2 - 7
Square Roots and Real Numbers

square root: one of two equal factors of a number

perfect square: number whose square root is rational

Can be asked three different ways...

$$\sqrt{64} = 8$$

$$-\sqrt{64} = -8$$

$$\pm\sqrt{64} = \pm 8$$

8 or -8
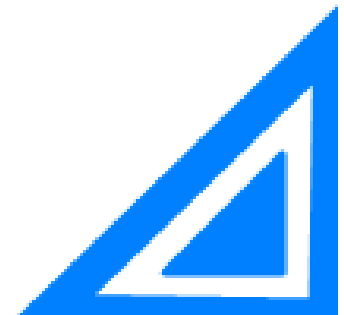
$-\sqrt{64}$ and $\sqrt{-64}$ are **NOT** the same thing!

$-$ 2nd x^2 64 $= -8$

2nd x^2 $-64 = $ error

Ex: $-\sqrt{\dfrac{\sqrt{49}}{\sqrt{256}}} = \boxed{-\dfrac{7}{16}}$

Ex: $\pm\sqrt{0.81} = \boxed{\pm\,0.9}$

irrational: cannot be expressed as fractions

* decimals that never stop or repeat

.010010001....   3.675123....

π $\sqrt{11}$ ~~$\sqrt{16}$~~

Ex: Classify each number as natural (N), whole (W), integer (Z), rational (Q), or irrational (I).

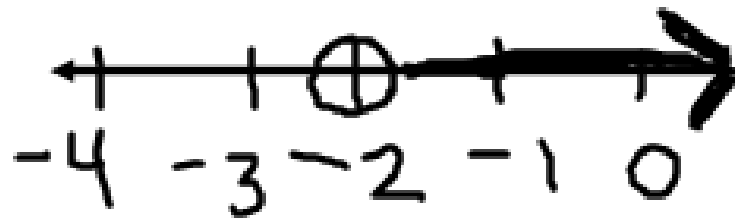a.) $\dfrac{5}{22}$ Q

b.) $\sqrt{121}$ N, W, Z, Q
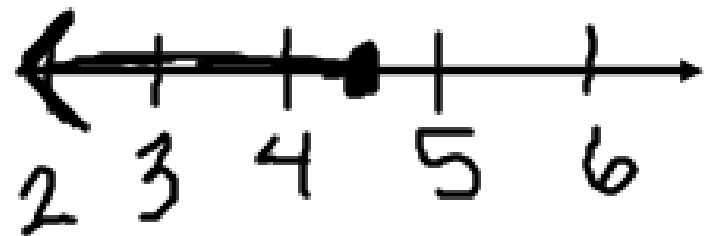
c.) $\sqrt{56}$ I

d.) $\dfrac{-36}{4} = -9$ Z, Q

Graph each solution set.

Ex: x > - 2   Ex: a ≤ 4.5

-4 -3 -2 -1 0

2 3 4 5 6

< >   ○

≤ ≥   ●

Fill in each □ with < , > , or = .

Ex: $\sqrt{19}$ □ $3.\overline{8}$

$4.4 \quad >$

Ex: $7.\overline{2}$ □ $\sqrt{52}$

$7.2222\ldots \quad 7.211\ldots$

$>$

Ex: Write the following in order from least to greatest.

$$2.\overline{63} \qquad -\sqrt{7} \qquad \frac{8}{3} \qquad \frac{53}{-20}$$

2.636363... ⊖ 2.6457... 2.666... ⊖ 2.65

$$\frac{53}{-20}, -\sqrt{7}, 2.\overline{63}, \frac{8}{3}$$

Homework:

2 - 7 WS