Rationalize Denominator means to make it rational. Square roots of non-perfect squares are irrational because they do not terminate nor do they repeat when placed in decimal form. Thus, rationalize a denominator means to simplify so that there is no $\sqrt{\ }$ in denominator.

Steps to Rationalize a Denominator with One Term

1. Write out problem.
2. Simplify numerator and denominator completely.
3. If numbers outside of $\sqrt{\ }$ in the numerator and denominator have common factors, simplify.
4. **If a $\sqrt{\ }$ ends up in the denominator, multiply both numerator and denominator by $\sqrt{\ }$ from the denominator.**
5. When multiplying $\sqrt{\ }$'s you multiply numbers under $\sqrt{\ }$'s together and numbers in front of $\sqrt{\ }$'s together.
6. After multiplying $\sqrt{\ }$'s, simplify new $\sqrt{\ }$'s and simplify numbers in front.

Examples: Simplify

$$\sqrt{\frac{7}{20}}$$

$$\frac{\sqrt{7}}{\sqrt{20}}$$

$$\frac{\sqrt{7}}{\sqrt{4\cdot 5}}$$

$$\frac{\sqrt{7}}{\sqrt{4}\sqrt{5}}$$

$$\frac{\sqrt{7}}{2\sqrt{5}}$$

A $\sqrt{\ }$ remains in denominator so we rationalize by multiplying numerator and denominator by the $\sqrt{\ }$ in the denominator.

$$\frac{\sqrt{7}\cdot\sqrt{5}}{2\sqrt{5}\cdot\sqrt{5}}$$

$$\frac{\sqrt{35}}{2\sqrt{25}}$$

$$\frac{\sqrt{35}}{2\cdot 5}$$

$$\frac{\sqrt{35}}{10}$$