

Perfect Squares

(1)² = 1 x 1 = 1
 (2)² = 2 x 2 = 4
 (3)² = 3 x 3 = 9
 (4)² = 4 x 4 = 16
 (5)² = 5 x 5 = 25
 (6)² = 6 x 6 = 36
 (7)² = 7 x 7 = 49
 (8)² = 8 x 8 = 64
 (9)² = 9 x 9 = 81
 (10)² = 10 x 10 = 100
 (11)² = 11 x 11 = 121
 (12)² = 12 x 12 = 144
 (13)² = 13 x 13 = 169
 (14)² = 14 x 14 = 196
 (15)² = 15 x 15 = 225
 (16)² = 16 x 16 = 256
 (17)² = 17 x 17 = 289
 (18)² = 18 x 18 = 324
 (19)² = 19 x 19 = 361
 (20)² = 20 x 20 = 400
 (21)² = 21 x 21 = 441
 (22)² = 22 x 22 = 484
 (23)² = 23 x 23 = 529

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Perfect Cubes

(1)³ = 1 x 1 x 1 = 1
 (2)³ = 2 x 2 x 2 = 8
 (3)³ = 3 x 3 x 3 = 27
 (4)³ = 4 x 4 x 4 = 64
 (5)³ = 5 x 5 x 5 = 125
 (6)³ = 6 x 6 x 6 = 216
 (7)³ = 7 x 7 x 7 = 343
 (8)³ = 8 x 8 x 8 = 512
 (9)³ = 9 x 9 x 9 = 729
 (10)³ = 10 x 10 x 10 = 1000
 (11)³ = 11 x 11 x 11 = 1331
 (12)³ = 12 x 12 x 12 = 1728
 (13)³ = 13 x 13 x 13 = 2197
 (14)³ = 14 x 14 x 14 = 2744
 (15)³ = 15 x 15 x 15 = 3375
 (16)³ = 16 x 16 x 16 = 4096
 (17)³ = 17 x 17 x 17 = 4913
 (18)³ = 18 x 18 x 18 = 5832
 (19)³ = 19 x 19 x 19 = 6859
 (20)³ = 20 x 20 x 20 = 8000
 (21)³ = 21 x 21 x 21 = 9261
 (22)³ = 22 x 22 x 22 = 10648
 (23)³ = 23 x 23 x 23 = 12167
 (24)³ = 24 x 24 x 24 = 13824
 (25)³ = 25 x 25 x 25 = 15625

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Handwritten notes:

$$5^5 = 3125$$

$$\sqrt[5]{3125} = 5$$

$$\sqrt{36} = 6$$

$$6^2 = 36$$

$$\sqrt[3]{8} = 2$$

Sep 8-8:50 AM

Activate Prior Learning: Square Roots and Cube Roots

When a number x can be written as the product of two equal factors, then the square root of x , represented by \sqrt{x} , is one of these factors. For example, $\sqrt{64} = 8$ because $8^2 = 64$.

The cube root of a number x , represented by $\sqrt[3]{x}$, is one of three equal factors of the number. For example, $\sqrt[3]{64} = 4$ because $4^3 = 64$.

Calculate each root: $\sqrt{144}$, $\sqrt[3]{27}$

(Continues on next page.)

4.1 Math Lab: Estimating Roots

Activating Prior Learning p.1

Activate Prior Learning: Powers with Integer Bases

Powers

Base \rightarrow **B** ^P Exponent \rightarrow **P**

Power

A power with a positive integer exponent represents repeated multiplication.

Example: $2^5 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

Example: Identify the base and the exponent for each expression

| | | |
|-----------|-------------|-----------|
| a) 4^3 | b) 7^{23} | c) a^b |
| Base: | Base: | Base: |
| Exponent: | Exponent: | Exponent: |

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Activate Prior Learning: Powers with Integer Bases

Express each expression as a power


a) (7)(7)(7)(7) 7^4

b) (4)(4)(4)(4)(4)(4)(4) 4^8

c) (z)(z)(z)(z)(z) z^5

d) (c)(c)(c)(c)(c) + (a)(a)(a)(a) $c^5 + a^4$

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Can you see the difference?

$$-4^2 = -(4 \times 4) = -16$$

$$(-4)^2 = -4 \times -4 = 16$$

Oct 10-1:45 PM

~~THINK~~

$$(-1)^2 = -1 \times -1 = 1$$

$$(-1)^3 = -1 \times -1 \times -1 = -1$$

$$(-1)^4 = 1$$

$$(-1)^5 = -1$$

Oct 10-1:45 PM

$(-1)^{10247} = -1$ $(-1)^{29584} = 1$

~~THINK~~

* Evaluating powers when the base is negative...

If the exponent is **even** the answer will be **positive**.

If the exponent is **odd** the answer will be **negative**.

$\sqrt{-4}$ error

$\sqrt[3]{-8} = -2$

$\sqrt[4]{-16} = i$

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Homework

Top - #1,
#2a,b
#3
#4

Bottom - #1-4 (a & b only for each)
#5

Sep 8-9:32 AM