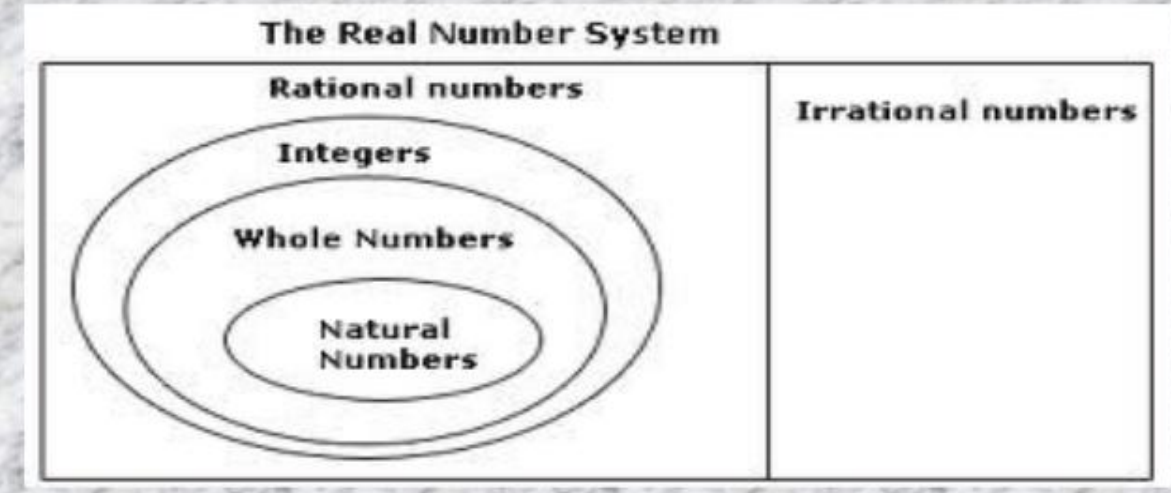
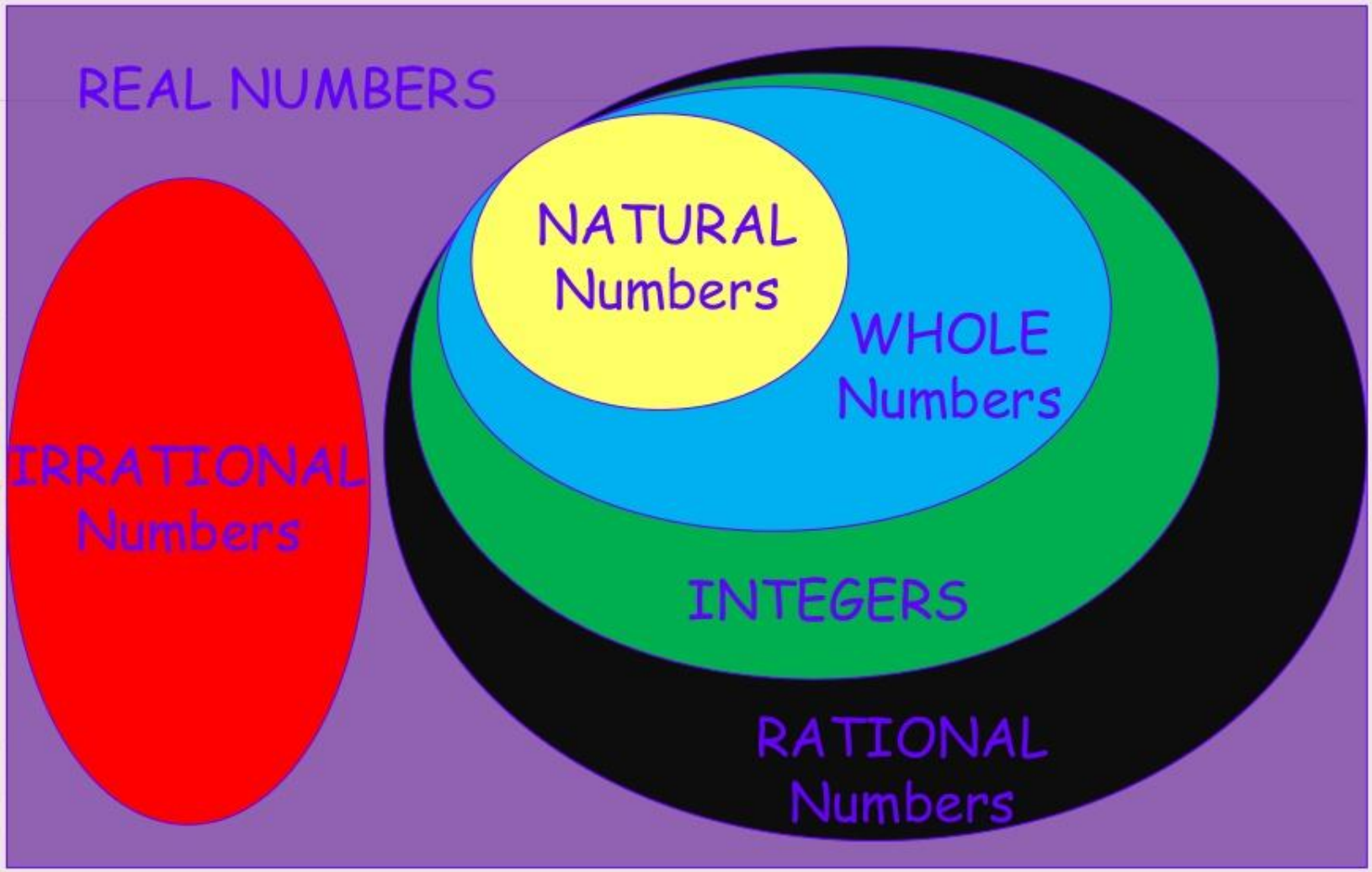
REAL NUMBERS

