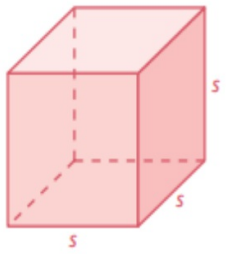
Skill check

1.) $\sqrt{169}$

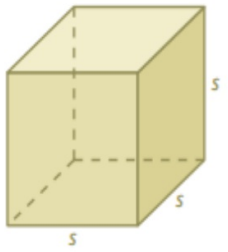
7-2 Cube roots

Cube root	Is a number that when multiplied by itself, and then multiplied by itself again, equals the given number.

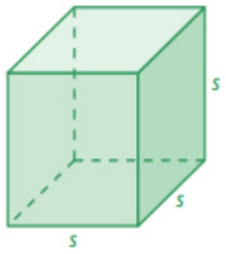
b. Volume = $27\ ft^3$



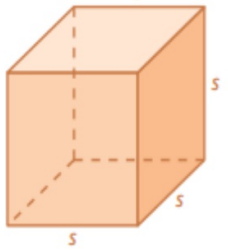
c. Volume = $125\ m^3$



d. Volume = $0.001\ cm^3$



e. Volume = $\frac{1}{8}\ yd^3$



Example 1
Finding Cube roots

1.) $\sqrt[3]{8}$

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

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

Example 2
Evaluating expression involving cube roots

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

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

Practice

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

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

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

Practice

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

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

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

Example 3
Evaluating an algebraic expression

$$\frac{x}{4} + \sqrt[3]{\frac{x}{3}}$$

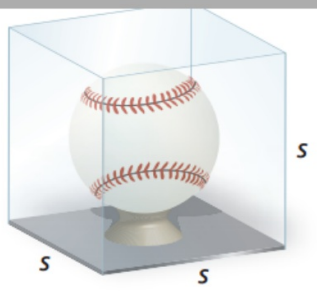
When $x = 192$

Practice

① $\sqrt[3]{8y} + y$; $y = 64$

② $2b - \sqrt[3]{9b}$; $b = -3$

The baseball display case is in the shape of a cube. Use the formula for the volume of a cube to find the edge length s.



Volume = 125 in.^{3}

1. Equations of the form $x^3 = p$ where p is a positive number (like $x^3 = 16$) will always have how many real solutions?

2. Equations of the form $x^3 = n$ where n is a negative number (like $x^3 = -12$) will always have how many real solutions?

3. True or False: Every equation of the form $x^3 = r$ where r is a real number will always have exactly one solution.

4. Solve the equations below. If the equation has no real solutions, write, "No real solutions."

   $x^3 = 343$

   $x^3 = -125$

   $x^3 = 8$

   $x^3 = 11$

   $3x^3 = 3{,}993$

   $5x^3 = 125$

   $x^3 = -100$

   $3x^3 = 63$

   $x^3 + 8 = 133$

   $x^3 + 7 = -1$

   $5x^3 + 10 = 40$

1. Equations of the form $x^3 = p$ where p is a positive number (like $x^3 = 16$) will always have how many real solutions? **1**

2. Equations of the form $x^3 = n$ where n is a negative number (like $x^3 = -12$) will always have how many real solutions? **1**

3. True or False: Every equation of the form $x^3 = r$ where r is a real number will always have exactly one solution. **True**

4. Solve the equations below. If the equation has no real solutions, write, "No real solutions."

   $x^3 = 343$ **$x = 7$**

   $x^3 = -125$ **$x = -5$**

   $x^3 = 8$ **$x = 2$**

   $x^3 = 11$ **$x = \sqrt[3]{11}$**

   $3x^3 = 3{,}993$ **$x = 11$**

   $5x^3 = 125$ **$x = \sqrt[3]{25}$**

   $x^3 = -100$ **$x = \sqrt[3]{-100}$**

   $3x^3 = 63$ **$x = \sqrt[3]{21}$**

   $x^3 + 8 = 133$ **$x = 5$**

   $x^3 + 7 = -1$ **$x = -2$**

Lesson 3 Exit Ticket **Name**_____

Complete the table by placing checkmarks in boxes if it is possible for an equation of the given type to have the given number of solutions. For example, if it is possible for an equation of the type $x^2 = 0$ to have 0 real solutions, put a checkmark in the box corresponding to $x^2 = 0$ and 0 real solutions.

	$x^2 = n$	$x^2 = 0$	$x^2 = p$	$x^3 = n$	$x^3 = 0$	$x^3 = p$
0 real solutions						
1 real solution						
2 real solutions						

Let n represent a negative number and p be a positive number.

Lesson 3 Exit Ticket - *KEY*

Complete the table by placing checkmarks in boxes if it is possible for an equation of the given type to have the given number of solutions. For example, if it is possible for an equation of the type $x^2 = 0$ to have 0 real solutions, put a checkmark in the box corresponding to $x^2 = 0$ and 0 real solutions.

	$x^2 = n$	$x^2 = 0$	$x^2 = p$	$x^3 = n$	$x^3 = 0$	$x^3 = p$
0 real solutions	X					
1 real solution		X		X	X	X
2 real solutions			X			

Let n represent a negative number and p be a positive number.