$\sqrt{}$

This is called the radical symbol.

It's used for undoing exponents.

$(3)^2 = 9$

$(-3)^2 = 9$

What are the square roots of 9? ± 3

What are the square roots of 729? ± 27

What are the square roots of -196?

- 196 has no real roots

Every positive number has how many square roots? 2 real roots

Every negative number has how many square roots? No real roots

What is the only number that has ONE real square root? Zero

Find the real square roots of each number

1. $\dfrac{81}{169}$ $\pm \dfrac{9}{13}$

2. -144 No Real Square Roots

3. 729 ± 27

4. 0.0064 ± 0.08

What is each problem asking for?

1. $-\sqrt{25}$ The negative Square Root of 25.

2. $\pm\sqrt{25}$ Both the positive and negative Square Root of 25.

3. $\sqrt{25}$ The positive Square Root of 25. Also known as the Principal Square Root.

The Principal Root:

When there is more than one root of a number the Principal Root is the Positive Root.

Simplify each.

1. $\pm\sqrt{441} = \pm 21$

2. $\sqrt{\dfrac{4}{49}} = \dfrac{2}{7}$

3. $-\sqrt{225} = -15$

4. $\sqrt{-9}$ No Real Roots

Without using a calculator estimate each square root as being between what consecutive integers.

Perfect Squares:
4
9
16
25
36
49
64
81
100

1. $\sqrt{40}$ Between __6__ and __7__
Since 40 is between 36 & 49 sq rt of 40 is between $\sqrt{36}$ & $\sqrt{49}$

2. $\sqrt{79}$ Between __8__ and __9__
Since 79 is between 64 & 81 sq rt of 79 is between $\sqrt{64}$ & $\sqrt{81}$

3. $\sqrt{13}$ Between __3__ and __4__
Since 13 is between 9 & 16 sq rt of 13 is between $\sqrt{9}$ & $\sqrt{16}$

You can now finish Hwk #27   Sec 10-3

Pages 526-527   *Due Thursday*

Problems: 10-12, 21, 22, 26-28

Don't forget to do the following problems which are on the Hwk Sheet
 Also simplify each square root:

a. $\sqrt{80}$ b. $\sqrt{12}$ c. $\sqrt{54}$ d. $\sqrt{252}$ e. $\sqrt{294}$

If $x^2 = 49$ how would you solve for x?

 Undo squaring by taking the square root of both sides.

 Squaring and Square Roots are inverses of each other.

What are the solutions? $\sqrt{x^2} = \sqrt{49}$

       $x = \pm 7$

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if $x^3 = 8$ then the value of x is found by doing

the "cube root" of 8.

                In symbols: $\sqrt[3]{8}$

 Index:

Tells what root
is being found

                $\sqrt[3]{8}$

If there is no index   ——— Radical Symbol
it's assumed to mean
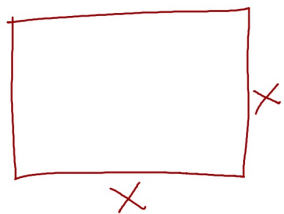square root.   The number under the radical
                is called the Radicand.

Solve. $\dfrac{5x^2}{5} = \dfrac{80}{5}$

$\sqrt{x^2} = \sqrt{16}$

$x = \pm 4$

A square has an area of 256 square inches. Find the length of each side of the square.

$$b \cdot h = Area$$
$$x \cdot x = 256$$

$$\sqrt{x^2} = \sqrt{256}$$
$$x = \pm 16$$

Since the side of a square can't be negative the answer is:

each side = +16 inches

Find the solutions to this equation.

$$11 - 4x^2 = 47$$
$$-11 \qquad -11$$

$$\frac{-4x^2}{-4} = \frac{36}{-4}$$

$$\sqrt{x^2} = \sqrt{-9}$$

NO Real Sol

When the book says to find solutions it means find all REAL solutions.

When they write no solution it means NO REAL solution.