Number Representation: Since numbers can either be fixed point or floating point, at the same time positive and negative; the entire classification of number representation methods is as under:

1. **Fixed Point Numbers**   **(Ex. 27, 163)**

    I. Positive Numbers   **(Ex. +27, +163)**

        a. Signed Magnitude Method

    II. Negative Numbers   **(Ex. -27, -163)**

        a. Signed Magnitude Method

        b. Signed 1's complement Method

        c. Signed 2's complement Method

2. **Floating Point Numbers**   **(Ex. 27.45, 163.027)**

    I. Positive Numbers   **(Ex. +27.45, +163.027)**

        a. IEEE 754 32-bit representation

    II. Negative Numbers   **(Ex. -27.45, -163.027)**

        a. IEEE 754 32-bit representation

Fixed Point Numbers: A Fixed point number is nothing but a REAL number with decimal point placed to extreme right of the number. One reason to use fixed point format (rather than floating point) is for cost savings in the DSP (Digital Signal Processing) chips designed for implementing a system.

We have the following hierarchy of representations for fixed point numbers:

1. Positive Numbers
    a. Signed Magnitude Method
2. Negative Numbers
    a. Signed Magnitude Method
    b. Signed 1's complement Method
    c. Signed 2's complement Method

<u>Assignments:</u>

1. What do you know about Number Representation? Why do we use it?
2. Differentiate between Fixed and Floating Point numbers.