

EXPONENTS

Example 1

$$2^4 = \underbrace{2 \times 2 \times 2 \times 2}_{\text{expanded form}} = 16$$

2^4 is called the power
 2 is called the base
 4 is called the exponent
 This is a power of 2

Example 2

Calculate $2^2 \times 3^2$

Solution

$$2^2 \times 3^2 = 2 \times 2 \times 3 \times 3 = 36$$

unlike bases

1. Evaluate: write the value of each.

(a) $2^2 =$

(b) $3^4 =$

(c) $4^3 =$

2. Simplify.

(a) 3×2^3

(b) 2×4^2

(c) $2^2 \times 3^3$

(d) $3^2 \times 2^3$

(e) $2^3 \times 4^2$

(f) $5^2 \times 2^2$

3. For each power, what is the base? the exponent?

(a) 2^3 base:

exponent:

(c) 2^5 base:

exponent:

(b) 3^4 base:

exponent:

(d) 36^1 base:

exponent

4. Write each expression as a power.

(a) $3 \times 3 \times 3 \times 3 \times 3$

(b) $(-5) \times (-5) \times (-5)$

(c) $2 \times 2 \times 2 \times 2$

(d) $-5 \times 5 \times 5$

(e) $5 \times 5 \times 5$

(f) 6×6

(g) $4 \times 4 \times 4 \times 4 \times 4 \times 4$

(h) $10 \times 10 \times 10 \times 10 \times 10$

5. Write in expanded form.

(a) $5^2 =$

(b) $6^4 =$

(c) $x^2 =$

(d) $(m)^3 =$

(e) $(n)^2 =$

(f) $3^4 =$

6. Evaluate

(a) $\sqrt{16} =$

(b) $\sqrt{36} =$

(c) $\sqrt{20} =$

7. Evaluate.

(a) $7^2 + 2^2$

(b) $4^3 - 2^5$

(c) $5 + \sqrt{25} - 10 =$

(d) 3×2^3

(e) $3^2 \times 2^2$

(f) $4^2 - 6^2 + \sqrt{49} =$

(g) $\sqrt{25} + 4^2 - 1^4$

(h) $\sqrt{50 - 1}$

(i) $\sqrt{20 - 4} + 2^2$

(j) $3^2 - \sqrt{8 - 4} + 2^2$

(k) $6^2 + 10^2$

(l) $\sqrt{14 - 4} + 10^2$