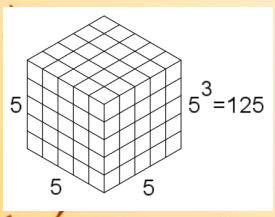
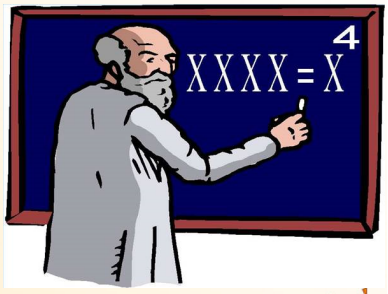
$2 \times 2 = 2^2 = 4$
$2 \times 2 \times 2 = 2^3 = 8$
$2 \times 2 \times 2 \times 2 = 2^4 = 16$
$2 \times 2 \times 2 \times 2 \times 2 = 2^5 = 32$
$2 \times 2 \times 2 \times 2 \times 2 \times 2 = 2^6 = 64$
$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 2^7 = 128$

Unit 2

October 1, 2018

Powers and Exponent Laws





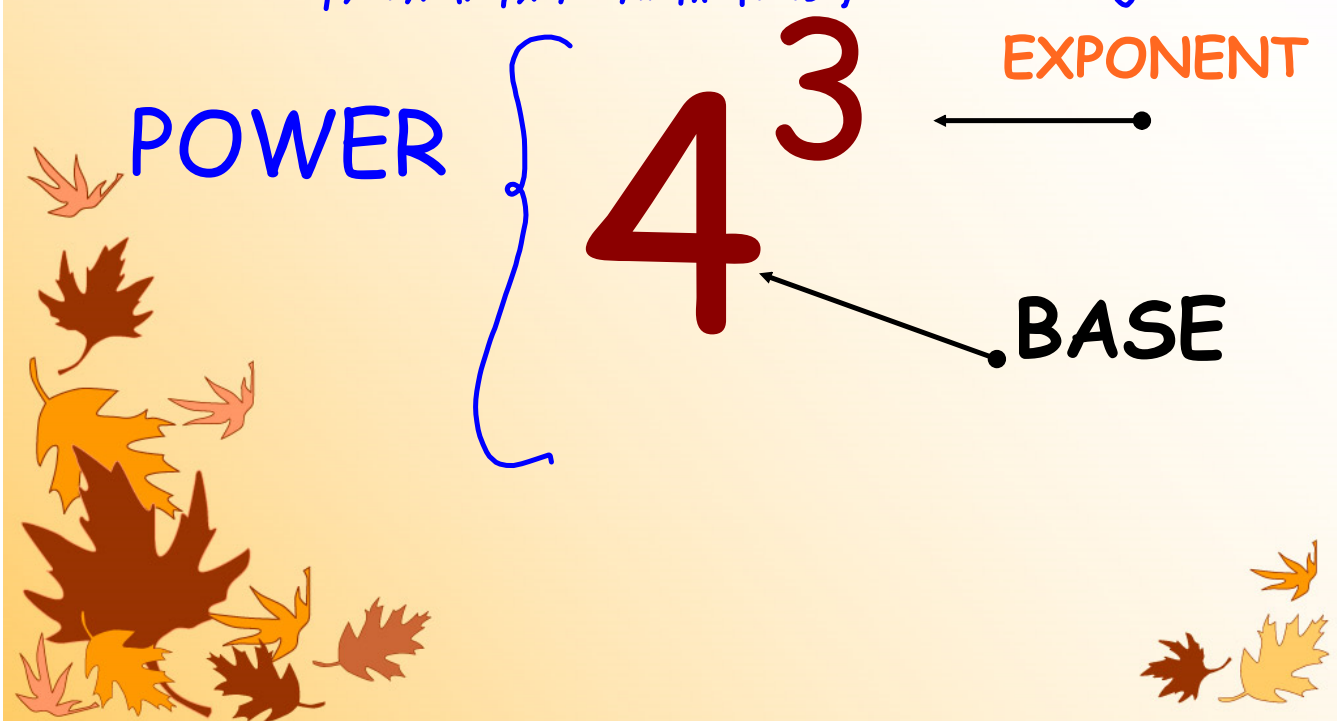
A power is a compact [smaller] way to write a big/small number.

Instead of saying 4x4x4x4x4x4x4 we say 4^7

Read as 4 to the exponent 7

TERMS TO KNOW:

1. power- an expression of the form a^n, where a is the base and n is the exponent; it represents a product of equal factors; for example, $4 \times 4 \times 4 = 4^3$ $4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 = 4^9$ y^x



125 is the same as 5^3

* 125 is STANDARD FORM [Evaluated Answer]

