

Math 9

Name: _____

2.1 – What is a Power?

Date: _____

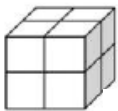
Powers are used to write the value of a number in SHORTHAND



What is the total area of the square? _____ → _____

Write the area as a product _____ → _____

Write the area using exponents _____ → _____



What is the total volume of the cube? _____ → _____

Write the volume as a product _____ → _____

Write the volume using exponents _____ → _____

Vocabulary: 4^3 Base: Exponent: Power:

4^3 is telling us to: “Write out _____”

The value (standard form) of the power is :

The **BASE** can also be a **NEGATIVE** value, e.g. $(-4)^3$: “Write out _____”

The value (standard form) of the power is :

Complete the following table:

Exponent Form	Expanded Form	Standard Form
7^5		
	$(-6)(-6)(-6)(-6)(-6)(-6)(-6)(-6)(-6)$	
$(-10)^3$		
		32
		81
		81

The **EXPANDED** form is always the product of the _____

WARNING!.....Be extra, extra cautious when there are negatives involved!!!!

Identify the **BASE** of each power:

$(-2)^7$

-2^7

(-2^7)

$-(-2)^7$

Write the following powers as repeated multiplication and evaluate:

$(-2)^7 =$

$-2^7 =$

$(-2^7) =$

$-(-2)^7 =$

Write the following a power and then evaluate:

a. $(-3) \times (-3) \times (-3) \times (-3) \times (-3) =$

b. $(-2) \times (-2) \times (-2) \times (-2) \times (-2) =$

c. $-(6)(6)(6)(6) =$

d. $-(-5)(-5)(-5)(-5)(-5)(-5)(-5)(-5) =$

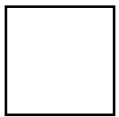
Using Models to represent Powers

Areas of Squares are used to model **powers of 2**.....

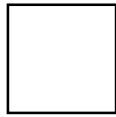
and.....**Volumes of Cubes** are used to model **powers of 3**.

Model each of the following square numbers:

a. 9



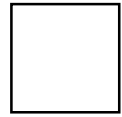
b. 81



c. 625

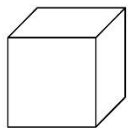


d. 5^2

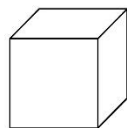


Model each of the following cubic numbers:

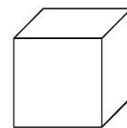
a. 8



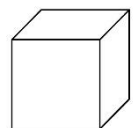
b. 343



c. 512



d. 10^3



What is the difference between -5^2 and $(-5)^4$?

Is 4^3 the same as 3^4 ? Why or why not?