THE NUMBER SYSTEM

π

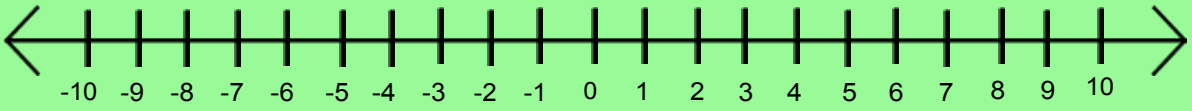
$\frac{1}{8}$

$\sqrt{7}$

0

$0.3333333\ldots$

1, 2, 3, 4, 5, 6...



THE NUMBER SYSTEM

W =	Whole Numbers	I =	Integers
$\overline{Q}$ =	Irrational Numbers	R =	Real Numbers
N =	Natural Numbers	Q =	Rational Numbers

EXAMPLES:

W: 0, 1, 2, 3, ...

$\overline{Q}$: π (3.141592...), $\sqrt{3}$, 1.23456738... , $\sqrt{15}$, ...

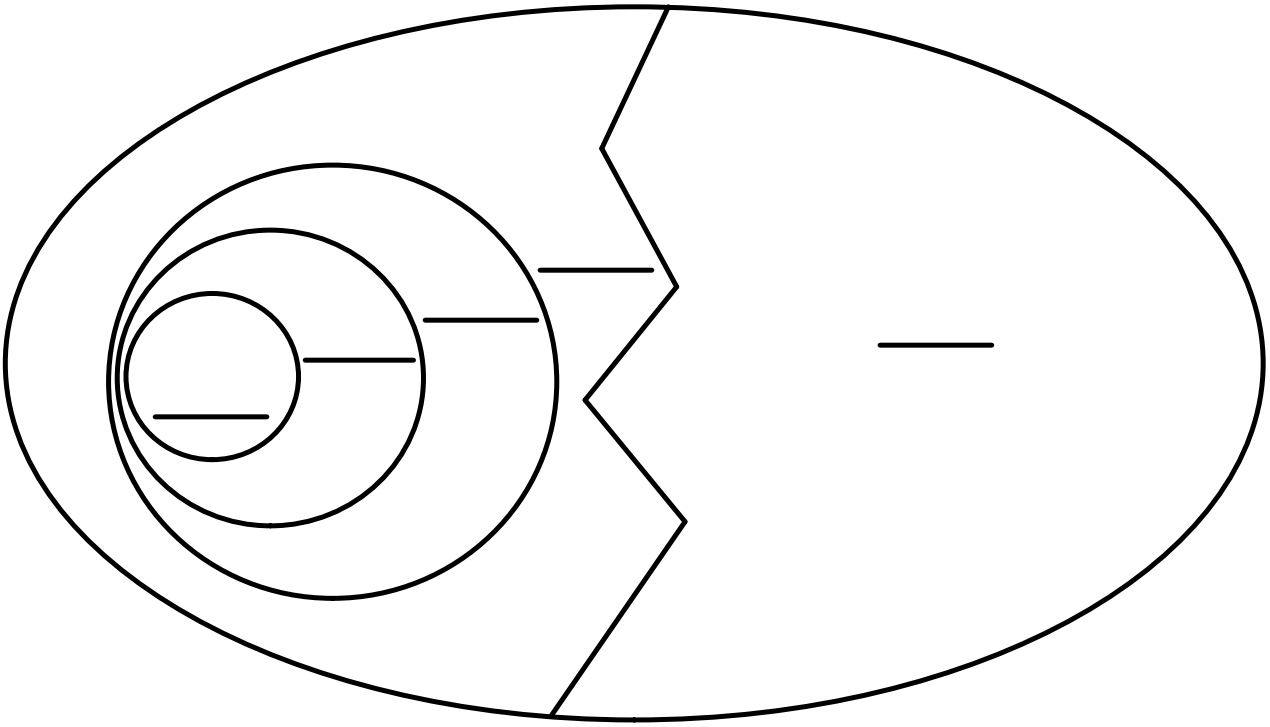
N: 1, 2, 3, ...

I: .....-3, -2, -1, 0, 1, 2, 3, ...

R: $-\frac{1}{2}$, $\sqrt{15}$, 0 , -3 , 3 , π (3.141592) , ...

Q: $\frac{1}{2}$, $-\frac{1}{2}$, $\frac{11}{3}$, 0.2 , -0.2 , 3 , -3 , 0 , ...

