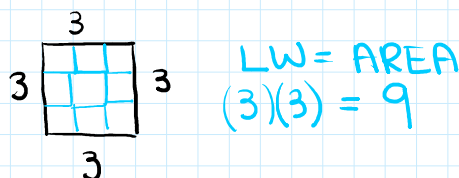


Rational Numbers - Square Roots

October 3, 2016 10:00 AM

Square Roots:

When asked to calculate the square root, same as asking what is the SIDE length of a square with an AREA of the square root.



$$\sqrt{9} = \sqrt{3 \times 3} = 3$$

$$\sqrt{\text{AREA}} = \sqrt{\text{LW}} = \text{side length}$$

Estimate and Calculate the number that has the given "square root".

a) $5 = 25$
 ↑ ↑
 side length want area

b) $3.1 = 9 = 9.61$
 ↑ ↑ ↑
 is side length Est.

$$\begin{array}{r} 3.1 \\ \times 3.1 \\ \hline 31 \\ + 930 \\ \hline 9.61 \end{array}$$

c) $10.2 = 100 = 104.04$
 ↓ ↓ ↓
 side length Est.

$$\begin{array}{r} 102 \\ \times 102 \\ \hline 204 \\ 0000 \\ + 10200 \\ \hline 10404 \end{array}$$

Are the following perfect squares?
 Explain ← use numbers

a) $121 = \sqrt{121} = \sqrt{11 \times 11} = 11$
 ↑ ↑
 Area side length
 Yes!

b) $25 = \sqrt{5 \times 5} = 5$ Yes! Both numerator and denominator

b) $\frac{25}{49} = \frac{\sqrt{5 \times 5}}{\sqrt{7 \times 7}} = \frac{5}{7}$ Yes! Both numerator and denominator are perfect squares

c) $\frac{9}{10} = \frac{\sqrt{5 \times 2}}{\sqrt{10 \times 1}} \rightarrow$ Not a perfect square.

d) $0.25 = \frac{25}{100} = \frac{\sqrt{5 \times 5}}{\sqrt{10 \times 10}} = \frac{5}{10}$ yes.
 hundredths \nearrow 2 spots \nearrow 2 zeros

Estimate and Calculate:

a) $\sqrt{0.34} \stackrel{\text{est}}{=} 0.6 \stackrel{\text{calc}}{=} 0.58$
 calc: $\sqrt{.25} = .5$ $\sqrt{.36} = .6$
 Between $.5$ and $.6$

b) $\sqrt{0.73} \stackrel{\text{Est}}{=} .85 = 0.86$
 $\sqrt{.64} = .8$ $\sqrt{.81} = .9$

7.00
8

7.00
9