EduSahara™ Assignment

Name : Simplifying Expressions with Variables

Chapter : Indices

Grade : ICSE Grade IX

1. $6d^{6}.9d^{2} =$

(i) $8d^{54}$ (ii) $15d^{12}$ (iii) $15d^{8}$ (iv) $54d^{12}$ (v) $54d^{8}$

2. $2k^{2}.7k^{7}.8k^{9} =$

(i) $17k^{18}$ (ii) $17k^{126}$ (iii) $112k^{126}$ (iv) $18k^{112}$ (v) $112k^{18}$

3. $7c^{8}.8c^{8}.4c^{9}.3c^{8} =$

(i) $25c^{168}$ (ii) $168c^{512}$ (iii) $18c^{512}$ (iv) $18c^{25}$ (v) $672c^{33}$

4. $-5u^{4}.-3u^{(-9)} =$

(i) $-8u^{(-36)}$ (ii) $-8u^{(-5)}$ (iii) $-5u^{15}$ (iv) $15u^{(-5)}$ (v) $15u^{(-36)}$

5. $-3a^{5}.-7a^{2}.-2a^{(-2)} =$

(i) $-12a^{(-20)}$ (ii) $5a^{(-42)}$ (iii) $-42a^{5}$ (iv) $-42a^{(-20)}$ (v) $-12a^{5}$

6. $-9m^{(-8)}.-8m^{(-4)}.-4m^{6}.-2m^{(-6)} =$

(i) $-6m^{(-144)}$ (ii) $-19m^{(-192)}$ (iii) $-144m^{(-192)}$ (iv) $576m^{(-12)}$ (v) $-19m^{(-6)}$

7. Find the square root of $s^{6}t^{6}u^{2} =$

(i) stu^{72} (ii) $\frac{1}{s^{6}t^{6}u^{2}}$ (iii) stu^{14} (iv) $(s^{6}t^{6}u^{2})^{2}$ (v) $s^{3}t^{3}u$

8. $3q^{5}r^{(-2)}.-3q^{(-4)}r^{9} =$

(i) $6qr^{7}$ (ii) $9qr^{(-11)}$ (iii) 0 (iv) $-9q^{5}r^{(-2)}$ (v) $-9qr^{7}$

9. $(x^{6})^{2} =$

(i) $2x^{6}$ (ii) x^{6} (iii) x^{8} (iv) x^{12} (v) $x^{(-4)}$

10. $\frac{i^{17}}{i^{6}} =$

(i) i^{102} (ii) $17i^{11}$ (iii) i^{23} (iv) $6i^{11}$ (v) i^{11}

11. $(w^6 x^6)^8 =$

(i) $w^{14} x^{14}$ (ii) $8 w^6 x^6$ (iii) $8 w^{48} x^{48}$ (iv) $w^{48} x^{48}$ (v) $8 w^{14} x^{14}$

12. $(-5 d^5 e^3)^4 =$

(i) $-20 d^{20} e^{12}$ (ii) $-5 d^{20} e^{12}$ (iii) $-20 d^9 e^7$ (iv) $625 d^{20} e^{12}$ (v) $625 d^9 e^7$

13. $\left(\frac{b^{11}}{b^4}\right)^2 =$

(i) b^{88} (ii) b^{14} (iii) $2 b^{15}$ (iv) $2 b^7$ (v) b^{30}

14. $\left(\frac{m^5 n^6}{o^3}\right)^4 =$

(i) $\left(\frac{m^9 n^{10}}{o^7}\right)$ (ii) $\left(\frac{m^{20} n^{24}}{o^{12}}\right)$ (iii) $\left(\frac{4 m^5 n^6}{4 o^3}\right)$ (iv) $\left(\frac{m^{20} n^{24}}{o^7}\right)$ (v) $\left(\frac{m^9 n^{10}}{o^{12}}\right)$

15. $\frac{a^{19} b^{19}}{a^8 b^4} =$

(i) $a^{38} b^{12}$ (ii) $a^{27} b^{15}$ (iii) $a^{11} b^{23}$ (iv) $a^{11} b^{15}$ (v) $a^{27} b^{23}$

16. $\frac{i^6}{i^{15}} =$

(i) i^9 (ii) $\frac{1}{i^{(-9)}}$ (iii) $\frac{1}{i^{21}}$ (iv) $\frac{1}{i^9}$ (v) $\frac{1}{i^{90}}$

17. $(d^5)^{(e+6)} =$

(i) $d^{(5e+11)}$ (ii) $d^{(5e+30)}$ (iii) $d^{(e+16)}$ (iv) $d^{(e+35)}$ (v) $d^{(5e-30)}$

18. $\left(\frac{k^4}{l^3}\right)^o =$

(i) $\frac{l^{3o}}{k^{4o}}$ (ii) $\frac{k^{4o}}{l^{3o}}$ (iii) $k^{4o} . l^{3o}$ (iv) $k^{4o} . - l^{3o}$