TITLE: _____



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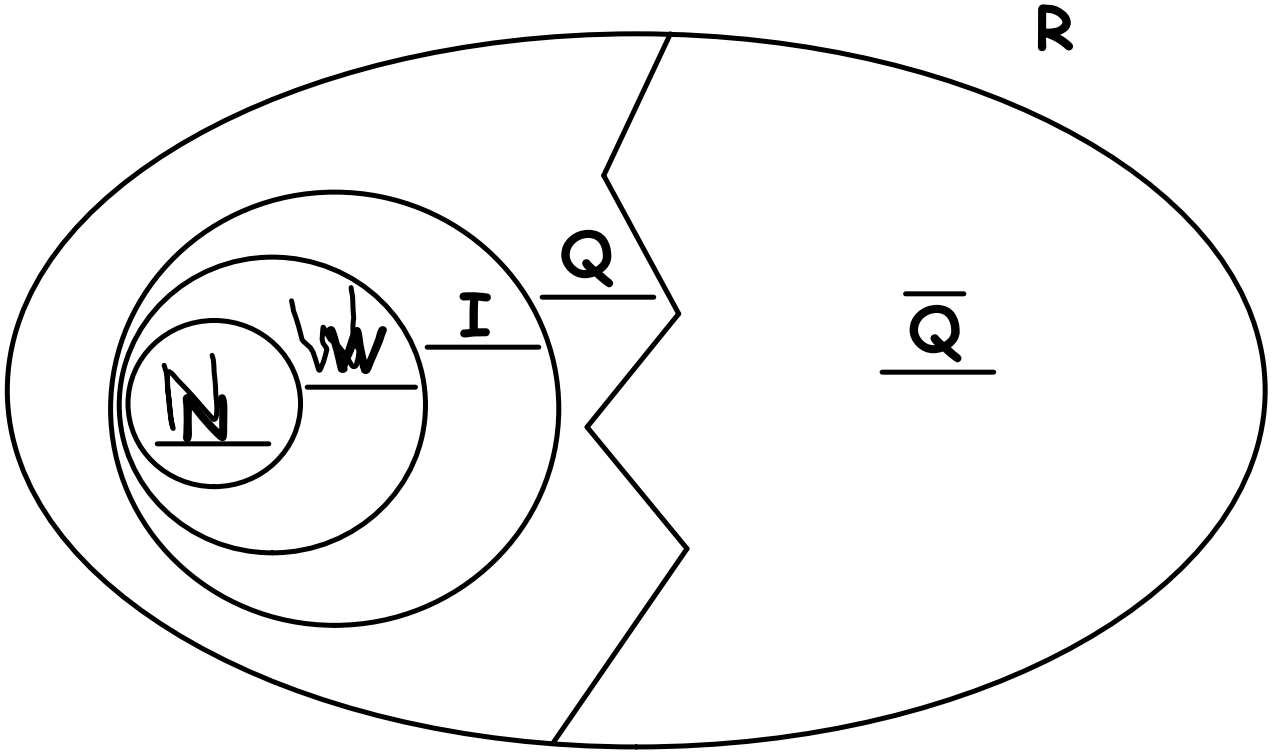

THE NUMBER SYSTEM

N - NATURAL NUMBERS
All positive non-zero numbers; in other words, all positive numbers. This does not include zero. These are the numbers we use to count.
Ex: 1, 2, 3, 4, 5, …

W - WHOLE NUMBERS
All positive numbers as well as zero. The whole number set expands upon the natural number set to include zero.
Ex: 0, 1, 2, 3, 4, 5, …

I - INTEGERS
All positive and negative numbers as well as zero. Integers expand upon the whole number set to include negative numbers.
Ex: … , -3, -2, -1, 0, 1, 2, 3, …

Q - RATIONAL NUMBERS
A number that can be expressed as the quotient of two integers; in other words, a rational number is any number that can be expressed as a fraction. (The denominator cannot be 0.)

Ex: 0.2 , -0.2 , $0.\overline{3}$, 4 , -4 , 0 , ½ , -½ ,$\sqrt{4}$,$\sqrt{9}$ …

$\overline{Q}$ - IRRATIONAL NUMBERS
A number that <u>cannot</u> be expressed as a quotient of integers; in other words, an irrational number is any number that <u>cannot</u> be expressed as a fraction. This includes all non-terminating and non-repeating decimals.

Ex: π (3.141592…) , 1.23456738… , $\sqrt{15}$, - π , …

R - REAL NUMBERS
All rational and irrational numbers.

"The quotient of two integers":

$$\frac{a}{b}, b \neq 0$$

Which number groups do the following numbers belong to? (NOTE: Every number belongs to AT LEAST 2 number groups.)

1. 2 N, W, I, Q, R
2. -3 R, I, Q
3. $\frac{1}{4}$ R, Q
4. π R, I
5. $\sqrt{15}$ R, I
6. -0.9 R, Q
7. $\sqrt{25}$ R, Q
8. 0 R, Q, W, N, I
   R, I, W, Q

TRUE or FALSE:

1. ALL integers are rational numbers. T

2. ALL natural numbers are whole numbers. T

3. ALL rational numbers are natural numbers. F

4. ALL integers are irrational numbers. F