

CLASS-IX MATHEMATICS ASSIGNMENT CHAPTER – 1
REAL NUMBERS

SECTION-A

1. Find an irrational number between $\frac{1}{7}$ and $\frac{2}{7}$. Given that $\frac{1}{7} = 0.\overline{0.142857}$.
2. Simplify $\sqrt{72} + \sqrt{800} - \sqrt{18}$.
3. Simplify $64^{\frac{-1}{3}} [64^{\frac{1}{3}} - 64^{\frac{2}{3}}]$
4. In the following equations, examine whether x, y and z represents rational or irrational number i) $x^3 = 27$ ii) $y^2 = 7$ iii) $z^2 = 0.16$
5. If $2^x \times 4^x = 8^{\frac{1}{3}} \times 32^{\frac{1}{5}}$, then find the value of x.

SECTION-B

6. Find the value of $\sqrt{\frac{2+\sqrt{3}}{2-\sqrt{3}}}$, if $\sqrt{3} = 1.73$.
7. Represent on number line: i) $\sqrt{2}$ ii) $\sqrt{7}$
8. If $x = 3+2\sqrt{2}$, then find whether $x + \frac{1}{x}$ is rational or irrational.
9. Express the following in the form of $\frac{p}{q}$, where p and q integers and $q \neq 0$:
i) $3.\overline{2}$ ii) $18.\overline{48}$
10. Visualise the representation of $6.4\overline{7}$ on the number line up to 5 decimal places, which is up to 6.47777 . Draw figure only.

SECTION-C

11. Find the value of a and b, if $\frac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$
12. Represent $\sqrt{10.5}$ on then number line.
13. Simplify $\sqrt[4]{81} - 8(\sqrt[3]{216}) + 15(\sqrt[5]{32}) + \sqrt{225}$.
14. Which is greatest amongst $\sqrt{2}$, $\sqrt[3]{4}$, and $\sqrt[4]{3}$?
15. Prove that $\frac{2^{30}+2^{29}+2^{28}}{2^{31}+2^{30}-2^{29}} = \frac{7}{10}$

SECTION-D

16. If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, find the value of $x^2 + y^2 + xy$.
17. Prove that $\frac{2^{36} + (\frac{1}{4} \times 2^{35}) + (\frac{1}{8} \times 2^{37})}{(\frac{1}{16} \times 2^{39}) + (\frac{1}{8} \times 2^{38})} = \frac{11}{8}$
18. If $x = \frac{5-\sqrt{21}}{2}$, then prove that $(x^3 + \frac{1}{x^3}) - 5(x^2 + \frac{1}{x^2}) + (x + \frac{1}{x}) = 0$
19. Prove that $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = 5$
20. Rationalise the denominator of $\frac{4}{2+\sqrt{3}+\sqrt{7}}$

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