Rationalizing Denominators

"Rational" refers to a number that is a ratio - that is, a number that ends at some point. Having a $\sqrt{\ }$ in the denominator makes that number non-rational (irrational).

This is non-rational:

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

↑ because of this guy

To make a number like this rational again, you need to get rid of the $\sqrt{\ }$ in the denominator. To do this, multiply the top and bottom by the bottom:

$$\frac{\sqrt{6}}{\sqrt{2}}\left(\frac{\sqrt{2}}{\sqrt{2}}\right) \longrightarrow \frac{\sqrt{6}\cdot\sqrt{2}}{\sqrt{2}\cdot\sqrt{2}}$$

When multiplying roots ~~w/ different #s~~, keep the $\sqrt{\ }$ and multiply the numbers inside. When multiplying roots with the same # inside, square the root:

$$\frac{\sqrt{6}\cdot\sqrt{2}}{\sqrt{2}\cdot\sqrt{2}} \longrightarrow \frac{\sqrt{6\cdot 2}}{(\sqrt{2})^2} \longrightarrow \boxed{\frac{\sqrt{12}}{2}}$$

← exponent cancels out $\sqrt{\ }$ of the same power