

⑥ Powers and Exponents

Exponents are used to represent factors - multiplying the same base (number) over and over again.

NOTES

base

3^5

exponent

$$= 3 \times 3 \times 3 \times 3 \times 3$$

$$9 \times 9 \times 3 = 243$$

Say the problem in words and then write each power as the product of the same factor (base).

NOTES

2^6 = two to the sixth power
 $2 \times 2 \times 2 \times 2 \times 2 \times 2$

3^8 = three to the eighth power
 $3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$

8^3 = eight to the third power
 $8 \times 8 \times 8$

Write each product using an exponent. Then find its value.

$4 \times 4 \times 4 \times 4 \times 4 = 1024$
 4^5

$6 \times 6 \times 6 = 216$
 6^3

$1 \times 1 \times 1 \times 1 \times 1 \times 1 \times 1 = 1$
 1^7

$7 \times 7 = 49$
 7^2

$5 \times 5 \times 5 \times 5 = 625$
 5^4

$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 256$
 2^8

There are some common phrases that are used to name an exponent.

Rewrite the statements using exponents.

four squared = 4^2 $4 \times 4 = 16$

eight cubed = 8^3 $8 \times 8 \times 8 = 512$

two to the sixth power = 2^6

Exponents: Basic Rules

Rule of 1

- Any number raised to the 1st power equals itself.
- $3^1=3$
- $4^1=4$

Rule of 0

- Any number raised to the 0 power equals 1.
- $1^0=1$
- $2^0=1$
- $3^0=1$
- $121^0=1$

Complete the missing sections in each row.

Exponent	Expanded Form	Value
4^3	$4 \times 4 \times 4$	64
3^4	$3 \times 3 \times 3 \times 3$	81
100^1	Rule of one	100
5^3	$5 \times 5 \times 5$	125
2^7	$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$	128
11^2	11×11	121

Drag the numbers up to make a base and an exponent that equals the given answer.

_____ = 64 _____ = 125

_____ = 32 _____ = 27

_____ = 121 _____ = 1000

0 1 2 3 4 5 6 7 8 9