Real Numbers

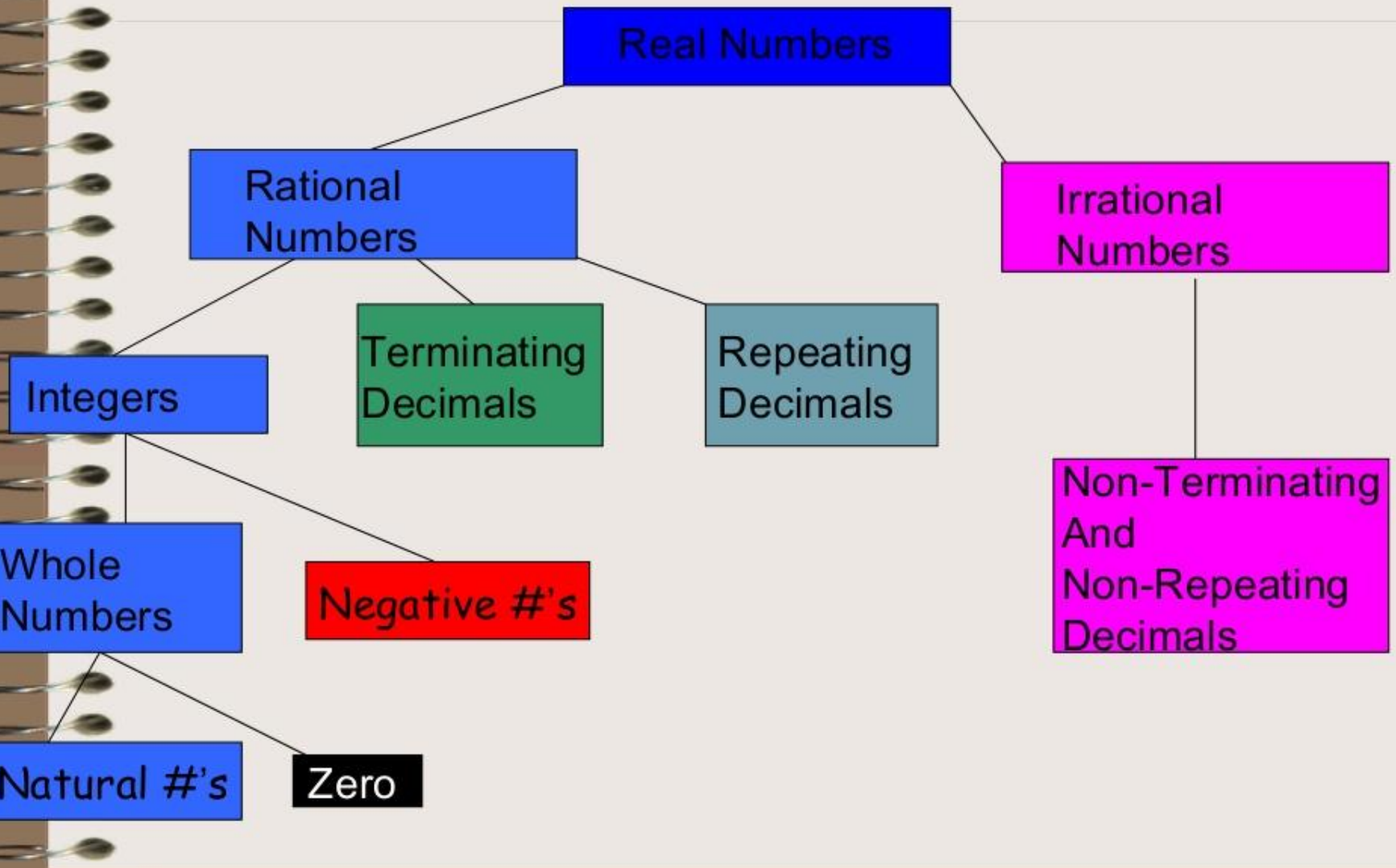
The real numbers include all of the measuring numbers . Real numbers are usually written using decimal numerals , in which a decimal point is placed to the right of the digit with place value one.

