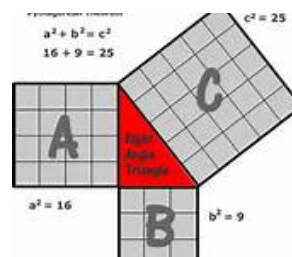


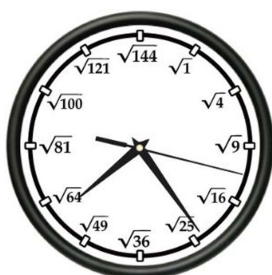


Math 8

Before we start  
Unit 1:



# Square Roots & Pythagorean Theorem



2<sup>3</sup>



# Exponents

★ Exponents are shorthand for repeated multiplication:

Ex)  $(5)(5) = 5^2$ ,  $(5)(5)(5) = 5^3$ .

★ The "exponent" stands for however many times the term is being multiplied.

Exponent

$5^3$  (3 times)  $5 \times 5 \times 5 = 125$

★ The term that's being multiplied is called the "base".

Base  $\rightarrow 5^3$

Given  $4^3$ , 4 is called the base and 3 is the exponent

★ Together,  $4^3$  is called a **power**.

$$2 + 2 + 2 + 2 + 2 = 5 \times 2$$

Repeated add  $\Rightarrow$  multiply

$$2 \times 2 \times 2 \Rightarrow 8$$

Repeated  
multiplying

exponent



$4^3$  means  $4 \times 4 \times 4 = 64$ .

$4 \times 4 \times 4$  is the expanded form. (repeated  $\times$ )

$64$  is the standard form. (answer off calculator)

$4^3$  is the exponential form (or the power).

The base is what you are multiplying by, and the exponent tells you how many times to multiply it.

Power			
Exponential	Expanded	Standard	
$2^5$ means	<u><math>2 \times 2 \times 2 \times 2 \times 2</math></u>	= <u><math>32</math></u>	
<u><math>3^3</math></u> means	$3 \times 3 \times 3$	= <u><math>27</math></u>	
$8^4$ means	<u><math>8 \times 8 \times 8 \times 8</math></u>	= 4096	$8^1 = 8$ $8^2 = 64$ $8^3 = 512$ $8^4 = 4096$

Evaluate the following (Show all work)

$$2 \times 2 \times 2 \times 2 \times 2 = 2^5 = 32$$

$4 \cdot 2 \cdot 2 \cdot 2$   
 $8 \cdot 2 \cdot 2$   
 $16 \cdot 2$   
 $32$

Fill in the blanks

$$6 \times 6 \times 6 \times 6$$

base 6

exponent 4

power  $6^4$



Calculator Button



$x^y$  or  $\wedge$  or  $y^x$

So for  $5^3$

$$5 \times^y 3$$

$$5 \wedge 3$$

$$5 y^x 3$$

$$= 125$$

$x^2$  is a special button that squares a #

(means times the number by itself)

$$3^2 = 3 \times 3$$

$$= 9$$

$x^2$

$$4^3 = 4 \times 4 \times 4$$

$\underbrace{4 \times 4}_{16} \times 4$   
 $64$

$$8^4 = 4096$$

$\wedge$   
 $8 \times 8 \times 8 \times 8$

\* # repeat (both) Homework \*

	Power	Base	Exponent	Exponential Form	Expanded Form	Standard Form
a)	$7^3$	7	3	$7^3$	$7 \cdot 7 \cdot 7$	343
b)		9	4			
c)				$6^2$		
d)					$4 \times 4 \times 4 \times 4 \times 4$	
e)	$3^5$					
f)		10	4			
g)	$5^4$					
h)	$4^5$					
i)					$8 \times 8 \times 8$	
j)				$3^9$		
k)		8	2			
l)					$5 \times 5 \times 5 \times 5 \times 5 \times 5$	
m)	$3^3$					
n)		11	2			
o)		6				1296
p)			5			32

$$o) 6^{\square} = 1296$$

$$p) \square^5 = 32$$



## Attachments

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WS 2.3 Powers.doc