

## Power Play: Exponents

The product of multiplying a number by itself is called a **power**. It is written as a **base number** and an **exponent**. The base number is the number being multiplied. The exponent shows how many times the base number is being multiplied by itself.

$$10^3 = 10 \times 10 \times 10 = 1,000$$

Diagram illustrating the components of a power:  $10^3 = 10 \times 10 \times 10 = 1,000$ . The base number is 10, the exponent is 3, and the factors are the three 10s being multiplied together.

Write out the factors and find out the value.

$2^2 =$	$4^3 =$	$7^3 =$	$6^4 =$	$2^5 =$
$3^2 =$	$10^4 =$	$3^3 =$	$5^4 =$	$8^4 =$

Write out the value.

$6^5 =$	$8^3 =$	$9^3 =$	$10^5 =$	$2^7 =$
$2^{10} =$	$4^2 =$	$6^3 =$	$7^4 =$	$4^5 =$

## Power Play: Exponents

Write the value of the factors using exponents.

$2 \times 2 \times 2$

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

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

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

$4 \times 4$

$7 \times 7 \times 7$

$5 \times 5 \times 5 \times 5$

$9 \times 9$

$6 \times 6 \times 6$

$3 \times 3 \times 3$

$10 \times 10 \times 10 \times 10$

$11 \times 11$

Fill in all the missing numbers

Factors

Number To Given Power

Standard Notation

$3 \times 3 \times 3$

$3^3$

27

$2 \times 2 \times 2 \times 2 \times 2 \times 2$

$7 \times 7 \times 7 \times 7 \times 7$

$12 \times 12 \times 12 \times 12$

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$$10^3 = 10 \times 10 \times 10 = 1,000$$

Labels: base number (points to 10), exponent (points to 3), factors (points to the three 10s).

Write out the factors and find out the value.

$2^2 =$ $2 \times 2 = 4$	$4^3 =$ $4 \times 4 \times 4 = 64$	$7^3 =$ $7 \times 7 \times 7 = 343$	$6^4 =$ $6 \times 6 \times 6 \times 6 = 1296$	$2^5 =$ $2 \times 2 \times 2 \times 2 \times 2 = 32$
$3^2 =$ $3 \times 3 = 9$	$10^4 =$ $10 \times 10 \times 10 \times 10 = 10,000$	$3^3 =$ $3 \times 3 \times 3 = 27$	$5^4 =$ $5 \times 5 \times 5 \times 5 = 625$	$8^4 =$ $8 \times 8 \times 8 \times 8 = 4096$

Write out the value.

$6^5 = 7776$	$8^3 = 512$	$9^3 = 729$	$10^5 = 100,000$	$2^7 = 128$
$2^{10} = 1024$	$4^2 = 16$	$6^3 = 216$	$7^4 = 2401$	$4^5 = 1024$

## Power Play: Exponents

Write the value of the factors using exponents.

$2 \times 2 \times 2$ $2^3$	$3 \times 3 \times 3 \times 3 \times 3$ $3^5$	$6 \times 6 \times 6 \times 6 \times 6$ $6^5$	$8 \times 8 \times 8 \times 8$ $8^4$
$4 \times 4$ $4^2$	$7 \times 7 \times 7$ $7^3$	$5 \times 5 \times 5 \times 5$ $5^4$	$9 \times 9$ $9^2$
$6 \times 6 \times 6$ $6^3$	$3 \times 3 \times 3$ $3^3$	$10 \times 10 \times 10 \times 10$ $10^4$	$11 \times 11$ $11^2$

Fill in all the missing numbers

Factors	Number To Given Power	Standard Notation
$3 \times 3 \times 3$	$3^3$	27
$2 \times 2 \times 2 \times 2 \times 2 \times 2$	$2^6$	64
$7 \times 7 \times 7 \times 7 \times 7$	$7^5$	16,807
$12 \times 12 \times 12 \times 12$	$12^4$	20,736