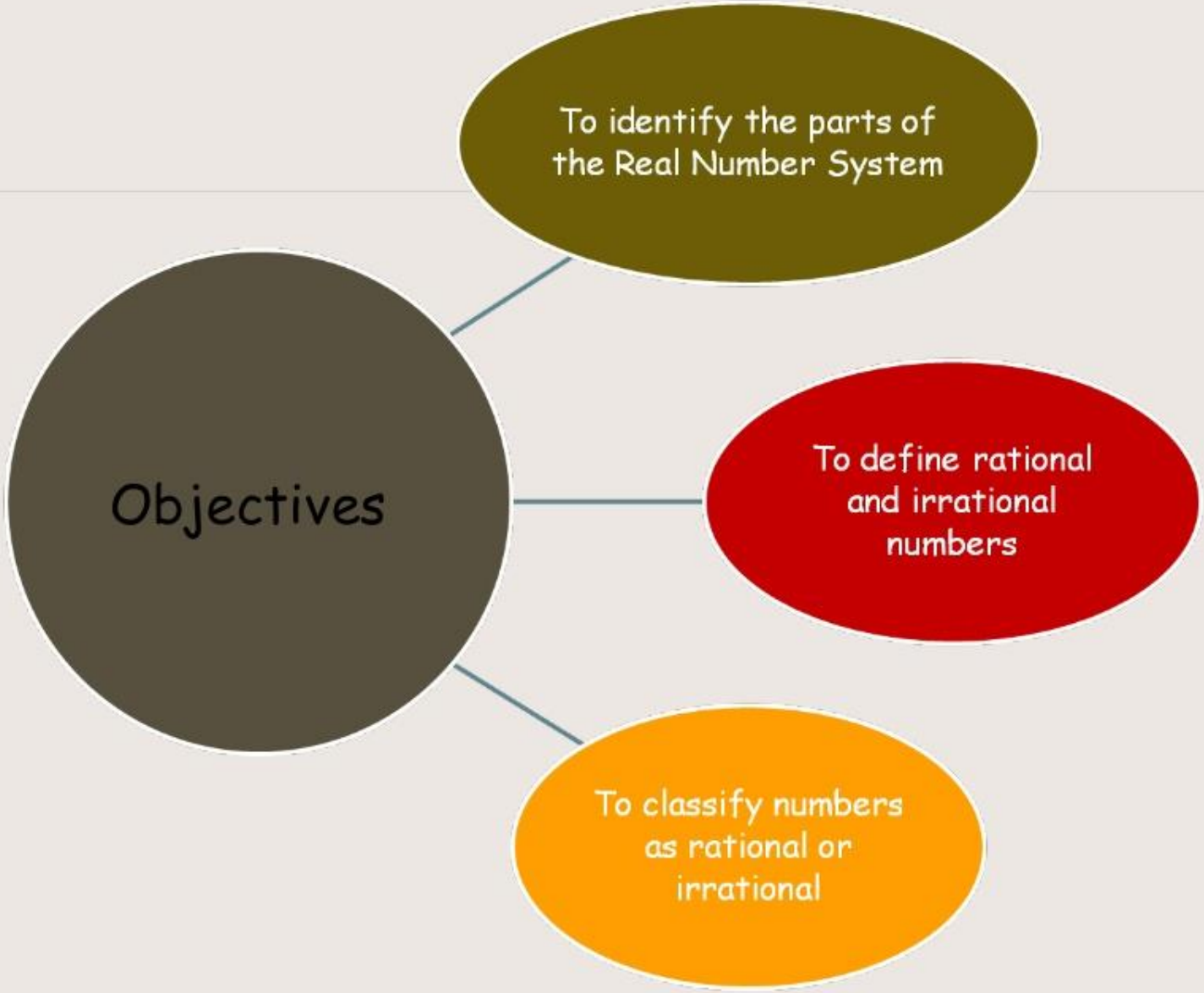
- It includes all types of numbers such as Integers, Whole numbers, Natural numbers, Rational number, Irrational numbers and etc… Let us see them in detail…

