Cube Roots

1. Find the value of x that makes the equation true: $x^3 = 125^{-1}$.

2. The volume of a cube is $729\ cm^3$. What is the length of one side of the cube? Write and solve an equation, and then check your solution.

Cube Roots

1. Find the value of x that makes the equation true: $x^3 = 125^{-1}$.

$$x^3 = 125^{-1}$$
$$\sqrt[3]{x^3} = \sqrt[3]{125^{-1}}$$
$$x = \sqrt[3]{125^{-1}}$$
$$x = \sqrt[3]{\frac{1}{125}}$$
$$x = \frac{1}{5}$$
$$x = 5^{-1}$$

Check:

$$(5^{-1})^3 = 125^{-1}$$
$$5^{-3} = 125^{-1}$$
$$\frac{1}{5^3} = 125^{-1}$$
$$\frac{1}{125} = 125^{-1}$$
$$125^{-1} = 125^{-1}$$

2. The volume of a cube is $729\ cm^3$. What is the length of one side of the cube? Write and solve an equation, and then check your solution.

Let x cm represent the length of one side of the cube.

$$x^3 = 729$$
$$\sqrt[3]{x^3} = \sqrt[3]{729}$$
$$x = \sqrt[3]{729}$$
$$x = 9$$

Check:

$$9^3 = 729$$
$$729 = 729$$

The length of one side of the cube is 9 cm.