

Calculating Square Roots

By Calculator -

figure out if your calculator
requires you to push $\sqrt{\quad}$

Before or After the number

$\sqrt{\quad} \quad 9$ or $9 \quad \sqrt{\quad}$

Do you need to use the $[2^{nd}]$ key?

Rounding: Last digit $\frac{5 \uparrow}{4 \rightarrow}$ go up
Stay

* A square is a number multiplied
by itself. EX: $3 \times 3 = 3^2$ or $9 \times 9 = 9^2$

* The square root ($\sqrt{\quad}$) "undoes" squaring.

$$\sqrt{3^2} = 3 \quad \text{or} \quad \sqrt{9^2} = 9 \quad \text{or} \quad \sqrt{X^2} = X$$
$$\sqrt{3 \cdot 3} \begin{matrix} \nearrow \\ 2^{x^0} \end{matrix} \quad \sqrt{9 \cdot 9} \begin{matrix} \nearrow \\ 2^{x^0} \end{matrix} \quad \sqrt{X \cdot X} \begin{matrix} \nearrow \\ 2^{x^0} \end{matrix}$$

if there are 2 of the same
factors inside the squareroot,
They both come out as one.

Examples

$$\sqrt{49} = \sqrt{7 \cdot 7} = 7$$

$2 \rightarrow 1$

$$\sqrt{50} = \sqrt{2 \cdot 5 \cdot 5} = 5\sqrt{2}$$

$2 \rightarrow 1$

↑
only 1 factor inside, so it has to stay ∴

$$\sqrt{x^3 y^4} = \sqrt{\overset{1}{x} \overset{2}{x} \overset{2}{y} \overset{2}{y} \overset{2}{y} \overset{2}{y}} = x y y \sqrt{x} = x y^2 \sqrt{x}$$

stay go go go simplify

$$\sqrt{45 x^2 y^5} = \sqrt{\overset{2}{3} \cdot 3 \cdot 5 \cdot \overset{2}{x} \overset{2}{y} \overset{2}{y} \overset{2}{y} \overset{1}{y}}$$

$3 x y^2 \sqrt{5 y}$