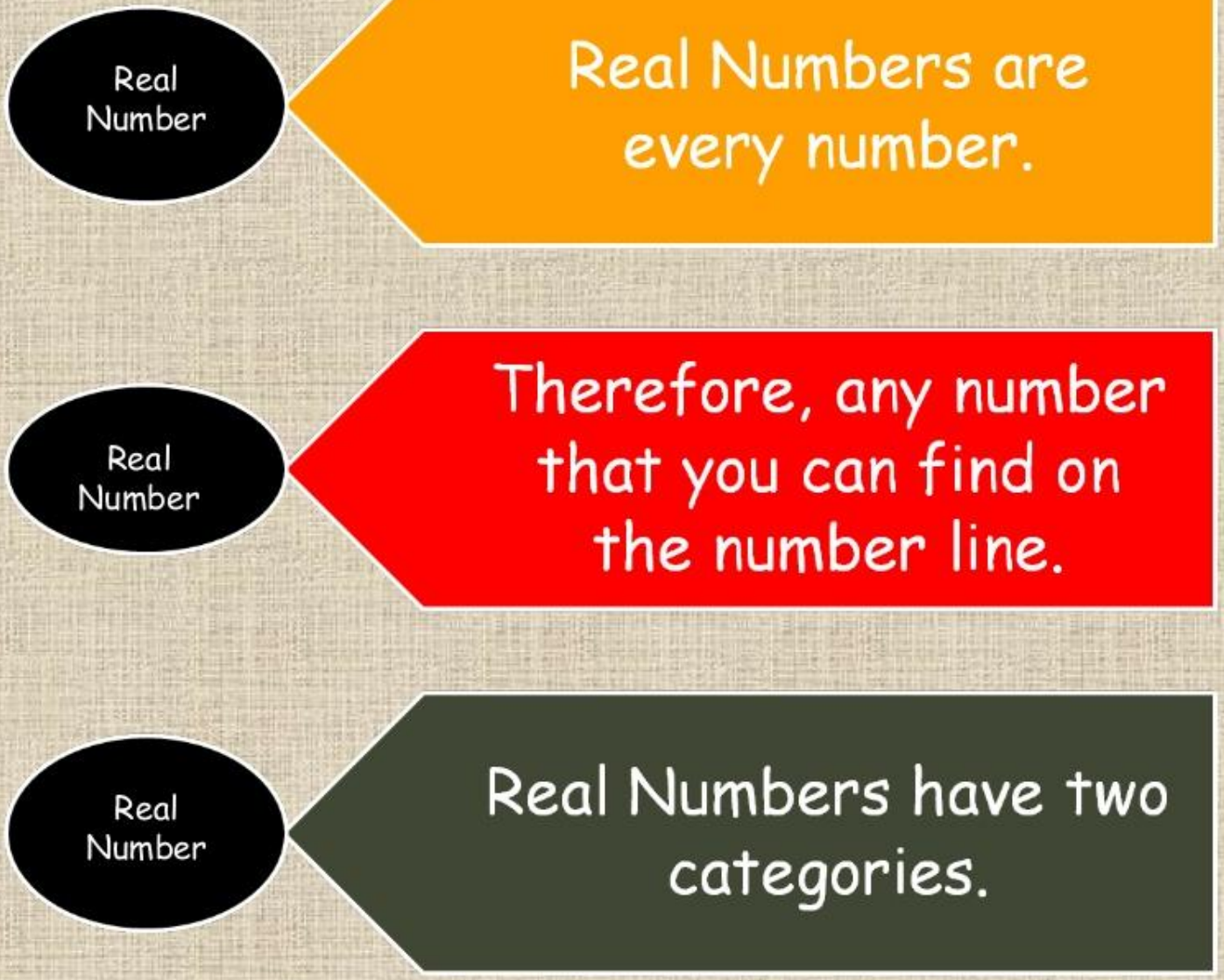



REAL NUMBERS
IRRATIONAL Numbers
NATURAL Numbers
WHOLE Numbers
INTEGERS
RATIONAL Numbers

Real Number System Tree Diagram




Objectives
To identify the parts of the Real Number System
To define rational and irrational numbers
To classify numbers as rational or irrational


Real Number
Real Numbers are every number.
Real Number
Therefore, any number that you can find on the number line.
Real Number
Real Numbers have two categories.

