

Cubes and Cube Roots Worksheet

Name _____ Date _____ Period _____

What does it mean to “cube” a number?

Fill in the chart:

$1^3 =$	$2^3 =$	$3^3 =$	$4^3 =$	$5^3 =$
$6^3 =$	$7^3 =$	$8^3 =$	$9^3 =$	$10^3 =$

The inverse of cubing a number is....

$\sqrt[3]{8} =$	$\sqrt[3]{512} =$	$\sqrt[3]{125} =$	$\sqrt[3]{64} =$
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How do you find the cube root of a *non-perfect cube*?

Example: what is the cube root of 30?

Well, $3 \times 3 \times 3 = 27$ and $4 \times 4 \times 4 = 64$, so we can guess the answer is between 3 and 4.

- Let's try 3.5: $3.5 \times 3.5 \times 3.5 = 42.875$
- Let's try 3.2: $3.2 \times 3.2 \times 3.2 = 32.768$
- Let's try 3.1: $3.1 \times 3.1 \times 3.1 = 29.791$

We are getting closer, but very slowly ... at this point, I get out my calculator and it says:

$3.1072325059538588668776624275224$

... but the digits just go on and on, without any pattern. So even the calculator's answer is **only an approximation!**

Practice: What 2 perfect cubes does $\sqrt[3]{89}$ fall between?

Practice: Rounded to the nearest hundredth, what is the $\sqrt[3]{102}$?

Assignment:

Write the **square** or **cube** of each number.

A. $4^2 = \underline{4 \times 4 = 16}$ $9^2 = \underline{\hspace{2cm}}$ $3^3 = \underline{\hspace{2cm}}$
B. $6^3 = \underline{\hspace{2cm}}$ $7^2 = \underline{\hspace{2cm}}$ $15^3 = \underline{\hspace{2cm}}$
C. $10^3 = \underline{\hspace{2cm}}$ $5^3 = \underline{\hspace{2cm}}$ $14^2 = \underline{\hspace{2cm}}$
D. $20^2 = \underline{\hspace{2cm}}$ $24^3 = \underline{\hspace{2cm}}$ $19^3 = \underline{\hspace{2cm}}$
E. $8^3 = \underline{\hspace{2cm}}$ $13^2 = \underline{\hspace{2cm}}$ $48^2 = \underline{\hspace{2cm}}$
F. $17^2 = \underline{\hspace{2cm}}$ $25^3 = \underline{\hspace{2cm}}$ $37^2 = \underline{\hspace{2cm}}$

Write the **square** root.

G. $36 = \underline{6^2}$ $64 = \underline{\hspace{1cm}}$ $81 = \underline{\hspace{1cm}}$ $25 = \underline{\hspace{1cm}}$ $324 = \underline{\hspace{1cm}}$ $529 = \underline{\hspace{1cm}}$
H. $100 = \underline{\hspace{1cm}}$ $49 = \underline{\hspace{1cm}}$ $4 = \underline{\hspace{1cm}}$ $16 = \underline{\hspace{1cm}}$ $121 = \underline{\hspace{1cm}}$ $1,600 = \underline{\hspace{1cm}}$
I. $400 = \underline{\hspace{1cm}}$ $225 = \underline{\hspace{1cm}}$ $625 = \underline{\hspace{1cm}}$ $144 = \underline{\hspace{1cm}}$ $900 = \underline{\hspace{1cm}}$ $2,500 = \underline{\hspace{1cm}}$

Write the **cube** root.

J. $125 = \underline{5^3}$ $1,000 = \underline{\hspace{1cm}}$ $64 = \underline{\hspace{1cm}}$ $27 = \underline{\hspace{1cm}}$ $8 = \underline{\hspace{1cm}}$ $216 = \underline{\hspace{1cm}}$
K. $512 = \underline{\hspace{1cm}}$ $1,728 = \underline{\hspace{1cm}}$ $2,744 = \underline{\hspace{1cm}}$ $343 = \underline{\hspace{1cm}}$ $8,000 = \underline{\hspace{1cm}}$ $6,859 = \underline{\hspace{1cm}}$

Use the chart on the back to determine which two whole numbers the non-perfect cube falls between:

$\sqrt[3]{200}$ is between and .

$\sqrt[3]{4}$ is between and .

$\sqrt[3]{1,058}$ is between and .

$\sqrt[3]{65}$ is between and .

$\sqrt[3]{2,201}$ is between and .

Using your calculator and rounding to the nearest hundredth, write the cube root:

$\sqrt[3]{200} = \underline{\hspace{2cm}}$

$\sqrt[3]{4} = \underline{\hspace{2cm}}$

$\sqrt[3]{1,058} = \underline{\hspace{2cm}}$

$\sqrt[3]{65} = \underline{\hspace{2cm}}$

$\sqrt[3]{2,201} = \underline{\hspace{2cm}}$