

DEEP PUBLIC SCHOOL  
HOLIDAY HOMEWORK

[2021-22]

CLASS 9<sup>TH</sup> SUBJECT-MATHS

NOTE – Do attempt maths activities in maths practical file and assignment work in sheets .

ACTIVITIES

1. To locate  $\sqrt{5}$  on number line by constituting square root spiral.
2. To represent 3.765 on number line.

Class-IX CHAPTER – 1 Number System (Maths Assignment)

1. Represent the following irrational numbers on number line.

(i)  $\sqrt{10}$       (ii)  $\sqrt{17}$       (iii)  $2+\sqrt{2}$

2. Represent geometrically  $\sqrt{8.1}$  on number line.

3. Write the following numbers in p/q form (i)  $2.0\overline{15}$  (ii)  $0.2\overline{35}$       Ans ( $\frac{399}{198}, \frac{235}{999}$ )

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

5. Simplify (i)  $2\sqrt{50} + 3\sqrt{32} + 4\sqrt{18}$       Ans( $34\sqrt{2}$ )

(ii)  $\sqrt[4]{16} - 6\sqrt[3]{343} + 18\sqrt[3]{243} - \sqrt{196}$       Ans(0)

(iii)  $\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[3]{32} + \sqrt{225}$       Ans(0)

6. If  $x=3+2\sqrt{2}$ , Check whether  $x + \frac{1}{x}$  is rational or irrational.      Ans (rational)

7. Rationalise the denominator

(i)  $\frac{4\sqrt{3} + 5\sqrt{2}}{4\sqrt{3} + 3\sqrt{2}}$       Ans  $\frac{9 + 4\sqrt{6}}{15}$

(ii)  $\frac{\sqrt{2}}{\sqrt{2} + \sqrt{3} - \sqrt{5}}$       Ans  $\frac{\sqrt{6} + 3 + \sqrt{15}}{6}$

8. If  $x=2+\sqrt{3}$ , find  $\left(x+\frac{1}{x}\right)^3$  Ans(64)

9. Simplify:  $\frac{\sqrt{6}}{\sqrt{2+\sqrt{3}}} + \frac{3\sqrt{2}}{\sqrt{6+\sqrt{3}}} - \frac{4\sqrt{3}}{\sqrt{6+\sqrt{2}}}$  Ans(0)

10. Simplify:  $\frac{\sqrt{72}}{5\sqrt{72}+3\sqrt{288}-2\sqrt{648}}$  Ans( $\frac{1}{5}$ )

11. Evaluate  $\frac{15}{\sqrt{10}+\sqrt{20}+\sqrt{40}-\sqrt{5}-\sqrt{80}}$  Ans (5.398)

if  $\sqrt{5}=2.236$  and  $\sqrt{10}=3.162$

12. Find a and b if  $\frac{7+3\sqrt{5}}{3+\sqrt{5}} - \frac{7-3\sqrt{5}}{3-\sqrt{5}} = a+b\sqrt{5}$  Ans(a=0,b=1)

13. If  $\sqrt{18-6\sqrt{5}} = \sqrt{a} - \sqrt{b}$ , then prove that  $a+b=18$ .

14. Simplify:  $\left(\frac{x^b}{x^c}\right)^{b+c-a} \times \left(\frac{x^c}{x^a}\right)^{c+a-b} \times \left(\frac{x^a}{x^b}\right)^{a+b-c}$  Ans (1)

15. Prove that  $(x^{a-b})^{a+b} \cdot (x^{b-c})^{b+c} \cdot (x^{c-a})^{c+a} = 1$

16. Prove that:  $\frac{a^{-1}}{a^{-1}+b^{-1}} + \frac{a^{-1}}{a^{-1}-b^{-1}} = \frac{2b^2}{b^2-a^2}$

17. If  $5^{2x-1} \cdot (25)^{x-1} = 2500$ , find x Ans(x=3)

18. If  $2^x=5^y=10^z$ , then prove that  $\frac{1}{x} + \frac{1}{y} = \frac{1}{z}$

19. Write  $\sqrt[3]{4}$ ,  $\sqrt{3}$ ,  $\sqrt[4]{6}$  in ascending order. Ans ( $\sqrt[4]{6} < \sqrt[3]{4} < \sqrt{3}$ )

20. If  $x=5-2\sqrt{6}$ , find  $x^2 + \frac{1}{x^2}$  Ans (98)

21. Simplify:  $\sqrt[4]{\sqrt[3]{x^2}}$  in exponential form Ans  $x^{\frac{1}{6}}$

22. If x, y, z are positive real numbers and p, q, r are natural numbers such that

$x^p=y^q=z^r$  and  $\frac{y}{x} = \frac{z}{y}$ , then prove that  $\frac{2}{q} = \frac{1}{p} + \frac{1}{r}$