What does it Mean?

The number line goes on forever.

Every point on the line is a real number.

There are no gaps on the number line.

Between the whole numbers and the fractions there are numbers that are decimals but they don't terminate and are not recurring decimals. They go on forever.

Real Numbers

REAL NUMBERS

154,769,852,354

$1.\overline{333}$

-5,632.10101012568497 65...

-8

$\sqrt[5]{225}$

$\sqrt{101}$

$\frac{11}{10}$

61

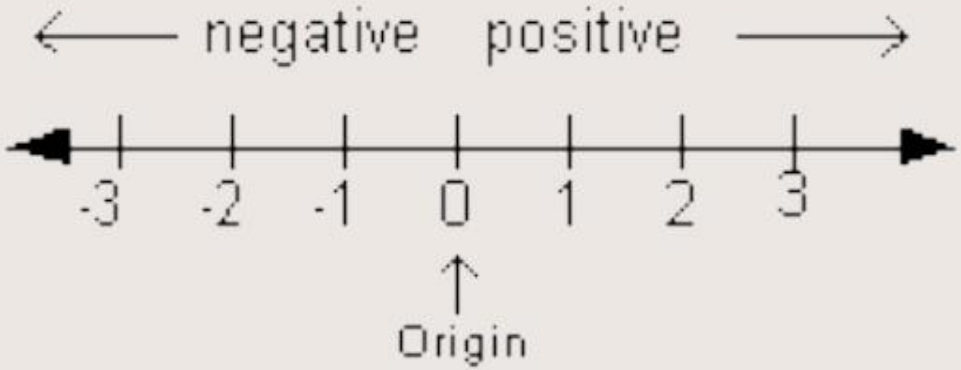
π

49%

549.23789

The Real Number Line

Any real number corresponds to a point on the **real number line.**



Order Property for Real Numbers

Given any two real numbers *a* and *b*,

- if **a is to the left of b** on the number line, **then a < b.**
- if **a is to the right of b** on the number line, **then a > b.**

Two Kinds of Real Numbers

Rational Numbers

Irrational Numbers

Rational Numbers

A rational number is a real number that can be written as a fraction.

A rational number written in decimal form is terminating or repeating.

Examples of Rational Numbers

- 16
- 1/2
- 3.56
- -8
- 1.3333…
- - 3/4

Integers

One of the subsets of rational numbers

What are integers?

