

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

Associative

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

Distributive

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

Commutative

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

Commutative

Simplify.

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

$7x^2 - 5x + 4$

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

$8x^2 - 2x$



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

$3x^2 + 2x - 9 - 4x^2 + 7x - 13$

$-x^2 + 9x - 22$

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

$7x^2 + 4 - x^2 + 2x + 4$

$6x^2 + 2x + 8$

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

$4x^2 + 32x - 6x^3 + 15x^2$

$-6x^3 + 19x^2 + 32x$

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

$2x^2 + x + 10x + 5 - 2x^2 - 10x$

$x + 5$

Multiply.

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

	x	2
x	x^2	$2x$
-8	$-8x$	-16

$x^2 - 6x - 16$

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

	a	-3
a	a^2	$-3a$
3	$3a$	-9

$a^2 - 9$

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

	x	2
x	x^2	$2x$
2	$2x$	4

$x^2 + 4x + 4$

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

	x^2	$5x$	3
$2x$	$2x^3$	$10x^2$	$6x$
3	$3x^2$	$15x$	9

$2x^3 + 13x^2 + 21x + 9$

15.) $(4x-5)^2$

	$4x$	-5
$4x$	$16x^2$	$-20x$
-5	$-20x$	25

$16x^2 - 40x + 25$

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

	$4x^2$	$-3x$	7
$4x^2$	$16x^4$	$-12x^3$	$28x^2$
$-3x$	$-12x^3$	$9x^2$	$-21x$
7	$28x^2$	$-21x$	49

$16x^4 - 24x^3 + 65x^2 - 42x + 49$

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

	$5x$	3
$5x$	$25x^2$	$15x$
3	$15x$	9

$25x^2 + 30x + 9$

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

$$(3x^2 + 2x - 7) - (5x^2 + 8x - 1)$$

$-2x^2 - 6x - 6$



Simplify the radicals below.

19.) $4\sqrt{32}$

$$4\sqrt{16\sqrt{2}}$$

$$4 \cdot 4\sqrt{2}$$

$16\sqrt{2}$

20.) $8\sqrt{45}$

$$8 \cdot \sqrt{9\sqrt{5}}$$

$$8 \cdot 3\sqrt{5}$$

$24\sqrt{5}$

21.) $\sqrt{100}$

10

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

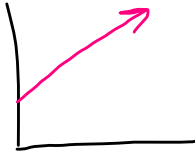
$$-7\sqrt{49\sqrt{2}}$$

$$-7 \cdot 7\sqrt{2}$$

$-49\sqrt{2}$

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

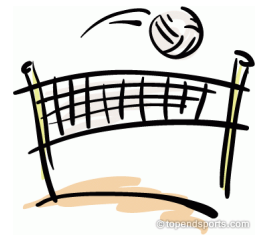
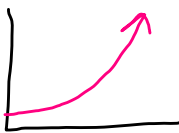
a.) Linear



b.) Quadratic



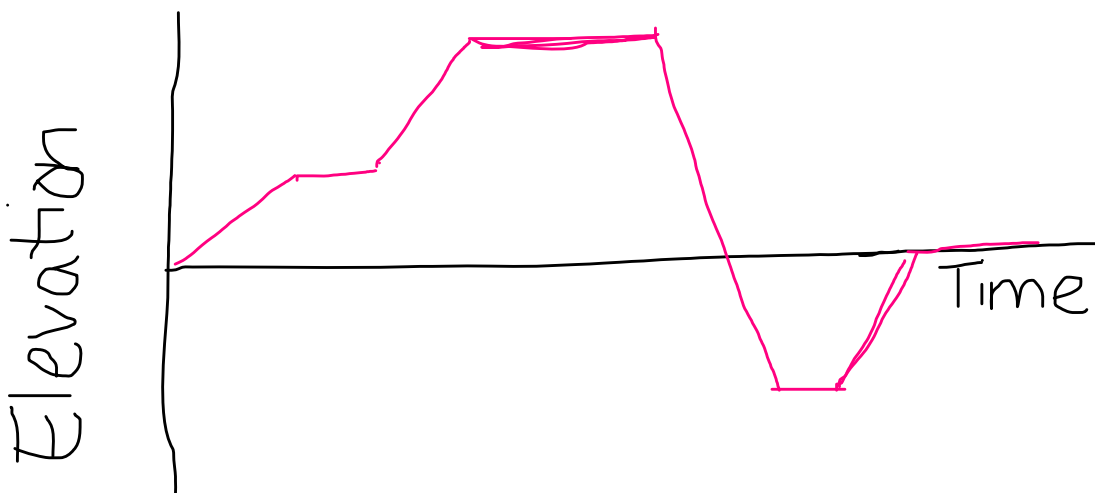
c.) Exponential



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

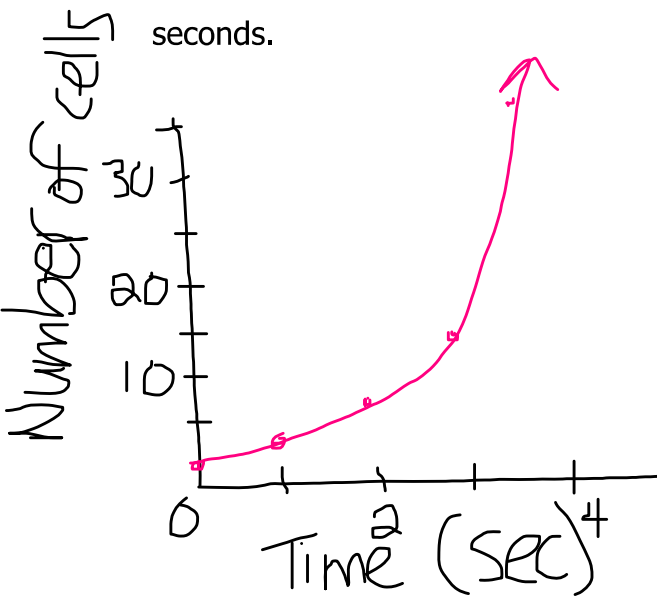
0 change in elevation.

25.) Eric walks into a hospital to go to a doctor's appointment. He takes the elevator to the 4th floor. After walking around a bit, Eric realized he was on the wrong floor and takes the elevator again to the 11th 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?

Yes, the number of cells doubles every second.



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

(Answers vary)

$$a(b+c) \xrightarrow{D} ab+ac \xrightarrow{C} ac+ab \xrightarrow{C} ac+ba$$

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.

$$\begin{aligned} (x+5)(3x+4) &= (x+5) \cdot 3x + (x+5) \cdot 4 \\ &= 3x(x+5) + (x+5) \cdot 4 \\ &= 3x^2 + 15x + (x+5) \cdot 4 \\ &= 3x^2 + 15x + 4(x+5) \\ &= 3x^2 + 15x + 4x + 20 \\ &= 3x^2 + (15x + 4x) + 20 \\ &= 3x^2 + 19x + 20 \end{aligned}$$

Distributive
Commutative
Distributive
Commutative
Distributive
Associative