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Example #3 – Solving with Square Roots

$\sqrt{x} = 2.4$

Step 1 Rewrite each decimal as a fraction.	* make it an improper fraction $2\frac{4}{10} = \frac{24}{10}$
Step 2 Square the value. Square is the inverse of Square root	$\left(\frac{24}{10}\right)^2 = \frac{24}{10} \cdot \frac{24}{10} = \frac{576}{100}$
Step 3 Record the answer using proper notation.	$\frac{576}{100}$ $X = 5.76$

* If it starts as a decimal, the answer should be a decimal.
* If it starts as a fraction, the answer should be a fraction.

$\sqrt{X} = 4$

① $\frac{4}{1}$

② $\left(\frac{4}{1}\right)^2 = \frac{4}{1} \cdot \frac{4}{1} = \frac{16}{1}$

③ $X = 16$

$\sqrt{X} = 0.49$

① $\frac{49}{100}$

② $\left(\frac{49}{100}\right)^2 = \frac{49}{100} \cdot \frac{49}{100} = \frac{2401}{10,000}$

③ $X = .2401$

49 × 49 = 441 + 1960 = 2401

$\sqrt{X} = \frac{3}{8}$

① $\frac{3}{8}$

② $\left(\frac{3}{8}\right)^2 = \frac{3}{8} \cdot \frac{3}{8} = \frac{9}{64}$

③ $X = \frac{9}{64}$

Example #4 – Solving with Perfect Squares

$x^2 = .25$

$X^2 = 16$
4, -4
2 solutions

Step 1 Read the number mathematically and write the decimal as a FRACTION.	$\frac{25}{100}$
Inverse of Square is Square root **Step 2** Take the Square Root of the fraction.	$\sqrt{\frac{25}{100}} = \frac{\sqrt{25}}{\sqrt{100}} = \frac{5}{10}$
Step 3 Record the answer using proper notation (REMEMBER: 2 Solutions).	$\frac{5}{10} = 0.5$ $\quad X = \pm 0.5$

*If X^2, then there are 2 solutions.

Make a mixed number an improper fraction

$X^2 = 6.25$

① $6\frac{25}{100} = \frac{625}{100}$

② $\sqrt{\frac{625}{100}} = \frac{\sqrt{625}}{\sqrt{100}} = \frac{25}{10}$

③ $\frac{25}{10} = 2.5$ $\quad X = \pm 2.5$

$X^2 = -3$

① $\frac{-3}{1}$

② $\sqrt{\frac{-3}{1}} = \frac{\sqrt{-3}}{\sqrt{1}}$

Can't take the square root of a negative number

③ $\emptyset$ No Solution