Eric's trip to the hospital.

26.) Graph the number of cells versus time in seconds.

| **Time (seconds)** | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| **Number of cells** | 2 | 4 | 8 | 16 | 32 |

Is there a pattern? If so, what is it?

27.) Create a flow chart to show that a(b + c) is equivalent to ac + ba. Use "C" for the Commutative Property, "A" for the Associative Property, and "D" for the Distributive Property

28.) Fill in the blanks showing that $(x+5)(3x+4)$ is equivalent to $3x^2+19x+20$. Write either "Commutative Property," "Associative Property," or "Distributive Property" on each blank.

$(x+5)(3x+4) = (x+5)\cdot 3x+(x+5)\cdot 4$ _____

$= 3x(x+5)+(x+5)\cdot 4$ _____

$= 3x^2+15x+(x+5)\cdot 4$ _____

$= 3x^2+15x+4(x+5)$ _____

$= 3x^2+15x+4x+20$ _____

$= 3x^2+(15x+4x)+20$ _____

$= 3x^2+19x+20$