

Powers and Exponents Notes

The number is called the base. 2^4 $2 \cdot 2 \cdot 2 \cdot 2$

An exponent tells you how many times to multiply a number, or base, by itself.

Numbers expressed using exponents are called POWERS.

Powers	Words
5^2	Five to the second power or five <u>squared</u> .
4^3	Four to the third power or four <u>cubed</u> .
2^4	Two to the fourth power.



units squared = area } geometric measurement
units cubed = volume }

****REMEMBER****

Exponents do NOT mean:

Multiply ~~to~~ the base by the exponent

Example: $5^2 \neq 5 \cdot 2$
↑ NOT EQUAL

Let's Try!!

$7^5 = 7 \cdot 5$ or $7 \cdot 7 \cdot 7 \cdot 7 \cdot 7$

$4^3 = 4 \cdot 3$ or $4 \cdot 4 \cdot 4$

In your own words, ~~and in complete sentences~~, how would you solve six to fourth power? How would you solve four to the sixth power? Do you think your answers will be the same? Why or why not? Multiply ~~to~~ ~~times~~ ~~to~~ 4 times.

$6^4 = 1296$
 $4^6 = 4096$
by
Multiply the base, 4, by itself 6 times.



Think, Pair, Share

These are the first three square numbers, 1, 4, and 9. What would the next three square numbers be?

1 ²	2 ²	3 ²	4 ²	5 ²	6 ²	...	10 ²
1	4	9	16	25	36		100

What is the 10th square number? How do you know? ← 100

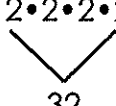
Can a square number be a prime number? Why or why not?

PRIME: is a number that is ONLY divisible by 1 and itself.
No, you can always divide by the number you square.
EX: $9 = 3^2$ $\frac{9}{3|9}$ $25 = 5^2$ $\frac{25}{5|25}$ $81 = 9^2$ $\frac{81}{9|81}$


Exponent Practice

Evaluate each expression. The first one is done for you.

SOLVE

$$1) 2^5 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$$


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$$2) 4^3 = 4 \cdot 4 \cdot 4$$


$$3) 10^2$$

$$4) 7^3$$

$$5) 5^4$$

$$6) 7^2$$

Write each product in exponential form. The first one has been done for you.

$$7) 5 \cdot 5 \cdot 5 = 5^3$$

$$8) 8 \cdot 8 \cdot 8 \cdot 8 =$$

$$9) 13 \cdot 13 \cdot 13 =$$

Evaluate each expression.

$$10) 2^6$$

$$11) 4^3$$

$$12) 1^{10}$$



Which One Doesn't Belong?? Identify the number that does not belong with the other three. Explain your reasoning in a complete sentence.

4	9	16	50
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Patterns: Which square numbers are odd, and which are even? Can you describe a pattern demonstrated by consecutive square numbers? Will the 17th square number be even or odd?