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

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   (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

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

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

9. Examine whether the following numbers are rational or irrational

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

    $\left(2 + \sqrt{3}\right)$

11. Represent $\dfrac{8}{5}$ 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 $\dfrac{-2}{3}$ and $\dfrac{3}{4}$

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

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

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

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

18. (a) $\dfrac{5 + 2\sqrt{3}}{7 + 4\sqrt{3}} = a + b\sqrt{3}$ (b) $\dfrac{5 + \sqrt{3}}{\sqrt{5} - \sqrt{3}} = \dfrac{1}{2}a + 3b\sqrt{15}$

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

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