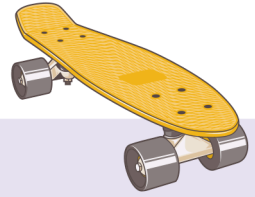


Name \_\_\_\_\_ Date \_\_\_\_\_

# SOLVING EQUATIONS WITH CUBE ROOTS

Taking the cube root of a number is the opposite, or inverse, of cubing it. So, you can solve some equations using cube roots.



*Let's try it!* Solve  $x^3 = -8$  for  $x$ .

$$x^3 = -8$$

$$\sqrt[3]{x^3} = \sqrt[3]{-8}$$
 Take the cube root of both sides of the equation.

$$x = -2$$
 Since  $(-2)^3 = (-2) \cdot (-2) \cdot (-2) = -8$ , the cube root of  $-8$  is  $-2$ .

In the example above, you can simplify the cube root of  $-8$  to get  $-2$  since  $-8$  is a perfect cube.

Consider solving an equation like  $x^3 = 15$ . Because  $15$  is not a perfect cube, you would need to write your answer using the cube root symbol. So, the exact solution of  $x^3 = 15$  is  $x = \sqrt[3]{15}$ .

*Try it yourself!* Solve each equation for the variable. Don't forget to check if you're taking the cube root of a perfect cube or not!

$b^3 = 64$	$f^3 = 2$	$z^3 = -27$
$h^3 = 216$	$p^3 = -9$	$m^3 = 512$
$c^3 = -300$	$r^3 = 125$	$b^3 = -729$
$t^3 = 1,500$	$n^3 = 1,000$	$a^3 = -1,331$
$g^3 = 3,375$	$y^3 = -27,000$	$d^3 = 6,400$