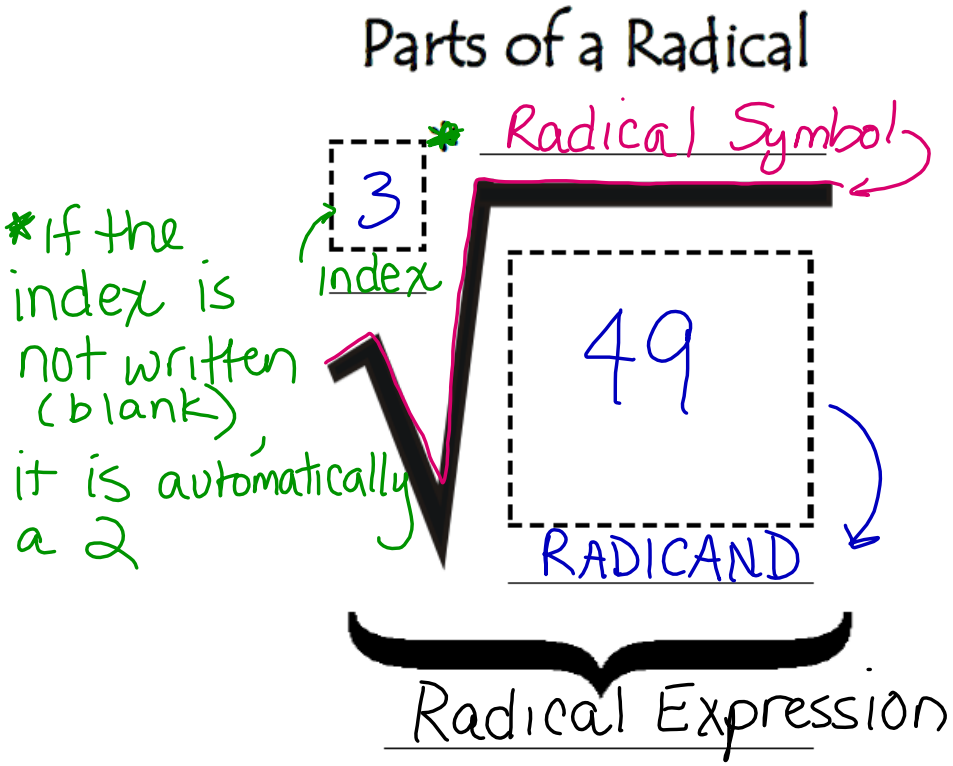

* If the _____ is not written, it is automatically a ____.

For each radical, determine the index and radicand.

$\sqrt{24}$

$\sqrt[4]{128n^8}$

$\sqrt[3]{16xy}$

$\sqrt[6]{448x^7y^7}$

$\sqrt{512x^2}$

$\sqrt[3]{1000}$

$\sqrt{512}$

$\sqrt{98k}$

$\sqrt[3]{-162}$

What is a square root?

Square Root: The opposite of squaring a number.

$\sqrt{16}$

± 4

$(4)^2 = 16$ and $(-4)^2 = 16$

both 4 and -4 are square roots of 16

Principle (nonnegative square root) is denoted with the radical sign. $\sqrt{}$

Negative Square Root is denoted by the negative radical sign. $-\sqrt{}$

Simplify

a. $\sqrt{25}$ ± 5

b. $\sqrt{0}$ 0

c. $\sqrt{\frac{9}{25}}$ $\frac{\sqrt{9}}{\sqrt{25}} \rightarrow \pm\frac{3}{5}$

d. $\sqrt{0.36}$ $\pm .6$

e. $-\sqrt{49}$ $(-)\pm 7$ ± 7

f. $\sqrt{-121}$ $\sqrt{-1}\cdot\sqrt{121}$ $i \cdot \pm 11$ $\pm 11i$

g. $\sqrt{7}$ $\sqrt{7}$

h. $\sqrt{45}$ $\sqrt{9}\cdot\sqrt{5}$ $\pm 3\sqrt{5}$

$i = \sqrt{-1}$

Steps for Simplifying Radicals

1. Write the prime factorization of your radicand.
2. Determine the index of the radical.
3. If the index is 2, circle groups of 2 identical numbers or variables. If the index is 3, circle groups of 3 identical numbers or variables, etc.
4. The number or variable ~~form~~ from each circled group will show up outside the radical symbol one time.
5. Anything left un-circled will remain inside the radical. If everything under the radical is circled the radical symbol will disappear.
6. Multiply the numbers and variables outside the radical together. Multiply the numbers and variables inside the radical together.

$\sqrt{24}$

24 → 6, 4 → 3, 2, 2, 2

3|24
2|8
2|4
2

index = 2

$2\sqrt{3\cdot 2}$

$2\sqrt{6}$

For each radical, determine the index and radicand.

$\sqrt{24}$
$\sqrt[4]{128n^8}$
$\sqrt[3]{16xy}$
$\sqrt[6]{448x^7y^7}$
$\sqrt{512x^2}$
$\sqrt[3]{1000}$
$\sqrt{512}$
$\sqrt{98k}$
$\sqrt[3]{-162}$

$\sqrt[3]{16xy}$

2|16xy
2|8xy
2|4xy
2xy

$2\sqrt[3]{2xy}$

$\sqrt[6]{448x^7y^7}$

7|448
2|64
2|32
2|16
2|8
2|4
2

$x^7 = xxxxxxx$
$y^7 = yyyyyyy$

$2\sqrt[6]{7x^7y^7}$

$2xy\sqrt[6]{7xy}$