EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Indices

Grade : ICSE Grade IX

1. Simplify $9^{-1} + 5^{0} + 4^{1} + 2^{-1}$

   (i) $\frac{111}{20}$ (ii) $\frac{103}{18}$ (iii) $\frac{91}{16}$ (iv) $\frac{101}{18}$ (v) $\frac{11}{2}$

2. Simplify $\left(v^{m}\right)^{(n-o)} \left(v^{n}\right)^{(o-m)} \left(v^{o}\right)^{(m-n)}$

   (i) $v^{(m+n+o)}$ (ii) 0 (iii) -1 (iv) v (v) 1

3. $6r^{5}.5r^{6} =$

   (i) $11r^{11}$ (ii) $11r^{30}$ (iii) $30r^{30}$ (iv) $30r^{11}$

4. Find the 4th root of $\frac{1}{16}$

   (i) $(\frac{-1}{2})$ (ii) $\frac{3}{2}$ (iii) $\frac{1}{4}$ (iv) 1 (v) $\frac{1}{2}$

5. Find the prime factorization of 12

   (i) $2^{2} \times 1$ (ii) $5^{2} \times 3$ (iii) $2^{2} \times 2$ (iv) $2^{2} \times 3^{2}$ (v) $2^{2} \times 3$

6. $\frac{s^{16}t^{12}}{s^{5}t^{9}} =$

   (i) $s^{11}t^{21}$ (ii) $s^{21}t^{3}$ (iii) $s^{11}t^{3}$ (iv) $s^{21}t^{21}$ (v) $s^{28}t^{14}$

7. The value of $\left(\frac{1}{3}\right)^{-3} \div \left(\frac{-3}{2}\right)^{-3}$

   (i) $(\frac{-729}{8})$ (ii) $(\frac{-727}{8})$ (iii) $\left(\frac{-729}{8}\right)^{2}$ (iv) $(\frac{-243}{2})$ (v) $(\frac{-731}{8})$

8. $\left(\left(a^{2}\right)^{3}\right)^{7} =$

   (i) $a^{(-8)}$ (ii) a^{42} (iii) $a^{(-1)}$ (iv) a^{13} (v) a^{12}

9. $(-2d^3e^3)^3 =$

(i) $-6d^6e^6$ (ii) $-2d^9e^9$ (iii) $-8d^9e^9$ (iv) $-6d^9e^9$ (v) $-8d^6e^6$

10. Expand the following base power $\left(\frac{4}{5}\right)^5$

(i) $\frac{1024}{3125}$ (ii) $\frac{7776}{3125}$ (iii) $\frac{32}{3125}$ (iv) $\frac{4096}{15625}$ (v) $\frac{256}{625}$

11. The value of $(-3)^3 - (-3)^3$

(i) 3 (ii) -1 (iii) -3 (iv) 0

12. Simplify $\frac{\sqrt[3]{1000} + \sqrt[3]{64}}{\sqrt[3]{1331} - \sqrt[3]{729}} =$

(i) 6 (ii) $\frac{14}{4}$ (iii) 7 (iv) 14 (v) 8

13. The value of $\left(\frac{-1}{3}\right)^{-2} - \left(\frac{-5}{2}\right)^{-3}$

(i) $\frac{1133}{125}$ (ii) $\frac{227}{25}$ (iii) $\left(\frac{1133}{125}\right)^2$ (iv) $\frac{1131}{125}$ (v) $\frac{1133}{123}$

14. Expand the following base power $(-3)^{-2}$

(i) $\frac{1}{9}$ (ii) -3 (iii) $\frac{1}{25}$ (iv) $(\frac{-1}{3})$ (v) $(\frac{-1}{27})$

15. Find the value of $\left(\frac{81}{16}\right)^{(5/4)}$

(i) $\frac{241}{32}$ (ii) $\frac{245}{32}$ (iii) $\frac{243}{34}$ (iv) $\frac{81}{10}$ (v) $\frac{243}{32}$

16. Simplify $\frac{(-5)^2 \times (-4)^{-2} \times 2^2 \times (-5)^2}{(-2)^{-2} \times (-4)^{-2} \times (-4)^2 \times (-4)^2}$

(i) $\left(\frac{3}{2}\right)^4$ (ii) $\left(\frac{7}{2}\right)^4$ (iii) $\left(\frac{5}{2}\right)^5$ (iv) $\left(\frac{5}{2}\right)^3$ (v) $\left(\frac{5}{2}\right)^4$

17. If $900 = p^2 \times q^2 \times r^2$, find p, q, r

(i) (2,5,3) (ii) (2,8,3) (iii) (5,5,0) (iv) (5,5,3) (v) (2,5,6)

18. $\sqrt[3]{\frac{8}{27}} =$

(i) $\frac{2}{3}$ (ii) $\frac{2}{5}$ (iii) 2 (iv) $\frac{4}{3}$ (v) 0

19. $\left(\frac{t^5 u^6}{v^9}\right)^9 =$

(i) $\left(\frac{9\,t^5 u^6}{9\,v^9}\right)$ (ii) $\left(\frac{t^{14} u^{15}}{v^{18}}\right)$ (iii) $\left(\frac{t^{14} u^{15}}{v^{81}}\right)$ (iv) $\left(\frac{t^{45} u^{54}}{v^{18}}\right)$ (v) $\left(\frac{t^{45} u^{54}}{v^{81}}\right)$

20. Find the 5th root of $\left(\frac{-243}{1024}\right)$

(i) $\left(\frac{-3}{2}\right)$ (ii) $\left(\frac{-3}{4}\right)$ (iii) $\left(\frac{-1}{4}\right)$ (iv) $\left(\frac{-1}{2}\right)$ (v) $\left(\frac{-5}{4}\right)$

21. Find the value of 5^{-2}

(i) $\left(\frac{-1}{25}\right)$ (ii) $\frac{3}{25}$ (iii) $\frac{1}{25}$ (iv) $\frac{1}{23}$ (v) $\frac{1}{27}$

22. $\frac{(-4)^6}{(-4)^7} =$

(i) $(-4)^{-1}$ (ii) $(-7)^{-1}$ (iii) $(-4)^{-2}$ (iv) $(-1)^{-1}$ (v) $(-3)^{-1}$

23. If $4^{(7e+4)} = 64^{(2e+6)}$, find e

(i) 15 (ii) 12 (iii) 17 (iv) 13 (v) 14

24. Expand the following base power 5^{-4}

(i) $\frac{1}{81}$ (ii) $\frac{1}{125}$ (iii) $\frac{1}{625}$ (iv) $\frac{1}{2401}$ (v) $\frac{1}{3125}$

25. The value of $5^2 \div (-2)^2$

(i) $\frac{25}{4}$ (ii) $\frac{23}{4}$ (iii) $\frac{25}{2}$ (iv) $\left(\frac{25}{4}\right)^2$ (v) $\frac{27}{4}$

Assignment Key

1) (iv)	2) (v)	3) (iv)	4) (v)	5) (v)	6) (iii)
7) (i)	8) (ii)	9) (iii)	10) (i)	11) (iv)	12) (iii)
13) (i)	14) (i)	15) (v)	16) (v)	17) (i)	18) (i)
19) (v)	20) (ii)	21) (iii)	22) (i)	23) (v)	24) (iii)
25) (i)					