

Rational NumbersReview: $W = \text{Whole Numbers}$  $\{0, 1, 2, 3, \dots\}$  $N = \text{Natural Numbers}$  $\{1, 2, 3, 4, 5, \dots\}$  $Z = \text{Integers}$  $\{\dots, -2, -1, 0, 1, 2, \dots\}$  $R = \text{Real Numbers}$  $\{\dots, -1, \dots, 0, \dots, 1, \dots\}$ 

\*

 $Q = \text{Rational Numbers}$  $\frac{\text{Integer}}{\text{Integer}} = \frac{Z}{Z} = \frac{\{\dots, -2, -1, 0, 1, 2, \dots\}}{\{\dots, -2, -1, 0, 1, 2, \dots\}}$

exs) Yes or No to  $\mathbb{Q}$

$$1.2 \rightarrow \frac{1.2}{1} \stackrel{\cdot 10}{=} \frac{12}{10} \quad \text{Yes!}$$

$$\frac{3}{4} \rightarrow \text{Yes!}$$

$$-1 \rightarrow \text{Yes!} \quad \frac{-1}{1}$$

$$\mathbb{W} \rightarrow \text{Yes!}$$

$$\mathbb{N} \rightarrow \text{Yes!}$$

$$\mathbb{Z} \rightarrow \text{Yes!}$$

$$\mathbb{R} \rightarrow \text{Not Always}$$

$$\pi \rightarrow (\text{pi}) \approx 3.14 \quad \text{No!}$$

$$\sqrt{2} = \text{No!}$$



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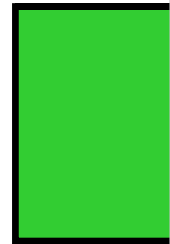
# Commutative Property for Addition & Multiplication.

→ Does Not Matter the order

For any  $\mathbb{Q}$   $a$  &  $b$ ,  
 $a + b = b + a$  and  $ab = ba$

$$3 + 5 = 5 + 3$$

$$2 \cdot 3 = 3 \cdot 2$$



# Associative Property for Addition & Multiplication

For any  $\mathbb{Q}$   $a + b + c$   
 $a + (b + c) = (a + b) + c$  and

$$a(bc) = (ab)c$$

ex)  $(3+2)+5 = 5+5 = \underline{\underline{10}}$

$$3+(2+5) = 3+7 = \underline{\underline{10}}$$

$$\begin{array}{r} 14 \\ 7 \\ 6 \\ 3 \\ +10 \\ \hline 40 \end{array}$$
$$\begin{array}{r} 6 \\ 3 \\ -10 \\ \hline 40 \end{array}$$

O.T.L.

① Pg 63: Exp.

11-15(a); 16, 17, 19, 21  
22, 24,