19. $\left(\frac{k^{(10m+9)}}{k^{(2m+1)}}\right) =$

(i) $k^{(-8m-4)}$ (ii) $k^{(8m+9)}$ (iii) $k^{(16m^2+34m+17)}$ (iv) $k^{(8m+8)}$ (v) $k^{(12m+10)}$

20. $\left(\frac{d^{10}}{d^{5}}\right)^{4} =$

(i) d^{20} (ii) d^{5} (iii) d^{15} (iv) d^{10} (v) $4\,d^{20}$

21. $\left(f^{16f}\right)^{6} =$

(i) f^{96f} (ii) f^{16f} (iii) $f^{(16f+6)}$ (iv) $6\,f^{96f}$

22. $\left(c^{(-3)}.\,d^{(-4)}\right)^{3} =$

(i) $c^{(-6)}.\,d^{(-7)}$ (ii) $c^{(-9)}.\,d^{(-8)}$ (iii) $c^{(-9)}.\,d^{(-12)}$ (iv) $1.\,d^{(-1)}$ (v) $c^{(-6)}.\,d^{(-12)}$

23. $\left(\left(j^{4}\right)^{(-5)}\right)^{-4} =$

(i) $j^{(-5)}$ (ii) $j^{(-16)}$ (iii) $j^{(-24)}$ (iv) j^{80} (v) j^{13}

24. $\left(4e.4\,f^{(-3)}\right)^{-3} =$

(i) $\frac{-12\,f^{9}}{-12\,e^{(-3)}}$ (ii) $\frac{f^{9}}{4096\,e^{3}}$ (iii) $\frac{e^{9}}{4096\,f^{(-3)}}$ (iv) $f^{9}.4096\,e^{(-3)}$ (v) $\frac{4\,f^{9}}{4\,e^{(-3)}}$

25. $(g-h)^{3}.(g-h)^{(-8)} =$

(i) $(g-h)^{(-8)}$ (ii) $(g-h)^{11}$ (iii) $(g-h)^{(-24)}$ (iv) $(g-h)^{(-5)}$ (v) $(g-h)^{3}$

26. $\left(\frac{g^{4}}{h^{4}}\right)^{-3} =$

(i) $\frac{g}{h}$ (ii) $\frac{g^{(-12)}}{h^{4}}$ (iii) $\frac{h^{12}}{g^{12}}$ (iv) $\frac{g^{(-12)}}{h^{(-12)}}$

27. $\sqrt{\frac{81\,m^{2}}{121\,n^{8}}} =$

(i) $\frac{9m}{11\,n^{4}}$ (ii) $\frac{9\,n^{4}}{11m}$ (iii) $\frac{9\,m^{2}}{11\,n^{8}}$ (iv) $\frac{9\,m^{4}}{11\,n^{16}}$ (v) $\frac{11m}{9\,n^{4}}$

28. Find the square root of $\frac{g^{6}\,h^{10}}{25\,i^{2}}$

(i) $\frac{g^{3}\,h^{10}}{5i}$ (ii) $\frac{g^{6}\,h^{5}}{5i}$ (iii) $\frac{g^{3}\,h^{5}}{5i}$ (iv) $\frac{g^{3}\,h^{5}}{5\,i^{2}}$ (v) $\frac{g^{6}\,h^{10}}{5\,i^{2}}$

29. Find the square root of $\frac{t^{10}}{9u^2}$

(i) $\frac{t^{10}}{3u}$ (ii) $\frac{t^5}{3u}$ (iii) $\frac{t^5}{3u^2}$ (iv) $\frac{t^{20}}{3u^4}$ (v) $\frac{t^{10}}{3u^2}$

30. $\frac{2c^{(-10)}}{5f^{(-7)}}$ =

(i) $\frac{5f^{(-7)}}{2c^{(-10)}}$ (ii) $\frac{2f^{(-7)}}{5c^{(-10)}}$ (iii) $\frac{5f^7}{2c^{10}}$ (iv) $\frac{2c^7}{5f^{10}}$ (v) $\frac{2f^7}{5c^{10}}$

31. Which of the following statements are true?

a) $(x^m)^n = (x^n)^m$

b) $\frac{x^m}{x^n} = x^{\frac{m}{n}}$

c) $(x^m)^n = x^{(m+n)}$

d) $a^m . a^n = a^{mn}$

e) $a . x^m = a^m . x^m$

f) $a^0 = 1 \ (a \neq 0)$

(i) {b,f,a} (ii) {b,a} (iii) {d,e,a} (iv) {c,f} (v) {a,f}

32. Simplify $\left(\frac{s^a}{s^b}\right)^{(a+b)} \left(\frac{s^b}{s^c}\right)^{(b+c)} \left(\frac{s^c}{s^a}\right)^{(c+a)}$

