BE-1A | TUESDAY 10-16-07

① $-4-12=?$

② $-4+(-12)=?$

③ $-4-(-12)=?$

④ $-4+12=?$

⑤ NAME THE SET: $\{0,1,2,3,\ldots\}$

⑥ NAME THE SET:

{terminating and repeating decimals}

⑧ $-4(-12)=?$

$\sqrt{}$ Radical sign (or symbol)

MEANS: take the square root of a number

Ex) $\sqrt{1} = 1$ since $1 \cdot 1 = 1$

$\sqrt{4} = 2$ since $2 \cdot 2 = 4$

$\sqrt{9} = 3$ since $3 \cdot 3 = 9$

$\sqrt{16} = 4$ since $4 \cdot 4 = 16$

The square root "undoes" squaring a number

$\sqrt{16} = \sqrt{4^2} = 4$

$\sqrt{20^2} = ? = \sqrt{400} = 20$

WHAT is $-4 \cdot -4$?

$-4 \cdot -4 = 16$

Technically, the $\sqrt{16} = 4$ AND -4 but if you just WRITE $\sqrt{16}$ it is understood you only want the $+4$

The positive square root is also called the principal square root.

BY CONVENTION:

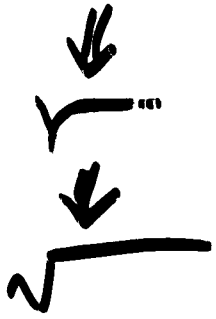
$\sqrt{16} = 4$

$-\sqrt{16} = -4$

$\pm\sqrt{16} = \pm 4$ READ "plus or minus 4" which means $4, -4$

Where did the RADICAL sign come from?

radix = LATIN for root



A number like 4 or 9 or 16 is called a "Perfect Square" because their square roots ARE integers which means they are also RATIONAL numbers.

(fraction)

$$\sqrt{4} = 2 = \frac{2}{1}$$

$$\sqrt{9} = 3 = \frac{3}{1}$$

$$\sqrt{16} = 4 = \frac{4}{1}$$

RATIONAL SQUARE ROOTS ARE NOT THAT COMMON, YOU CAN LIST ALL OF THE RATIONAL SQUARE ROOTS (OR PERFECT SQUARES) FROM 1 TO 100 QUITE EASILY — DO SO NOW:

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

Lets look at the first 3 perfect squares:

$\sqrt{1} = 1$

$\sqrt{2} = 1.414\ldots$??? no pattern, ∞

Not a fraction number

not rational

irrational number (like π)

$\sqrt{3} = 1.732\ldots$???

$\sqrt{4} = 2$

$\sqrt{5} =$

$\sqrt{6} =$

$\sqrt{7} =$

$\sqrt{8} =$

$\sqrt{9} = 3$

{non-terminating, non-repeating decimals}

irrational numbers

{rational and irrational numbers} = REAL NUMBERS

NATURAL
WHOLE
INTEGERS → RATIONAL
irrational → REAL

Ch. 2-7 Square Roots and Real Numbers

ESTIMATE $\sqrt{15}$

$\sqrt{70}$

HW: • Read Ch 2-6