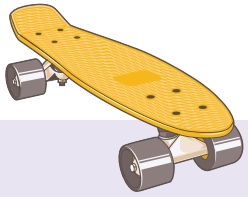
Name _____ Date Answer Key

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!

$b^3 = 64$	$f^3 = 2$	$z^3 = -27$
$b = 4$	$f = \sqrt[3]{2}$	$z = -3$
$h^3 = 216$	$p^3 = -9$	$m^3 = 512$
$h = 6$	$p = \sqrt[3]{-9}$	$m = 8$
$c^3 = -300$	$r^3 = 125$	$b^3 = -729$
$c = \sqrt[3]{-300}$	$r = 5$	$b = -9$
$t^3 = 1{,}500$	$n^3 = 1{,}000$	$a^3 = -1{,}331$
$t = \sqrt[3]{1{,}500}$ (or $5\sqrt[3]{12}$)	$n = 10$	$a = -11$
$g^3 = 3{,}375$	$y^3 = -27{,}000$	$d^3 = 6{,}400$
$g = 15$	$y = -30$	$d = \sqrt[3]{6{,}400}$ (or $4\sqrt[3]{100}$)