- Integers are the whole numbers and their opposites.
- Examples of integers are

6

-12

0

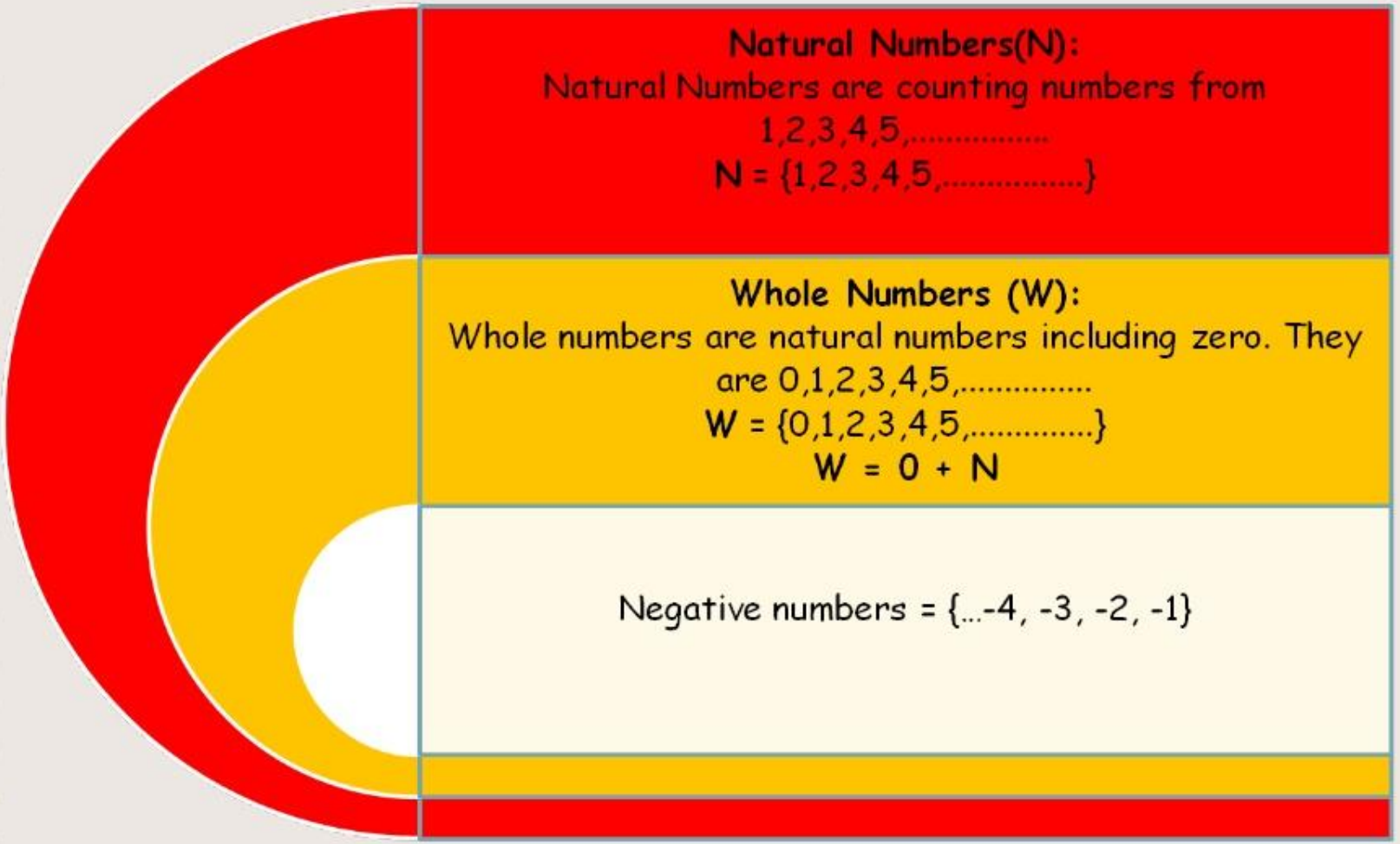
186

-934

What are integers?.....

- Integers are rational numbers because they can be written as fraction with 1 as the denominator.

Types of Integers



Irrational Numbers

An irrational number is a number that cannot be written as a fraction of two integers.

Irrational numbers written as decimals are non-terminating and non-repeating.

Irrational numbers can be written only as decimals that do *not* terminate or repeat. They cannot be written as the quotient of two integers. If a whole number is not a perfect square, then its square root is an irrational number.

Caution!

A repeating decimal may not appear to repeat on a calculator, because calculators show a finite number of digits.

Examples of Irrational Numbers

- Square roots of non-perfect "squares"

$$\sqrt{17}$$

- Pi

- $\sqrt{4}$ is not irrational because it equals 2 which is rational

Try this!

a) $\sqrt{2}$

b) $\sqrt{12}$

c) $\sqrt{25}$

d) $\frac{5}{11}$

e) $\sqrt{66}$

- a) Irrational
- b) Irrational
- c) Rational
- d) Rational
- e) Irrational

Additional Example 1: Classifying Real Numbers

Write all classifications that apply to each number.

A. $\sqrt{5}$

5 is a whole number that is not a perfect square.

irrational, real

B. −12.75

−12.75 is a terminating decimal.

rational, real

C. $\frac{\sqrt{16}}{2}$

$\frac{\sqrt{16}}{2} = \frac{4}{2} = 2$

whole, integer, rational, real

7. At midnight the temperature is 8°C. If the temperature rises 4°C per hour, what is the temperature at 6 am?

How long Is it from Midnight to 6 am?

6 hours

+4 degrees

How much does the temperature rise each hour?

(6 hours)(4 degrees per hour)

= 24 degrees

Add this to the original temp.

8° + 24° = 32°C

8. A deep-sea diver must move up or down in the water in short steps in order to avoid getting a physical condition called the bends. Suppose a diver moves up to the surface in five steps of 11 feet. Represent her total movements as a product of integers, and find the product.

Multiply

(5 steps) (11 feet)

(55 feet)

5 * 11 = 55

Summary

- What did you learn in this lesson?
- What are some important facts to remember about the real number system?
- Is there something within the lesson that you need help on?

Thank you !!!