

Exponents and Square Roots

A number multiplied by itself, such as 4×4 , can be written as 4^2 . We read 4^2 as 4 to the second power or 4 squared. $4 \times 4 \times 4$ is 4^3 or 4 to the third power or 4 cubed.

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

$$4^3 = 4 \times 4 \times 4 = 64$$

Finding the root of a number is the opposite of finding a power. When you find the square root of 16, or $\sqrt{16}$, ask yourself *what number multiplied times itself equals 16?*

$$\sqrt{16} = 4 \text{ because } 4 \times 4 = 16$$

Find 5^2

$$5^2 = 5 \times 5$$

$$5^2 = 25$$

Find 7^3

$$7^3 = 7 \times 7 \times 7$$

$$7^3 = 49 \times 7$$

$$7^3 = 343$$

Find $\sqrt{81}$

$$9 \times 9 = 81$$

$$\sqrt{81} = 9$$

Find each answer.

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|------------------------------|---|--------------------|---------------------|--------------------------|
| 1. 3^2
$3 \times 3 = 9$ | $\sqrt{64}$
$8 \times 8 = 64$
$\sqrt{64} = 8$ | 4^3

6^3 | 7^2

14^2 | $\sqrt{4}$

12^2 |
| 3. 8^3 | $\sqrt{36}$ | 5^2 | $\sqrt{16}$ | 1^2 |
| 4. 10^3 | $\sqrt{144}$ | 16^3 | 5^3 | 6^2 |
| 5. $\sqrt{169}$ | 8^2 | 2^3 | 9^2 | $\sqrt{121}$ |
| 6. $\sqrt{25}$ | 20^2 | 0^2 | 4^2 | $\sqrt{49}$ |

Solve.

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| <p>7. Aaron built a deck that measures 16 feet on each side. What is the area of the deck? (Use the formula for area of a square, $A = s^2$.)</p> | <p>8. Sheila built her children a toy box that measures 2 feet by 2 feet by 2 feet. What is the volume of the box? (Use the formula for the volume of a cube, $V = s^3$.)</p> |
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Answer _____

Answer _____

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Answer Key

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|----|-----------------|-----|-------|-----|-----|
| 1. | 9 | 8 | 64 | 49 | 2 |
| 2. | 10 | 729 | 216 | 196 | 144 |
| 3. | 512 | 6 | 25 | 4 | 1 |
| 4. | 1,000 | 12 | 4,096 | 125 | 36 |
| 5. | 13 | 64 | 8 | 81 | 11 |
| 6. | 5 | 400 | 0 | 16 | 7 |
| 7. | 256 square feet | | | | |
| 8. | 8 cubic feet | | | | |

