Class : IX **Subject : Mathematics** **Assignment 1: Number System**

1. Explain each of the following in p/q form:

2. (i) 0.675 (ii) $0.3\overline{2}$ (iii) $0.12\overline{3}$ (iv) $0.003\overline{52}$ (v) $4.\overline{32}$ (vi) 2.317317317.....

3. Find two irrational numbers and two rational numbers between 0.5 and 0.55

4. Simplify each of the following by rationalizing the denominator.

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

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

7. Give an example each of two irrational numbers, whose

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

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

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

9. Examine whether the following numbers are rational or irrational

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

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

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

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

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

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

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

17. Find the values of 'a' and 'b' if

18. (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. Simplify:- (a) $\frac{3}{\sqrt{5}-\sqrt{3}}$ (b) $\frac{2\sqrt{7}}{\sqrt{5}+\sqrt{3}}$

21. Evaluate:- a) $(390625|6561)^{1/2}$ (b) $(1296)^{1/4} \times (1296)^{1/2}$