

Category A: Estimating Square Roots and Cube Roots

Quick Review!

When estimating irrational numbers, the easiest way to compare values is by squaring (or cubing) the given values.

Ex: Between which two consecutive numbers would $\sqrt[3]{50}$ be located?

A. 1 and 2

$$\begin{array}{cc} \uparrow & \uparrow \\ \sqrt[3]{1} & \sqrt[3]{8} \end{array}$$

B. 2 and 3

$$\begin{array}{cc} \uparrow & \uparrow \\ \sqrt[3]{8} & \sqrt[3]{27} \end{array}$$

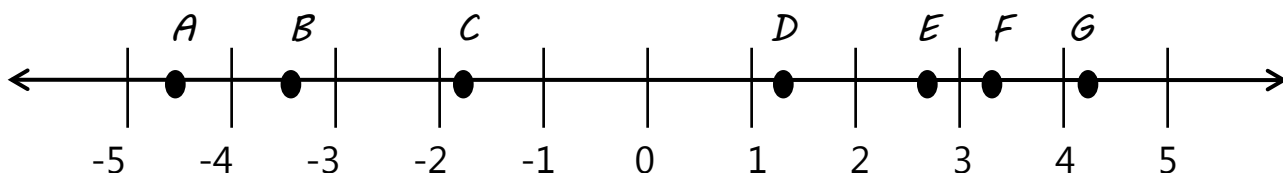
C. 3 and 4

$$\begin{array}{cc} \uparrow & \uparrow \\ \sqrt[3]{27} & \sqrt[3]{64} \end{array}$$

Since it is the **cube** root of 50, cube each number.

C would be the answer because 50 is between 27 and 64.

Using the number line, which point is the *best* estimate of:



1. $-\sqrt{20}$

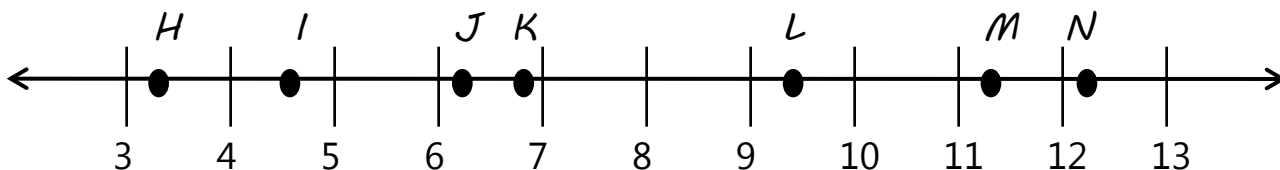
4. $-\sqrt{3}$

2. $\sqrt{7}$

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

3. $\sqrt[3]{36}$

6. $\sqrt[3]{75}$



7. $\sqrt{130}$

10. $\sqrt[3]{40}$

8. $\sqrt{38}$

11. $\sqrt{48}$

9. $\sqrt[3]{100}$

12. $\sqrt{151}$

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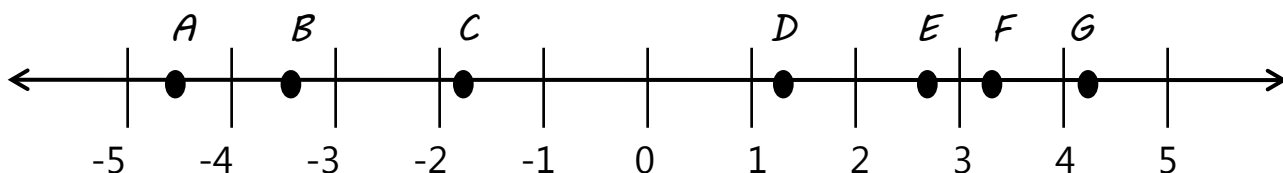
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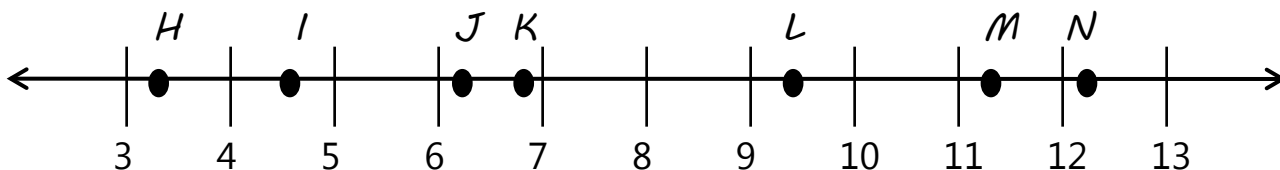
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Category A: Estimating Square Roots and Cube Roots

Between what two consecutive integers
do the following real numbers lie between?

