OR

Product Property

Multiply first

Simplify first?

$$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$$

and

$$\sqrt{a} \cdot \sqrt{b} = \sqrt{ab}$$

Quotient Property

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

divide first

Simplify first?

and

$$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$$

OR

Rationalizing the Denominator

No Radicals in the Denominator

Multiply top + bottom by denominator (radical)

Simplifying Radicals

Look For LIKE TERMS

$\sqrt{2}$ and $3\sqrt{2}$ ✓

$\sqrt{ab^2}$ and $4\sqrt{ab^2}$ ✓

$2\sqrt{5}$ and $\sqrt{2}$ ✗

SAME RADICAND

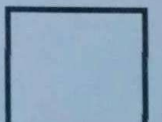
WHAT YOU NEED TO KNOW ABOUT...

SQUARE ROOTS

The Side Length of a Square is the Square root of its area

$\sqrt{7}$

radical — radicand



Area = 40, What is the Side Length?

$\sqrt{40}$

$\sqrt{4}\ \sqrt{10}$

$2\sqrt{10}$

$\sqrt{40}$

8 · 5

4 · 2

2 · 2 · 2 · 5

$2\sqrt{10}$

Estimate to the nearest tenth.

$\sqrt{34}$	$-\sqrt{55}$	$\sqrt{90}$
≈ 5.8	≈ -7.4	≈ 9.5

Remember your perfect squares!!!

$1^2 = 1$	$6^2 = 36$	$11^2 = 121$	$16^2 = 256$	$21^2 = 441$
$2^2 = 4$	$7^2 = 49$	$12^2 = 144$	$17^2 = 289$	$22^2 = 484$
$3^2 = 9$	$8^2 = 64$	$13^2 = 169$	$18^2 = 324$	$23^2 = 529$
$4^2 = 16$	$9^2 = 81$	$14^2 = 196$	$19^2 = 361$	$24^2 = 576$
$5^2 = 25$	$10^2 = 100$	$15^2 = 225$	$20^2 = 400$	$25^2 = 625$

To Find Factors of your radicand use your calculator $y = \frac{radicand}{x}$ then look at the table 2nd Graph

$2\sqrt{32}$

$2 \cdot \sqrt{16 \cdot 2}$

$2\sqrt{16}\sqrt{2}$

$2 \cdot 4\sqrt{2} = \boxed{8\sqrt{2}}$

$3\sqrt{40} \cdot 2\sqrt{5}$

$3 \cdot 2\sqrt{200}$

$6\sqrt{100 \cdot 2}$

$6\sqrt{100} \cdot \sqrt{2}$

$6 \cdot 10\sqrt{2} = \boxed{60\sqrt{2}}$

$7\sqrt{\frac{180}{5}} = \sqrt{36}$

$7\sqrt{36}$

$7 \cdot 6 = \boxed{42}$

$2\sqrt{18} \cdot \sqrt{2}$

$2\sqrt{36}$

$2 \cdot 6$

$\boxed{12}$

$\sqrt{\frac{15}{2}}\ \frac{\sqrt{15}}{\sqrt{2}}\left(\frac{\sqrt{2}}{\sqrt{2}}\right)$

$\boxed{\frac{\sqrt{30}}{2}}$

$\frac{4\sqrt{10}}{\sqrt{45}}\ \sqrt{\frac{10}{45}} = \sqrt{\frac{2}{9}}$

$\frac{4\sqrt{2}}{\sqrt{9}} = \boxed{\frac{4\sqrt{2}}{3}}$

Simplify each expression.

$\sqrt{6} + \sqrt{24}$

$\sqrt{4 \cdot 6}$

$1\sqrt{6} + 2\sqrt{6} = \boxed{3\sqrt{6}}$

$3\sqrt{3} - \sqrt{27}$

$\sqrt{9 \cdot 3}$

$3\sqrt{3} - 3\sqrt{3} = \boxed{0}$

$2\sqrt{54} - 3\sqrt{6}$

$2\sqrt{9 \cdot 6}$

$6\sqrt{6} - 3\sqrt{6}$

$\boxed{3\sqrt{6}}$

$3\sqrt{5} + 2\sqrt{45}$

$2\sqrt{9 \cdot 5}$

$3\sqrt{5} + 6\sqrt{5}$

$\boxed{9\sqrt{5}}$

$-\sqrt{50}$

$-\sqrt{25 \cdot 2}$

$-\sqrt{25}\sqrt{2}$

$\boxed{-5\sqrt{2}}$

$\sqrt{2} \cdot \sqrt{18}$

$\sqrt{36}$

$\boxed{6}$

$\sqrt{12} = \sqrt{4 \cdot 3}$

$= \sqrt{4} \cdot \sqrt{3}$

$= 2\sqrt{3}$

$\frac{\sqrt{147}}{\sqrt{3}} = \sqrt{49}$

$\boxed{7}$

$\frac{\sqrt{150}}{\sqrt{2}} = \sqrt{75}$

$\sqrt{25 \cdot 3}$

$\sqrt{25}\sqrt{3}$

$\boxed{5\sqrt{3}}$

$\sqrt{\frac{25}{16}} = \frac{\sqrt{25}}{\sqrt{16}}$

$= \frac{5}{4}$

$\frac{2\sqrt{2}}{\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right)$

$\boxed{\frac{2\sqrt{6}}{3}}$

$\frac{5}{\sqrt{10}}\left(\frac{\sqrt{10}}{\sqrt{10}}\right)$

$\frac{5\sqrt{10}}{10}$

$\boxed{\frac{\sqrt{10}}{2}}$

$\frac{\sqrt{8}}{\sqrt{18}}\ \sqrt{\frac{4}{9}}$

$\frac{\sqrt{4}}{\sqrt{9}} = \boxed{\frac{2}{3}}$

$5\sqrt{2} + 3\sqrt{2}$

$\boxed{8\sqrt{2}}$

$5\sqrt{3} - \sqrt{12}$

$\sqrt{4 \cdot 3}$

$\sqrt{9}\sqrt{3}$

$5\sqrt{3} - 2\sqrt{3}$

$\boxed{3\sqrt{3}}$

$\sqrt{80} - 5\sqrt{5}$

$\sqrt{16 \cdot 5}$

$\sqrt{16}\sqrt{5}$

$4\sqrt{5} - 5\sqrt{5}$

$\boxed{-\sqrt{5}}$