

For Online Tutorials, Subscribe



/careerplusacademy

## PRACTICE REVISION QUESTIONS

### NUMBER SYSTEM: CLASS IX

#### Representation of Irrational Numbers on number line

1. Represent  $\sqrt{2}$ ,  $\sqrt{3}$  and  $\sqrt{5}$  on number line.
2. Represent  $\sqrt{10}$  on number line
3. Represent  $\sqrt{9.3}$  on number line

#### Converting p/q to decimal expansion and vice versa

4. Express the following in p/q form: (i)  $1.\overline{245}$  (ii)  $2.\overline{35}$  (iii)  $3.\overline{245}$
5. Find two rational and irrational numbers between  $\sqrt{2}$  and  $\sqrt{3}$ .
6. Find two rational and irrational numbers between  $\frac{2}{5}$  and  $\frac{3}{5}$

#### Visualization of decimal expansion on number line

7. Visualise  $3.\overline{765}$  on the number line, using successive magnification.
8. Visualise  $4.\overline{26}$  on the number line, up to 4 decimal places.

#### Rationalisation based questions

9. Simplify the following by rationalizing the denominator.

$$(i) \frac{4+\sqrt{5}}{4-\sqrt{5}} + \frac{4-\sqrt{5}}{4+\sqrt{5}} \quad (ii) \frac{\sqrt{5}-1}{\sqrt{5}+1} + \frac{\sqrt{5}+1}{\sqrt{5}-1} \quad (iii) \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} + \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$$

10. Find the value of a and b in each of the following:

$$(i) \frac{3+\sqrt{2}}{3-\sqrt{2}} = a + b\sqrt{2} \quad (ii) \frac{3+\sqrt{7}}{3-\sqrt{7}} = a + b\sqrt{7} \quad (iii) \frac{7+\sqrt{5}}{7-\sqrt{5}} = a + b\sqrt{5}$$

$$(iv) \frac{4+3\sqrt{5}}{4-3\sqrt{5}} = a + b\sqrt{5} \quad (v) \frac{2+\sqrt{3}}{2-\sqrt{3}} = a + b\sqrt{3} \quad (vi) \frac{\sqrt{11}-\sqrt{7}}{\sqrt{11}+\sqrt{7}} = a - b\sqrt{77}$$

$$(vii) \frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3} \quad (viii) \frac{5-\sqrt{6}}{5+\sqrt{6}} = a - b\sqrt{6} \quad (ix) \frac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$$

11. Prove that  $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = 5$

12. If  $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$  and  $y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$ , find the value of  $x^2 + y^2 + xy$ .

For Online Tutorials, Subscribe  /careerplusacademy

13. If  $x = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$  and  $y = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ , find the value of  $x^2 + y^2$ .

14. If  $x = \frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}}$  and  $y = \frac{\sqrt{5} - \sqrt{3}}{\sqrt{5} + \sqrt{3}}$ , find the value of  $x + y + xy$ .

15. If  $x = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ , find (i)  $x^2 + \frac{1}{x^2}$  (ii)  $x^4 + \frac{1}{x^4}$ .

16. If  $x = 4 - \sqrt{15}$ , find (i)  $x^2 + \frac{1}{x^2}$  (ii)  $x^4 + \frac{1}{x^4}$ .

17. If  $x = 2 + \sqrt{3}$ , find (i)  $x^2 + \frac{1}{x^2}$  (ii)  $x^4 + \frac{1}{x^4}$ .

**Laws of Exponents based questions**

18. Evaluate: (i)  $\left(\frac{256}{6561}\right)^{\frac{3}{8}}$  (ii)  $(15625)^{\frac{1}{6}}$  (iii)  $\left(\frac{343}{1331}\right)^{\frac{1}{3}}$  (iv)  $\sqrt[8]{\frac{6561}{65536}}$

19. Evaluate: (i)  $\left(\frac{625}{81}\right)^{\frac{1}{4}}$  (ii)  $(6.25)^{\frac{3}{2}}$  (iii)  $(0.000064)^{\frac{5}{6}}$  (iv)  $(17^2 - 8^2)^{\frac{1}{2}}$

20. Find the value of  $\frac{4}{(216)^{\frac{-2}{3}}} + \frac{1}{(256)^{\frac{-3}{4}}} + \frac{2}{(243)^{\frac{-1}{5}}}$

21. If  $2^x = 3^y = 6^{-z}$ , then prove that  $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 0$ .

22. Show that  $\frac{1}{1+x^{a-b}} + \frac{1}{1+x^{b-a}} = 1$

23. Show that  $\left(\frac{x^a}{x^b}\right)^{a+b} \cdot \left(\frac{x^b}{x^c}\right)^{b+c} \cdot \left(\frac{x^c}{x^a}\right)^{c+a} = 1$

24. If  $27^x = \frac{9}{3^x}$ , find the value of x.

25. If  $25^{x-1} = 5^{2x-1} - 100$ , then find the value of x.

