## Unit \# 1 - Solving Quadratic Equations: Part II (By Square Roots)

## Simplifying Radicals - Square Roots

- square root (of a number) $\rightarrow$ If have $a^{2}=b$, then $\qquad$ because $\qquad$

- radicand - represents the $\qquad$ Ex: $\sqrt{4}$ where $\qquad$
- index number - represents the $\qquad$ Ex: $\sqrt{x}$ where index $=$ $\qquad$
- Notes: 1.) You can have a $\qquad$ (called the $\qquad$ )
2.) You can have a $\qquad$ where $\qquad$
3.) (Normally) You have a $\qquad$ where a $\qquad$ symbol is used
4.) (Occasionally) You can have a $\qquad$ where answer is $\qquad$
- GOAL to simplifying square roots - $\qquad$ where the easiest way to do this is by $\qquad$ using a $\qquad$

Example 1: Simplify each radical (square root) completely.

| a.) Simplify: $\sqrt{18}$ |
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| b.) Simplify: $\sqrt{27}$ |
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| c.) Simplify: $\sqrt{360}$ |
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| d.) Simplify: $5 \sqrt{48}$ |
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| e.) Simplify: $-3 \sqrt{32}$ |
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| f.) Simplify: $3 \sqrt{5} \cdot 2 \sqrt{10}$ |
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- quadratic equation \# 1 (to solve by sq roots) $\rightarrow$ equation needs to be in the form: $\qquad$
Follow these steps to solve: $\quad$ Step 1 - $\qquad$
Step 2 - $\qquad$
Step 3 - $\qquad$
* Notes: Keep answers in simplified radical form

If get a negative underneath square root $\rightarrow$ answer is no real solution $\quad$ Ex: $x=\sqrt{-2}$
Example 2: Solve each quadratic equation by using square roots.

| a.) $3 \mathrm{x}^{2}=75$ | b.) $24 \mathrm{x}^{2}-6=0$ | c.) $6-4 \mathrm{x}^{2}=-18$ | d.) $8 \mathrm{x}^{2}-10=214$ | e.) $2 \mathrm{x}^{2}+16=0$ |
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- quadratic equation \# 2 (to solve by sq roots using a "formula") $\rightarrow$ equation needs to be in the form:
$\qquad$
* Notes: This method will work for $\qquad$ but the equation $\qquad$
Keep answers in simplified radical form
If get a negative underneath square root $\rightarrow$ answer is no real solution $\quad$ Ex: $x=\sqrt{-2}$
Example 3: Solve each quadratic equation using the Quadratic Formula. Round to tenth place.

| a.) $x^{2}-5 x+6=0$ | b.) $-2 x^{2}+8-4 x=0$ | c.) $3 x^{2}=-1$ | d.) $2 x^{2}+4 x-5=2$ |
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