

# Only to be used for arranged hours

Math 31

Activity # 2

## "Exponents"

Your Name: \_\_\_\_\_

Definition: If  $b$  is a real number and  $n$  is a natural number,

$b^n = b \cdot b \cdot b \cdot \dots \cdot b$  This is a repeated multiplication with the base  $b$ , repeated  $n$  times.

$b^n$  is exponential form.  $n$  is called the exponent.

1) Write the repeated multiplication of  $(-10)$  with six factors of  $(-10)$

2) Using problem 1, write this repeated multiplication in exponential form

Answer \_\_\_\_\_

3) Using problem 2, evaluate the exponential number. Answer \_\_\_\_\_

4) Each team member should evaluate one part of the expression below. Then the team should then find the final result.

$$(-1)^{100} + (0)^{30} + (-1)^{99} - (-10)^2$$

5) Simplifying An Algebraic Expression. Explain why the following two terms are called like variable terms.

$$-12x^2 - (-8x^2)$$

Simplify by showing the steps. Demonstrate the Distributive Property.

6)  $6y^3 + 8y^2$  Explain why these two variable terms are unlike.

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### The Order of Operations

To simplify an expression, we use the Order Of Operations, which is:

First, Perform the operation inside of any pair of grouping symbols ( ), [ ], or { }.

Start at the innermost grouping symbols.

Then, Evaluate exponents

Next, Multiply or divide, in the order of appearance, working left to right

Last, Add or subtract, in the order of appearance, working left to right

7) In the expression,  $6 + 4(20 \div 5 - 3 \cdot 2)^2$ , what would be the first operation to be performed? \_\_\_\_\_ second operation ? \_\_\_\_\_

last operation ? \_\_\_\_\_

8) What would be the sign of the final answer? positive or negative?

$$\frac{3(-4) - (-2)^2(-3)}{-6 - (-2)}$$

### Translating From Algebra into English.

9) Translate  $-x^2$  into English. \_\_\_\_\_

10) Evaluate  $-x^2$  for  $x = -3$  Answer \_\_\_\_\_

11) Let  $x$  represent an unknown number. Translate the following and simplify.

Multiply this unknown number by negative five. Now subtract this result from six.

Answer \_\_\_\_\_

12) Translate and simplify. Cube negative two. Subtract the result from negative ten.

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Answer \_\_\_\_\_

13) Translate and simplify. Multiply this unknown number by four. Add seven to this product.

Subtract this sum from the unknown number.

Final answer \_\_\_\_\_

14) Simplify.

$$\frac{-2 + 4(-3 + 6)}{-4 + (-2)(-3)} + \frac{(-3)^2 \div 3 - (-9)}{-10 - (-7)} + \frac{\{-8 \cdot 3 \div (-2) + (-1)^{10}\}}{(-5)(-3) - 2} - \frac{|-16| \div 8 \cdot (-2)^3}{(6 - 2)^2}$$

**Answer Key**

(1)  $(-10)(-10)(-10)(-10)(-10)(-10)$  (2)  $(-10)^6$  (3) 1,000,000 (4) -100

(5) The two variable terms have the same variable which is raised to the same exponent;  $-4x^2$

(6) The exponent is different. (7) division; multiplication; addition (8) No sign. The result is zero.

(9) The opposite of the square of  $x$ . (10) -9 (11)  $6 - (-5x) = 6 + 5x$  (12) -2

(13)  $x - (7 + 4x) = x - 7 - 4x = -3x - 7$  (14) 3