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1. **Every rational number is also**

   (a) a natural number   (b) a whole number   (c) an irrational number   (d) a real number

2. **The decimal form of** $\dfrac{56}{1000}$

   (a) 0.56   (b) 560   (c) 0.056   (d) 5.6

3. **π is a**

   (a) whole number   (b) irrational number   (c) integer   (d) rational number

4. **The decimal form of** $\dfrac{3}{11}$ **is**

   (a) $0.\overline{27}$ (b) $0.2\overline{7}$ (c) 0.27 (d) $0.27\overline{2}$

5. **The product of two irrational numbers is**

   (a) always a rational number   (b) always an irrational number (c)   always an integer

   (d) sometimes rational & sometimes irrational

6. **Write 5 rational numbers between 5 & 6**

7. **Write 4 irrational numbers between $\sqrt{3}$ & $\sqrt{5}$**

8. **Show that $1.\overline{37}$ can be in the form $\dfrac{p}{q}$ (rational number)**

9. **Is $\sqrt{441}$ an irrational number. Give reason.**

10. **Represent on a number line**

    (a) $\sqrt{2}$ (b) $\sqrt{5}$ (c) $\sqrt{10}$

11. **Represent 4.735 using successive magnification.**

12. **Write 2 real numbers whose difference is an irrational number.**

13. **Find the decimal representation of $\dfrac{8}{3}$**

14. **Arrange in ascending order $\sqrt[3]{7}$, $\sqrt{10}$, $\sqrt[6]{3}$**

15. **Simplify :**   (i) $(3 + \sqrt{3})(2 + \sqrt{2})$ (ii) $(\sqrt{11} - \sqrt{7})(\sqrt{11} + \sqrt{7})$ (iii) $(\sqrt{5} + \sqrt{2})^2$

(iv) $(2\sqrt{2} - 3\sqrt{3} + \sqrt{11}) + (5\sqrt{3} - 2\sqrt{2} + 6\sqrt{11})$

(v) $16\sqrt{15} \div 4\sqrt{3}$ (vi) $2\sqrt{5} \times 6\sqrt{5}$

16. **Rationalise the denominator :**

(i) $\dfrac{5}{\sqrt{3} - \sqrt{5}}$ (ii) $\dfrac{7 - 3\sqrt{2}}{7 + 3\sqrt{2}}$ (iii) $\dfrac{5 + \sqrt{2}}{3\sqrt{2}}$ (iv) $\dfrac{1}{2 - \sqrt{3}}$ (v) $\dfrac{\sqrt{2}}{\sqrt{2} + \sqrt{3}}$

17. **Find a and b if** (i) $a - b\sqrt{3} = \dfrac{2 - \sqrt{3}}{2 + \sqrt{3}}$ (ii) $\dfrac{\sqrt{11} - \sqrt{7}}{\sqrt{11} + \sqrt{7}} = a - b\sqrt{77}$

(iii) $\dfrac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}} = a + b\sqrt{15}$ (iv) $\dfrac{\sqrt{2} + \sqrt{3}}{3\sqrt{2} - 2\sqrt{3}} = a - b\sqrt{6}$

18. **Find the value of** $x^2 + \dfrac{1}{x^2}$ **if :**   (i) $x = 2 + \sqrt{3}$ **(ii)** $x = 4 + \sqrt{15}$

19. **If** $x = \dfrac{\sqrt{7} - \sqrt{6}}{\sqrt{7} + \sqrt{6}}$ **and** $y = \dfrac{\sqrt{7} + \sqrt{6}}{\sqrt{7} - \sqrt{6}}$ **find the value of** $x^2 + y^2$

20. **If** $x = \dfrac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$, $y = \dfrac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ **find** $x + y + xy$

21. **Simplify :**   (i) $\dfrac{3}{5 - \sqrt{3}} + \dfrac{2}{5 + \sqrt{3}}$ (ii) $\dfrac{4 + \sqrt{5}}{4 - \sqrt{5}} + \dfrac{4 - \sqrt{5}}{4 + \sqrt{5}}$

(iii) $\dfrac{1}{2 + \sqrt{3}} + \dfrac{2}{\sqrt{5} - \sqrt{3}} + \dfrac{1}{2 - \sqrt{5}}$

22. **If** $x = \dfrac{\sqrt{3} + 1}{2}$ **find** $2x^2 - 8x + 7$

23. **Find the value to three places of decimals given**

$\sqrt{2}$ = 1.414 , $\sqrt{3}$ = 1.732, $\sqrt{5}$ = 2.236 and $\sqrt{10}$ = 3.162

(i) $\dfrac{3}{\sqrt{10}}$ (ii) $\dfrac{\sqrt{5} + 1}{\sqrt{2}}$ (iii) $\dfrac{2 + \sqrt{3}}{3}$

24. **Represent** $\sqrt{5.4}$ **on a number line geometrically.**

25. **Simplify :**   (i) $64^{1/3}$ (ii) $\left(\dfrac{64}{25}\right)^{-3/2}$ (iii) $\left(\dfrac{256}{81}\right)^{5/4}$ (iv) $\sqrt[5]{(32)^{-3}}$

(v) $\left[\dfrac{81}{16}\right]^{-3/4} \times \left[\left(\dfrac{25}{9}\right)^{-3/2} \div \left(\dfrac{5}{2}\right)^{-3}\right]$