## Algebra 2

## 5-01 nth Roots and Rational Exponents

## Root

- If $a^{2}=b$, then $a$ is a $\qquad$ $\left(2^{\text {nd }}\right)$ root of $b$.
- If $a^{n}=b$, then $a$ is the $\qquad$ root of $b$.


## Parts of a radical



## Rational Exponents

$$
\begin{gathered}
b^{1 / n}=\sqrt[n]{b} \\
b^{m / n}=\sqrt[n]{b^{m}}=(\sqrt[n]{b})^{m}
\end{gathered}
$$

Evaluate
$36^{1 / 2}$
$\left(\frac{1}{8}\right)^{-\frac{1}{3}}$
$27^{\frac{4}{3}}$

Find roots with a calculator

- The $\sqrt{x}$ or $\sqrt{ }$ key is for $\qquad$ roots (either radicand then key or key then radicand depending on calculator)
- The $\sqrt[x]{y}$ or $\sqrt[y]{x}$ or $\sqrt[x]{ }$ is for $\qquad$ root (index $\rightarrow$ key $\rightarrow$ radicand OR radicand $\rightarrow$ key $\rightarrow$ index)
Try it with $\sqrt[4]{100}$


## Steps to solve an equation with an exponent

1. $\qquad$ the exponent term
2. Take the $\qquad$ of both sides where the index is the $\qquad$

- If the index is $\qquad$ , put $\qquad$

3. $\qquad$
4. $\qquad$ your answers!!!

Solve. Round to two decimal places, if necessary.
$5 x^{3}=320$

$$
(x+3)^{4}=24
$$