$\sqrt{5}$	$\sqrt{38}$	$\sqrt{53}$
$\sqrt{99}$	$\sqrt[3]{26}$	$\sqrt[3]{214}$
$\sqrt{227}$	$\sqrt{77}$	$\sqrt{171}$
$\sqrt{194}$	$\sqrt[3]{80}$	$\sqrt{147}$
$\sqrt[3]{999}$	$\sqrt[3]{119}$	$\sqrt{380}$

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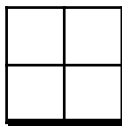
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Category B: Square Roots and Cube Roots

Quick Review!

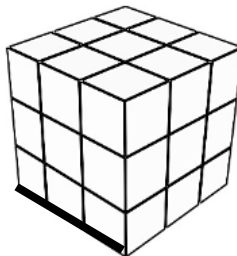
Square Roots!



Think! What number multiplied by itself equals 4?

$$2 \times 2 = 4 \quad \text{so... } \sqrt{4} = 2$$

Cube Roots!



Think!
What number multiplied **three** times (l x w x h) equals 27?

$$3 \times 3 \times 3 = 27$$

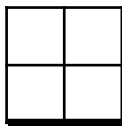
$$\text{so... } \sqrt[3]{27} = 3$$

$\sqrt{16}$	$-\sqrt{4}$	$\sqrt[3]{64}$	$\pm\sqrt{361}$
$\sqrt{36}$	$-\sqrt{144}$	$\sqrt{81}$	$\sqrt{-289}$
$h^2 = 121$	$\sqrt{100}$	$-\sqrt{400}$	$s^2 = 81$
$\sqrt{400}$	$\frac{1}{100} = d^2$	$-\sqrt{\frac{25}{441}}$	$\sqrt[3]{-512}$
$900 = y^2$	$\sqrt{\frac{-81}{100}}$	$x^2 = \frac{81}{169}$	$256 = z^2$
$-\sqrt{9}$	$x^2 = 49$	$-\sqrt{36}$	$\sqrt{169}$

Category B: Square Roots and Cube Roots

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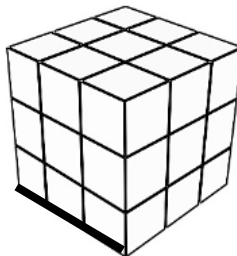
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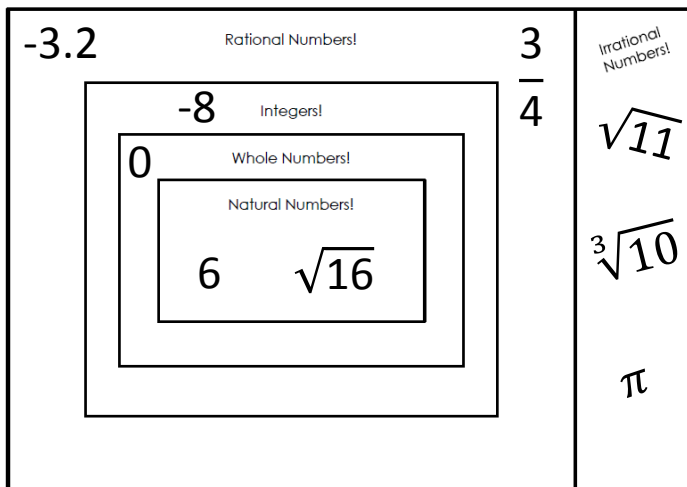
$\sqrt{\frac{16}{49}}$	$324 = a^2$	$t^2 = 36$	$\sqrt[3]{\frac{27}{64}}$
$a^2 = \frac{25}{121}$	$\sqrt{\frac{49}{100}}$	$\pm\sqrt{0.81}$	If a square has an area of 256 in ² , what is the side length?
If a square has an area of 81 in ² , what is the side length?	$\sqrt{289}$	$\pm\sqrt{2.25}$	$c^2 = \frac{49}{64}$
$\sqrt{y} = 6$	$-\sqrt{0.49}$	If a cube has a volume of 64 cm ³ , what is the side length?	$\pm\sqrt{0.01}$
$-\sqrt{3.24}$	$\frac{144}{169} = r^2$	$\sqrt{2.25}$	$\pm\sqrt{\frac{121}{289}}$
$-\sqrt{0.49}$	If a cube has a volume of 125 cm ³ , what is the side length?	$\sqrt{\frac{81}{25}}$	$\sqrt[3]{1}$
$-\sqrt{0.09}$	$\sqrt[3]{1000}$	$\sqrt{z} = 8.4$	If a square has an area of 196 in ² , what is the side length?
If a cube has a volume of 216 cm ³ , what is the side length?	$0.0196 = m^2$	$\sqrt{\frac{361}{400}}$	$\sqrt{0.04}$

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Category C: Classifying Real Numbers

