7.2

FINDING CUBE ROOTS

Perfect Cubes

Perfect Squares that you should know

1^3 4^3 7^3

2^3 5^3 8^3

3^3 6^3 9^3

10^3

Cube Roots

Perfect Cube Roots that you should know

$\sqrt[3]{1}$ $\sqrt[3]{64}$ $\sqrt[3]{343}$

$\sqrt[3]{8}$ $\sqrt[3]{125}$ $\sqrt[3]{512}$

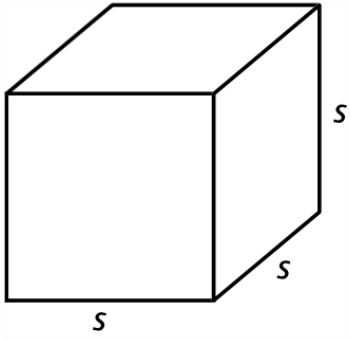
$\sqrt[3]{27}$ $\sqrt[3]{216}$ $\sqrt[3]{729}$

$\sqrt[3]{1000}$

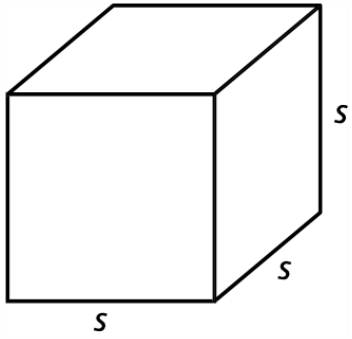
Do Now

Find the edge length of the cube.

1. Volume $= 64{,}000\ \text{ft}^3$



2. Volume $= \frac{1}{216}\ \text{ft}^3$



Finding Cube Roots

Find each cube root.

a. $\sqrt[3]{8}$

b. $\sqrt[3]{-27}$

c. $\sqrt[3]{\frac{1}{64}}$

Evaluating with Cube Roots

Evaluate each expression.

a. $2\sqrt[3]{-216} - 3$

b. $\left(\sqrt[3]{125}\right)^3 + 21$

On Your Own

Find the cube root.

1. $\sqrt[3]{1}$

2. $\sqrt[3]{-343}$

3. $\sqrt[3]{-\frac{27}{1000}}$

Evaluate the expression.

4. $18 - 4\sqrt[3]{8}$

5. $\left(\sqrt[3]{-64}\right)^3 + 43$

6. $5\sqrt[3]{512} - 19$

Evaluating with Cube Roots

Evaluate $\frac{x}{4} + \sqrt[3]{\frac{x}{3}}$ when $x = 192$.

On Your Own

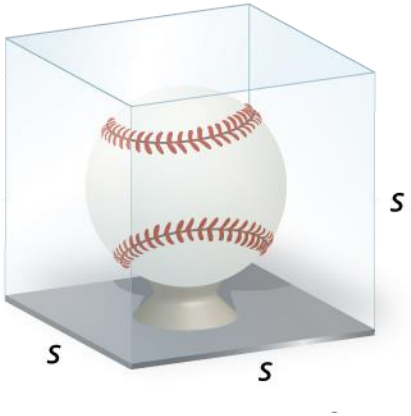
Evaluate the expression for the given value of the variable.

7. $\sqrt[3]{8y} + y, y = 64$

8. $2b - \sqrt[3]{9b}, b = -3$

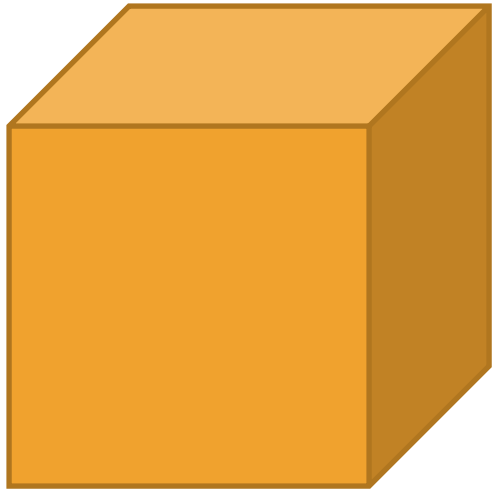
Critical Thinking...

Find the surface area of the baseball display case.



With Your Partner

9. The volume of a music box that is shaped like a cube is 512 cubic centimeters. Find the surface area of the music box.



Did You Understand?

Explain the difference between $\sqrt{64}$ and $\sqrt[3]{64}$.