

Algebra 1

Ms. Hornecker

Welcome!!

Your Seating Chart is on the board

The number by your name is your phone pocket number. **Please make sure your phone is there everyday!**

Warm up-

Simplify the following

1. $2^3 = 8$

2. $4^2/2^2 =$

4. $\frac{16}{4}$

3. $(-3)^3 =$

$(-3)(-3)(-3) = -27$

4. $-3^3 =$

-27

5. $1/4^2 =$

$\frac{1}{4^2} = \frac{1}{16}$

6. $6^2/12 =$

$\frac{36}{12} = 3$

$-3 \cdot 3 \cdot 3 = -27$


Chapter 8: Exponents and Exponential Functions

Section 8.1 Zero and Negative Exponents

Success Criteria (SC): Students Will Be Able To (SWBAT):

- understand and define and reason behind exponential rules
- simplify exponential expressions
- evaluate exponential expressions

Foldable instructions!!!

 <http://www.instructables.com/id/Poof-Books/>

Exponent Properties-

Zero as an Exponent

For every nonzero number a , $a^0 = 1$

Ex: 1. $5^0 = 1$ 2. $-2^0 = -1$ 3. $(1.02)^0 = 1$

$$(-2)^0 = 1$$

Exponent Properties-

Negative Exponent

For every nonzero number a and integer n , a^{-n}

$$= 1/a^n \quad a^{-n} = \frac{1}{a^n}$$

Ex: 1. $6^{-4} = \frac{1}{6^4}$

$$\frac{1}{1296}$$

2. $(-8)^{-1} = \frac{1}{(-8)^1} = -\frac{1}{8}$

3. $\frac{1}{4^{-2}} = \frac{4^2}{1} = 16$

Simplify

$$1. (-7)^0 = 1$$

$$2. -3^{-2} = \frac{1}{-3^2} = \frac{1}{-9} = -\frac{1}{9}$$

$$3. 3^{-4} = \frac{1}{3^4} = \frac{1}{81}$$

Simplify → only positive exponents

$$1. 4xy^{-3} = \frac{4x}{y^3}$$

$$2. 7s^{-4} \cdot 1 = 7s^{-4} = \frac{7}{s^4}$$

$$3. \frac{n^{-5}}{v^2} = \frac{1}{v^2 n^5}$$

Evaluate $4x^2y^{-3}$ for $x = 3$ and $y = -2$

First, re-write with positive exponents only . . .

$$\frac{4x^2}{y^3}$$

Then substitute values . . . and calculate . . .

$$\frac{4(3)^2}{(-2)^3} = \frac{4 \cdot 9}{-8} = \frac{36}{-8} \div 4 = -\frac{9}{2}$$

Evaluate $\frac{n^{-1}}{c^2}$ for $n = -2$ and $c = 3$

$$\frac{1}{c^2 n^1} = \frac{1}{(3)^2 (-2)} = \frac{1}{9 \cdot (-2)} = -\frac{1}{18}$$

Evaluate $\frac{1}{nw^{-2}}$ for $n = -2$ and $w = 5$

$$\frac{w^2}{n} = \frac{(5)^2}{-2} = -\frac{25}{2}$$

In the lab, the population of a certain bacterial doubles every month. The expression $3000 \cdot 2^m$ models a population of 3000 bacteria after m months of growth. Evaluate the expression for $m=0$ and $m=-2$. describe what the value of the expression represents in each situation.

$$3000 \cdot 2^0$$
$$3000 \cdot 1$$
$$3000$$

Homework

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