**REAL NUMBERS** are the set of numbers that is formed by combining the rational numbers and the irrational numbers.

**Irrational Numbers**

**Real Numbers**

**Rational Numbers**

**Non-Integers**

**Integers**

**Negative Numbers**

**Whole Numbers**

**Zero**

**Natural Numbers**

**IRRATIONAL NUMBERS** are the set of all numbers whose decimal representation are neither terminating nor repeating. It cannot be expressed as a quotient of integers.

**RATIONAL NUMBERS** are the set of all numbers which can be expressed in the form: , where and are integers and is not equal to , written . It can be expressed as terminating or repeating decimals.

**NON-INTEGERS** are the set of all numbers that is neither a positive whole number, nor a negative whole number, nor zero. These include decimals, fractions, and imaginary numbers.

**INTEGERS** are the set of numbers formed by positive whole numbers, negative whole numbers, and zero.

**NEGATIVE NUMBERS** are numbers less than zero and usually mean a value that is a deficit or shortage.

**WHOLE NUMBERS** are the set of numbers formed by adding 0 to the set of natural numbers.

**ZERO** denotes the absence of all magnitude or quantity.

**NATURAL NUMBERS** are used for counting.

**Sample Problem 1**: Determine which of the numbers given below are:

1. **Integers**
2. **Rational Numbers**
3. **Irrational Numbers**
4. **Real Numbers**
5. **Natural Numbers**
6. **Non-integers**

**NUMBER LINE** is used to show the sets of natural numbers, whole numbers, and integers. Also, it can be used to show the set of rational numbers. The point that corresponds to a number is the **graph** of the number, and drawing the point is called **graphing** the number or **plotting** the point.

**0**

**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**Negative Numbers**

**Positive Numbers**

**Natural Numbers**

**Whole Numbers**

**Integers**

**Sample Problem 2**: Graph the numbers and on the number line

**0**

**1**

**2**

**3**

**4**

**-1**

**-2**

**-3**

**-4**

**Sample Problem 3**: Graph the numbers and on the number line and write two inequalities that compare the two numbers.

**-4**

**-3**

**-2**

**-1**

**0**

**-5**

**-6**

**-7**

**-8**

**Sample Problem 4**: Graph the numbers and on the number line and write the numbers in increasing order.

**0**

**1**

**2**

**3**

**4**

**-1**

**-2**

**-3**

**-4**

**ABSOLUTE VALUE** of a real number is the distance between the origin and the point representing the real number. The symbolrepresents the absolute value of a number.

**0**

**1**

**2**

**3**

**4**

**5**

**6**

**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**5 units**

**5 units**

|  |  |
| --- | --- |
| The distance of -5 to the origin is 5 units. | The distance of 5 to the origin is 5 units. |

**Sample Problem 5**: Evaluate and graph the numbers and on the number line.

**0**

**1**

**2**

**3**

**4**

**-1**

**-2**

**-3**

**-4**