

**Wednesday
August 20th**

- Warm up
- Properties of Real Numbers - Graphic organizers
- Practice devices/paper

HW: Fill in organizer

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KeyConcept Real Numbers (R)

Letter	Set	Examples
Q	rational	0.125, $-\frac{7}{8}$, $\frac{2}{3} = 0.66...$
I	irrational	$\pi = 3.14159...$ $\sqrt{3} = 1.73205...$
Z	integer	-5, 17, -23, 8
W	whole	2, 96, 0, $\sqrt{36}$
N	natural	3, 17, 6, 86

Based on the examples given, can you determine the defining characteristics of each set?

- **Rational numbers** can be expressed as a ratio $\frac{a}{b}$, where a and b are integers and b is not zero. The decimal form of a rational number is either a terminating or repeating decimal.
- The decimal form of an **irrational number** neither terminates nor repeats. Square roots of numbers that are not perfect squares are irrational numbers.
- The sets of **integers**, $\{..., -3, -2, -1, 0, 1, 2, 3, \dots\}$, **whole numbers**, $\{0, 1, 2, 3, 4, \dots\}$, and **natural numbers**, $\{1, 2, 3, 4, 5, \dots\}$, are subsets of the rational numbers. These numbers are subsets of the rational numbers because every integer n is equal to $\frac{n}{1}$.

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ConceptSummary Real Number Properties

For any real numbers a , b , and c :

Property	Addition	Multiplication
Commutative		
Associative		
Identity		
Inverse		
Closure		
Distributive	$a(b + c) = ab + ac$ and $(b + c)a = ba + ca$	

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1.2 -- Properties of Real Numbers

Ex. 1: Name the sets of numbers to which each number belongs.

a) $\sqrt{6}$ **I** b) 2.52525252..... **Q**

c) 5 **N, W, Z, Q** d) -11 **Z, Q**

e) $-\frac{2}{3}$ f) $-\sqrt{36}$ **Z, Q**
~~**I, W, N**~~

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Ex.2: Name the property illustrated by $(-8 + 8) + 15 = 0 + 15$.
additive inverse

Ex. 3: What is the property illustrated by $3 + 0 = 3$?
additive identity

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Ex. 4: Find the additive inverse and multiplicative inverse for -7.

AI: $-7 + 7 = 0$
MI: $-7 \cdot \frac{1}{7} = 1$

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Ex. 6: Simplify $4(3a - b) + 2(b + 3a)$.

$$12a - 4b + 2b + 6a$$
$$\boxed{18a - 2b}$$

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