Name:_____   Date:_____

Notes
Algebra Section 2.7
Pages 110-116

Goal: "Find the square root of real numbers"
        "Compare real numbers"

Vocabulary:

Square Roots: One of two equal <u>factors</u> of a <u>number</u>

Radicand: The <u>number</u> or <u>expression</u> inside a <u>radical</u> symbol.

Perfect Square: The <u>square</u> of an <u>integer</u> (will not have a decimal).

Irrational Number: A <u>number</u> that cannot be written as a <u>fraction.</u> It doesn't <u>end</u> or <u>repeat.</u>

Real Numbers: The set of all <u>rational</u> and <u>irrational</u> numbers.

radical symbol $\longrightarrow$ $\sqrt{a}$ $\longleftarrow$ radicand

Evaluate: List all of the perfect squares: Evaluate:

$1^2 =$ 1 $\sqrt{1} = 1$
$2^2 =$ 4 $\sqrt{4} = 2$
$3^2 =$ 9 $\sqrt{9} = 3$
$4^2 =$ 16 $\sqrt{16} = 4$
$5^2 =$ 25 $\sqrt{25} = 5$
$6^2 =$ 36 $\sqrt{36} = 6$
$7^2 =$ 49 $\sqrt{49} = 7$
$8^2 =$ 64 $\sqrt{64} = 8$
$9^2 =$ 81 $\sqrt{81} = 9$
$10^2 =$ 100 $\sqrt{100} = 10$

Examples: $-\sqrt{81}$ "Take the opposite of $\sqrt{81}$.
           $\pm\sqrt{9}$ "The $\sqrt{9}$ can be either positive or negative"

Evaluate each expression:

Ex: $-\sqrt{9}$ **Ex:** $\sqrt{25}$ **Ex:** $\pm\sqrt{64}$ **Ex:** $-\sqrt{81}$
      -3   5   8 and -8   -9

Ex: $\pm\sqrt{100}$ **Ex:** $\sqrt{121}$ **Ex:** $-\sqrt{400}$ **Ex:** $\sqrt{16}$

10 and -10   11   -20   4

Exponents with a negative base:

Examples:

$(-3)^2$ $(-2)^3$ $(-5)^2$ $(-3)^4$

9   -8   25   81

Ex: $x^2 = 144$ **Ex:** $x^2 = 64$ **Ex:** $x^2 = 1$

12 and -12   8 and -8   1 and -1

Approximate Square Roots:

$\sqrt{40}$ 40 is not a perfect square. The greatest perfect square less than 40 is 36. The least perfect square greater than 40 is 49.

$\sqrt{36}$ $\sqrt{40}$ $\sqrt{49}$

6   7

The $\sqrt{40}$ is between 6 and 7.

Ex: $\sqrt{32}$ **Ex:** $\sqrt{103}$

5 and 6   10 and 11

Ex: $\sqrt{48}$ **Ex:** $\sqrt{5}$

6 and 7   2 and 3

Irrational Number:

Classify the following numbers using all names that apply:

Number	Rational?	Irrational?	Integer?	Whole?
$\sqrt{24}$		Y		
$\sqrt{100}$	Y		Y	Y
$-\sqrt{81}$	Y		Y	
$-\sqrt{25}$	Y		Y	
$\sqrt{361}$	Y		Y	Y
$\sqrt{30}$		Y		