Cube Roots

1. A cube has a volume of $64 \ in^3$. What is the measure of one of its sides? Write and solve an equation.

2. What value of x makes the following equation true: $125 = x^3$?

3. Find the value of x that makes the equation true: $x^3 = 1000^{-1}$

Cube Roots

1. A cube has a volume of $64\ in^3$. What is the measure of one of its sides? Write and solve an equation.

$$x^3 = 64$$
$$\sqrt[3]{x^3} = \sqrt[3]{64}$$
$$x = \sqrt[3]{64}$$
$$x = 4$$

Check:

$$4^3 = 64$$
$$64 = 64$$

2. What value of x makes the following equation true: $125 = x^3$?

$$125 = x^3$$
$$\sqrt[3]{125} = \sqrt[3]{x^3}$$
$$\sqrt[3]{125} = x$$
$$5 = x$$

Check:

$$125 = 5^3$$
$$125 = 125$$

3. Find the value of x that makes the equation true: $x^3 = 1000^{-1}$

$$x^3 = 1000^{-1}$$
$$\sqrt[3]{x^3} = \sqrt[3]{1000^{-1}}$$
$$x = \sqrt[3]{1000^{-1}}$$
$$x = \sqrt[3]{\frac{1}{1000}}$$
$$x = \frac{1}{10}$$
$$x = 10^{-1}$$

Check:

$$\left(10^{-1}\right)^3 = 1000^{-1}$$
$$10^{-3} = 1000^{-1}$$
$$\frac{1}{10^3} = 1000^{-1}$$
$$\frac{1}{1000} = 1000^{-1}$$
$$1000^{-1} = 1000^{-1}$$

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