**Quick
Review!**

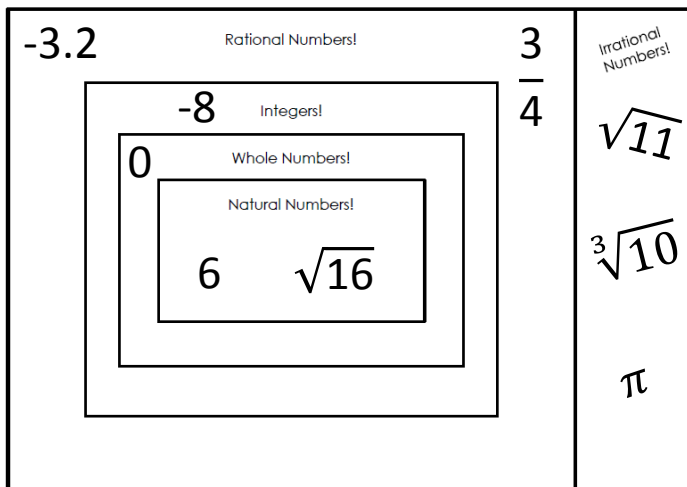


Name all sets of numbers to which each number belongs.

12	-15	3.18	$-\sqrt{12}$
π	$\sqrt{25}$	$-2\frac{7}{9}$	$\sqrt{13}$
$\sqrt[3]{30}$	$9.\bar{3}$	$1\frac{1}{2}$	$\frac{8}{4}$

Category C: Classifying Real Numbers

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Category C: Classifying Real Numbers

Why is each classification below WRONG?

6.5 *Real, rational,
terminating, integer*

What's wrong:

$\sqrt{3}$ *Real, rational*

What's wrong:

$\frac{16}{4}$ *Real, rational,
terminating, integer,
whole*

What's wrong:

$0.\overline{61}$ *Real, rational,
repeating, integer,
whole*

What's wrong:

$\frac{1}{5}$ *Real, irrational*

What's wrong:

-7.36 *Real, rational,
terminating, integer*

What's wrong:

Provide an example of each classification.

Integer:

NOT Rational Number:

Natural Number:

NOT Whole Number:

Rational Number:

NOT Terminating Number:

Irrational Number:

NOT Integer:

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Category D: Ordering Real Numbers

Quick Review!

When ordering and comparing real numbers, write each number in decimal notation OR write both numbers with radicals.

Ex: Fill in the \bigcirc with $<$, $>$, or $=$ to make a true statement.

$$\sqrt{15} \bigcirc 3\frac{9}{10}$$

$$\sqrt{15.21}$$

$$\begin{array}{r} 3.9 \\ \times 3.9 \\ \hline 15.21 \end{array}$$

Fill in each \bigcirc with $<$, $>$, or $=$ to make a true statement.

$\sqrt{7} \bigcirc 2.8$	$2\frac{1}{3} \bigcirc 2.\bar{3}$	$\sqrt{121} \bigcirc 11$	$\sqrt{30} \bigcirc 5.6$
$2.45 \bigcirc 2.\bar{4}$	$\sqrt{5} \bigcirc 2.23$	$\sqrt{6.25} \bigcirc 2\frac{1}{2}$	$5\frac{1}{3} \bigcirc \sqrt{30}$
$2.9 \bigcirc \sqrt{8}$	$6\frac{1}{6} \bigcirc \sqrt{38}$	$2.1 \bigcirc \sqrt{4.41}$	$2.\bar{8} \bigcirc \sqrt{24}$

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Category D: Ordering Real Numbers

Order each set of numbers from least to greatest. Verify your answers.

$$-\frac{9}{10}, \sqrt{1}, -2.1, \sqrt{9}, -1.5$$

$$3.1, -\frac{2}{5}, \sqrt{15}, \sqrt{4}, -1.3$$

$$-\frac{7}{10}, \sqrt{3}, 0.5, \frac{1}{3}, 2.6$$

$$\frac{3}{8}, \sqrt{12}, \frac{5}{9}, \sqrt{11}, -0.65$$

$$4\frac{1}{2}, \sqrt{15}, 3, 4.\overline{21}$$

$$5\frac{4}{5}, \sqrt{30}, 6, 5.\overline{3}$$

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Category E

Real Numbers Challenge!

Choose one of the following options below!

<p>Create 5 Instagram photos that are comparing real numbers ($<$, $>$, and $=$).</p>	<p>Develop a facebook page for a real number. Use the “friends” and “mini-feed” to highlight different classifications.</p>	<p>Get creative! Make up a song about the first 20 perfect squares.</p>
<p>Design an informational brochure about the classifications of real numbers.</p>	<p>Get writing! Create a news article related to estimating square roots.</p>	<p>Pick four different types of real numbers. Write a “story” where the numbers decide how to order themselves from least to greatest.</p>
<p>Make a poster comparing square roots and perfect squares. Include a world problem for each example.</p>	<p>You are a country music artist! Create a song singing “the blues” about being an irrational number.</p>	<p>Get creative! Develop a poem that explains the classifications of the real numbers.</p>

Have your own idea? Let me know! I probably will say yes!

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