

**Class : IX**

**Subject : Mathematics**

**Assignment 1: Number System**

- Explain each of the following in  $\frac{p}{q}$  form:
- (i) 0.675 (ii)  $0.3\bar{2}$  (iii)  $0.12\bar{3}$  (iv)  $0.003\bar{52}$  (v)  $4.\bar{32}$  (vi) 2.317317317.....
- Find two irrational numbers and two rational numbers between 0.5 and 0.55
- Simplify each of the following by rationalizing the denominator.

$$5. \quad (i) \frac{7 + 3\sqrt{5}}{7 - 3\sqrt{5}} \quad (ii) \frac{2\sqrt{3} - \sqrt{5}}{2\sqrt{2} + 3\sqrt{3}} \quad (iii) \frac{7\sqrt{3} - 5\sqrt{2}}{\sqrt{48} + \sqrt{18}}$$

$$6. \quad \text{Simplify:- a) } 3\sqrt{5} + -\sqrt{5} + \sqrt{180} \quad (b) \sqrt{54} + \sqrt{150}$$

- Give an example each of two irrational numbers, whose

- |   |   |
|---|---|
| (i) difference is a rational number     | (v) product is a rational number        |
| (ii) difference is an irrational number | (vi) product is an irrational number    |
| (iii) sum is a rational number          | (vii) quotient is a rational number     |
| (iv) sum is an irrational number        | (viii) quotient is an irrational number |

- Without actual division decide which of following rational numbers have terminating decimal representation:-

$$9. \quad (i) \frac{33}{375} \quad (ii) \frac{15}{28} \quad (iii) \frac{16}{45} \quad (iv) \frac{12}{35} \quad (v) \frac{80}{27} \quad (vi) \frac{123}{1250}$$

- Examine whether the following numbers are rational or irrational

$$10. \quad (i) \frac{3\sqrt{8}}{\sqrt{2}} \quad (ii) \left(\sqrt{2} + \frac{1}{2}\right)^2 \quad (iii) \frac{22\sqrt{7}}{5\pi} \quad (iv) (3 + \sqrt{2})(2 - \sqrt{3})(3 - \sqrt{2})(2 + \sqrt{3})$$

- Represent  $\frac{8}{5}$  and  $\sqrt{20}$  on a number line.

- (a) Represent  $\sqrt{5.2}$  on a number line. (b) Visualize 0.436 on the number line

- Insert 6 rational numbers between  $\frac{-2}{3}$  and  $\frac{3}{4}$

- Find two irrational numbers between  $\sqrt{3}$  and 2.

- Rationalise the denominator of  $\frac{1}{1 - \sqrt{7}}$

- Given  $\sqrt{3} = 1.732$  app., find to three places of decimal the value of  $\frac{1 + 2\sqrt{3}}{2 - \sqrt{3}}$

- Find the values of 'a' and 'b' if

$$18. \quad (a) \frac{5 + 2\sqrt{3}}{7 + 4\sqrt{3}} = a + b\sqrt{3}$$

$$(b) \frac{5 + \sqrt{3}}{\sqrt{5} - \sqrt{3}} = \frac{1}{2}a + 3b\sqrt{15}$$

$$19. \quad \text{Simplify:- (a) } \frac{3}{\sqrt{5} - \sqrt{3}}$$

$$(b) \frac{2\sqrt{7}}{\sqrt{5} + \sqrt{3}}$$

- Evaluate:- a)  $(390625|6561)^{1/2}$

$$(b) (1296)^{1/4} \times (1296)^{1/2}$$