

Warm-Up

October 29, 2018

No Calculator

Which of the following are perfect squares?

A. $\frac{25}{200}$ $\div 25$
 $\div 25$

$\frac{1}{8}$ $\leftarrow 1 \times 1$
 \uparrow NO
 NO

B. $\frac{169}{121}$ $\leftarrow 13 \times 13$
 $\leftarrow 11 \times 11$

yes

$\sqrt{\frac{169}{121}} = \frac{13}{11}$

c) Write $\frac{25}{200}$ as a decimal.

0.125 take the square root

$\sqrt{0.125} = 0.353...$

Irrational numbers cannot be a perfect square

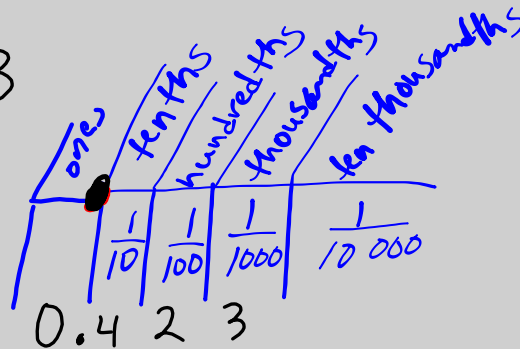


How can we use the square roots of whole numbers to determine the square roots of decimals?

Convert a decimal to a fraction then determine the square root of the numerator and denominator.

Example: 0.423

$$\frac{423}{1000}$$



Convert the following into a fraction.

a) 0.25

$$\frac{25}{100}$$

b) 0.4924

$$\frac{4924}{10000}$$

c) 1.26

$$\frac{126}{100}$$

Are these perfect squares?

a) $\frac{1}{10}$ ← 1x1

↑ NO

NO

b) $\frac{1}{10\ 000}$ ← 1x1

↑ 100x100

yes

c) $\frac{1}{1000}$ ← 1x1

↑ NO

NO

d) $\frac{1}{1\ 000\ 000}$ ← 1x1

↑ 1000x1000

yes





Square Root of a Decimal

Decimal	Fraction	Square Root	Perfect square ?
A. 0.49	$\frac{49}{100}$	$\frac{\sqrt{49}}{\sqrt{100}} = \frac{7}{10}$	yes
B. 0.64	$\frac{64}{100}$	$\sqrt{\frac{64}{100}} = \frac{8}{10}$	yes
C. 1.21	$\frac{121}{100}$	$\sqrt{\frac{121}{100}} = \frac{11}{10}$	yes
D. 1.44	$\frac{144}{100}$	$\sqrt{\frac{144}{100}} = \frac{12}{10}$	yes



Which of the following are perfect squares?

A. $\frac{75}{300} = \frac{1}{4}$

Handwritten notes: $75 \div 75$, $300 \div 75$, $1 \leftarrow 1 \times 1$, $4 \leftarrow 2 \times 2$. The word "yes" is circled next to the fraction.

B. $\frac{196}{81}$

Handwritten notes: $196 \leftarrow 14 \times 14$, $81 \leftarrow 9 \times 9$. The word "yes" is circled next to the fraction.


Remember to convert to fractions first!

C. 0.25

Handwritten notes: $25 \leftarrow 5 \times 5$, $\frac{25}{100} \leftarrow 10 \times 10$. The word "yes" is circled next to the fraction.

D. 1.96

Handwritten notes: $196 \leftarrow 14 \times 14$, $\frac{196}{100} \leftarrow 10 \times 10$. The word "yes" is circled next to the fraction.



a) What are the equal fractions that will give $\frac{1}{9}$?

$$\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$$

b) What is the square root of $\frac{1}{9}$?

$$\sqrt{\frac{1}{9}} = \frac{1}{3}$$



Which of the following are perfect squares?

If "no" at first...put in lowest terms then decide!

A. $\frac{40}{200}$

$\frac{4}{20}$

$\frac{1}{5}$ ← 1x1

5 ↗ NO

NO

B. $\frac{36}{50}$

$\frac{18}{25}$

18 ↗ NO

25 ↘ 5x5

NO



Are they perfect squares

C. 8

18

4 ← 2x2
9 ↑ 3x3

yes

D. 16

5

← 4x4
NO
NO

E. 2

9

← 20
3x3
NO





Is each decimal a perfect square?
 [remember to convert it to a fraction
 in its simplest form]

A. 6.25

$$\frac{625}{100}$$

Handwritten annotations for problem A:
 - An arrow points from the text "25x25" to the numerator 625.
 - An arrow points from the text "10x10" to the denominator 100.
 - The word "yes" is circled in blue below the fraction.

B. 0.627

$$\frac{627}{1000}$$

Handwritten annotations for problem B:
 - The word "No" is circled in blue below the fraction.



$$c) \frac{400}{10000} \leftarrow 20 \times 20$$

yes $\nearrow 100 \times 100$

$$d) \frac{0.0121}{10000} \leftarrow 11 \times 11$$

yes $\nearrow 100 \times 100$

Find the square root of the following: [calculator]

$$a) \sqrt{1789.29} = 42.3$$

$$b) \sqrt{533.61} = 23.1$$

Find the square root. No calculator!

[Use fractions]

$$a) \sqrt{0.16} = 0.4$$

$$\sqrt{\frac{16}{100}} = \frac{4}{10}$$

$$b) \sqrt{1.69} = 1.3$$

$$\frac{\sqrt{169}}{\sqrt{100}} = \frac{13}{10}$$

$$c) \sqrt{\frac{128}{72}} = \sqrt{\frac{64}{36}} = \frac{8}{6}$$



Calculate the number whose square root is...

a) 5

$$\sqrt{?} = 5$$

$$? = 25$$

b) $\frac{1}{4}$

$$\sqrt{?} = \frac{1}{4}$$

$\times 4$

$$? = \frac{1}{16}$$

c) 0.15

$$\sqrt{?} = \frac{15}{100}$$

$$? = \frac{225}{10000}$$