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The Number Systems

Natural, Whole, Integers, Rational, Real, Imaginary,
Complex

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MATH IS AS SIMPLE AS 1, 2, 3

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Natural Numbers

DEFINITION:

All counting numbers starting with one.

IMPORTANT:

Zero and negative numbers are not Natural Numbers.

EXAMPLE:

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11...

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Whole Numbers

DEFINITION:

All counting numbers
starting with zero.

IMPORTANT:

Fractions and decimals
are not Whole Numbers

EXAMPLE:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ...

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Integers

DEFINITION:

Positive or negative whole numbers including zero.

EXAMPLE # 1:

$-8, -7, -6, -5, -4, -3, -2, -1, 0$

EXAMPLE # 2:

$0, +1, +2, +3, +4, +5, +6, +7, +8,$

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Rational Numbers

DEFINITION:

A number that can be written as a fraction.

Ending(terminating)decimal numbers and numbers that repeat are also rational.

EXAMPLE:

$$0.5 = \frac{1}{2}, \quad 0.75 = \frac{3}{4},$$

$$0.6666\dots = \frac{2}{3}$$

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Real Numbers

DEFINITION:

All rational and irrational numbers.

IMPORTANT:

All real numbers are found on the number line.

EXAMPLE:

$0, +1, +2, -2, -1, 0, 0.5 = \frac{1}{2}$

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Imaginary Numbers

DEFINITION:

Imaginary numbers are square roots of negative numbers.

IMPORTANT:

They are all real numbers multiplied by i = (the square root of -1)

EXAMPLE:

$4i$ is an imaginary number and its square is -16 .

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Complex Numbers

DEFINITION:

A complex number is a number that can be written in the the form $a+bi$, a and b are real numbers and i is the imaginary unit. A complex number is a combination of a real number and an imaginary number.

EXAMPLE:

$$(a+bi) + (c+di) = (a+c) + (b+d)i$$
$$(3+2i)+(1+7i)=(4+9i)$$

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