

Name: _____

Date: _____

Period: _____

Notes - Exponential Notation

Exponential Notation	Repeated multiplication
Factor	A number multiplied by another number to get a product
Base	The number being multiplied repeatedly - or the factor
Exponent/Power	number that tells you how many times to multiply the base by itself
	2^3
Examples	<p>1. $2^3 = 2 \cdot 2 \cdot 2$ 8</p> <p>2. $4^3 = 4 \cdot 4 \cdot 4$ 64</p> <p>3. $5^2 = 5 \cdot 5$ 25</p> <p>4. $3^5 = 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$ 243</p>
Reading Exponents	<p>4^5 - Four to the fifth power</p> <p>8^6 - Eight to the sixth power</p>
2 Special Exponents	<p>7^2 - Seven Squared Seven to the second power</p> <p>5^3 - Five Cubed Five to the third power</p>
Power of Zero	<p>When any number (other than zero) has an exponent of zero, the answer is <u>always</u> <u>one</u>.</p> <p>$5^0 = \underline{1}$ $7,851.35^0 = \underline{1}$</p>

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Power of Zero Pattern

Pattern

$4^3 = 4 \times 4 \times 4 = 64$
 $4^2 = 4 \times 4 = 16$
 $4^1 = 4$
 $4^0 = 1$

Special Base

If 10 is the base, look at the following:

$10^1 = 10$
 $10^2 = 100$
 $10^3 = 1000$
 $10^4 = 10000$
 $10^5 = 100,000$

Write 1
the exponent
tells you how
many zeros

If 10 is the base here is how to find the answer:

- write a 1
- look at the exponent
- the exponent tells you how many zeros to write after the one.

Practice

Write the following in exponential notation:

1. $4 \times 4 \times 4 \times 4 \times 4 \times 4 = 4^6$

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

3. $2 \times 2 \times 2 \times 2 \times 2 = 2^5$

Simplify the following:

1. $5^3 = 5 \times 5 \times 5 = 125$

2. $4^2 = 4 \cdot 4 = 16$

3. $10^6 = 1,000,000$

Write the following in words and then simplify:

1. 8^3 (Can be written in 2 different ways) $8 \cdot 8 \cdot 8$ 512

Eight cubed / Eight to the third power

2. 2^2 (Can be written in 2 different ways)

Two squared $2 \cdot 2 = 4$

Two to the second power

$\frac{364}{512}$