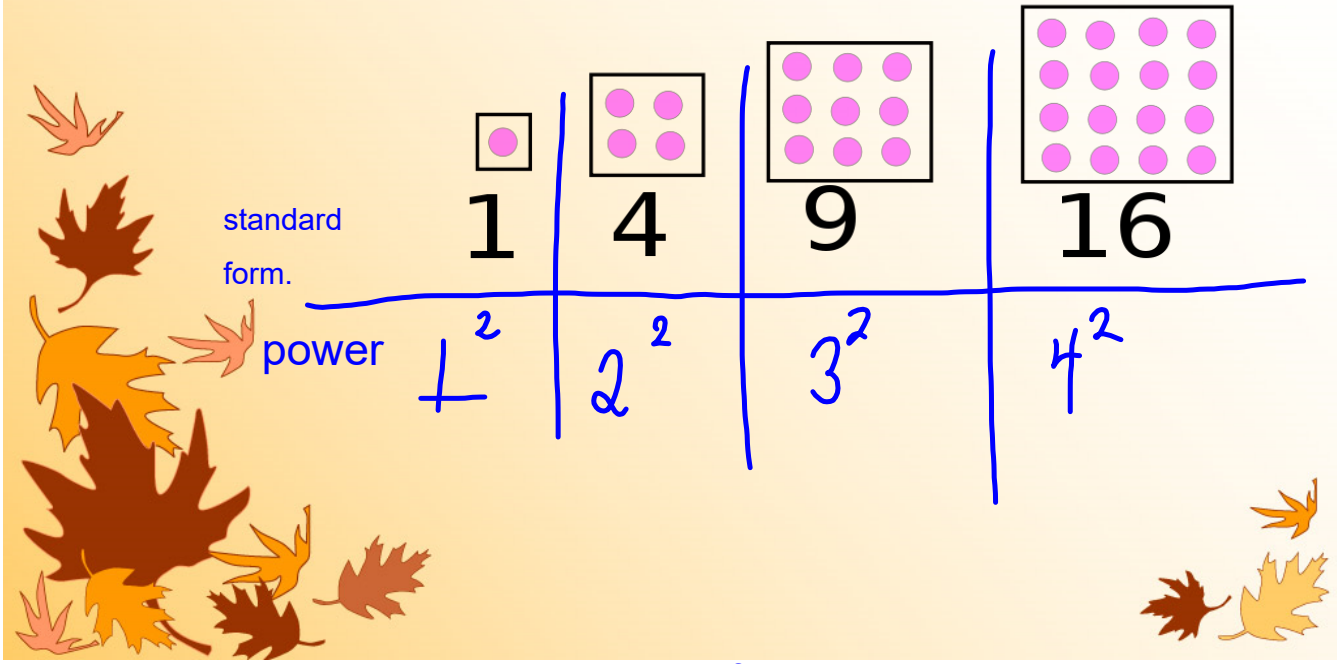
* 5x5x5 is a REPEATED MULTIPLICATION

* And 5^3 is a Power.

*5^3 is read as 5 to exponent 3 or 5 cubed

Square Number

- A power with an integer (+) or (-) base and exponent 2 is a square number.



We can write 4^2 in three ways:

1. Standard form: 16
2. As repeated multiplication: 4×4
3. As a power: 4^2

Cube Number

- A power with an integer base and exponent 3 is a cube number.

	Power	Standard Form
	1^3	1
$(4 \times 4 \times 4)$	4^3	64
	6^3	216

Write each of the following as:

Repeated Multiplication	Power	Standard form [Evaluate]
A. 3 x 3 x 3 x 3 x 3 x 3 =	3^6	729
B. 7=	7^1	7
C. 4 x 4 x 4=	4^3	64

2x2 y2x2 x2x2

$\downarrow 2^6$

Write a power with a base of 2 that will equal 64: ___

What is the base in each of the following:

A. 8^7 B. $(-10)^5$ C. $(\frac{1}{4})^3$

Base 8 -10 $\frac{1}{4}$

$-100\,000$

$\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} = \frac{1}{64}$

What if a power has a negative sign?

	A. $(-3)^4$	B. -3^4	C. $-(-3)^4$	D. $-(3)^4$
Base	-3	3	-3	3
Repeated multiplication	$-3\times-3\times-3\times-3$ $(-3)(-3)(-3)(-3)$	$-(3\times3\times3\times3)$ $-(3)(3)(3)(3)$ $-3\times3\times3\times3$	$-(-3\times-3\times-3\times-3)$	$-(3\times3\times3\times3)$
Evaluate	81	-81	-81	-81

	Base	Repeated multiplication	Evaluate
A. 4^5	4	4x4x4x4x4	1024
B. -2^5	2	-(2x2x2x2x2) -2x2x2x2x2	-32
C. $(-2)^5$	-2	-2x-2x-2x-2x-2	-32
D. $(-2)^4$	-2	-2x-2x-2x-2	16

Evaluate The following:

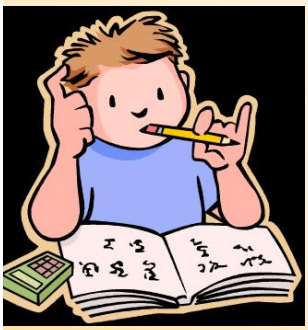
Standard Form.

A. 10^5 B. $(-5)^3$ C. $-(2.3)^6$

D. $(-3)^2$

Predict whether the final answer will be positive or negative:

a. $(-2)^3$ B. $-(2)^4$ C. $-(-3)^4$ D. -3^3



Homework questions
Page 55-56
7, 8, 9,

chart

#7.

power	base
a) 2^7	2
c,	1

#8.

power	exponent

#9.

power	R.M