(i) 0 (ii) $s^{(a+b+c)}$ (iii) -1 (iv) s (v) 1

33. Simplify $(w^a)^{(b-c)} (w^b)^{(c-a)} (w^c)^{(a-b)}$

(i) -1 (ii) 1 (iii) 0 (iv) $w^{(a+b+c)}$ (v) w

34. Simplify $(v^{(i+j)})^{(i-j)} (v^{(j+k)})^{(j-k)} (v^{(k+i)})^{(k-i)}$

(i) $v^{(i+j+k)}$ (ii) 0 (iii) -1 (iv) 1 (v) v

35. Simplify $\left(\frac{s^a}{s^b}\right)^c \left(\frac{s^b}{s^c}\right)^a \left(\frac{s^c}{s^a}\right)^b$

(i) 1 (ii) s (iii) 0 (iv) $s^{(a+b+c)}$ (v) -1

36. Simplify $\frac{\left(u^{(f+g)}\right)^4\left(u^{(g+h)}\right)^4\left(u^{(h+f)}\right)^4}{\left(u^f.u^g.u^h\right)}$

(i) $u^f.u^g.u^h$ (ii) $u^{(4f+4g+4h)}$ (iii) $u^{(7f+7g+7h)}$ (iv) $u^{(3f+3g+3h)}$ (v) $u^{(8f+8g+8h)}$

37. Simplify $\left(\frac{4^a.25^{(a-4)}.36^{(a-3)}}{16^{(a-4)}.5^{(a-3)}.6^{(a-3)}}\right)$

(i) $4^{(a+4)}.5^{(-a+2)}.6^{(-a+3)}$ (ii) $4^{(-a+8)}.5^{(-a+2)}.6^{(-a+3)}$ (iii) $4^4.5^{(-1)}.6^0$

(iv) $4^{(-a+8)}.5^{(a-5)}.6^{(a-3)}$

38. If $m^{\frac{1}{3}} + n^{\frac{1}{3}} + o^{\frac{1}{3}} = 0$, then

(i) $(m+n+o) = 3m^{\frac{1}{3}}n^{\frac{1}{3}}o^{\frac{1}{3}}$ (ii) $(m+n+o)^3 = 27mno$ (iii) $(m+n+o) = 27mno$ (iv) $(m+n+o) = 3mno$

39. Find the square root of $d^{(2m+2)}.e^{2m}.f^{(2m-2)}$

(i) $d^{(m+1)}.e^{2m}.f^{(m-1)}$ (ii) $d^{(m-1)}.e^m.f^{(m+1)}$ (iii) $d^{(m+1)}.e^m.f^{(m-1)}$

(iv) $2d^{(m+1)}.2e^m.2f^{(m-1)}$

40. $\left(d^5 + e^5\right)^0 =$

(i) 4 (ii) $d^5 + e^5$ (iii) 0 (iv) (-2) (v) 1

41. Evaluate $\left(j^{\frac{1}{2}} + k^{\frac{1}{2}}\right)\left(j^{\frac{1}{2}} - k^{\frac{1}{2}}\right) =$

(i) $(j+k)$ (ii) $(j-k)$ (iii) 0 (iv) $(j+k)^2$ (v) 1

42. Evaluate $\left(d^{\frac{1}{3}} + e^{\frac{1}{3}}\right)\left(d^{\frac{2}{3}} - d^{\frac{1}{3}}e^{\frac{1}{3}} + e^{\frac{2}{3}}\right) =$

(i) $d - e$ (ii) $(d+e)^2$ (iii) $(d-e)^2$ (iv) $d + e$ (v) 0

43. Evaluate $\left(f^{\frac{1}{3}} - g^{\frac{1}{3}}\right)\left(f^{\frac{2}{3}} + f^{\frac{1}{3}}g^{\frac{1}{3}} + g^{\frac{2}{3}}\right) =$

(i) $(f+g)^2$ (ii) $(f-g)^2$ (iii) 0 (iv) $f + g$ (v) $f - g$

44. $\left(e^{\frac{1}{3}} + f^{\frac{1}{3}} + g^{\frac{1}{3}}\right)\left(e^{\frac{2}{3}} + f^{\frac{2}{3}} + g^{\frac{2}{3}} - e^{\frac{1}{3}}f^{\frac{1}{3}} - f^{\frac{1}{3}}g^{\frac{1}{3}} - g^{\frac{1}{3}}e^{\frac{1}{3}}\right) =$

(i) $e + f + g - 3g^{\frac{1}{3}}e^{\frac{1}{3}}f^{\frac{1}{3}}$ (ii) 0 (iii) $(e-f-g)^2$ (iv) $(e+f+g)^2$ (v) $(e-f-g)$

45. $\left(\frac{3}{5}hij\right)\times\left(9i^{10}j^{4}\right)\times\left(-\frac{3}{5}j^{5}\right)=$

(i) $-\frac{81}{25}hi^{16}j^{9}$ (ii) $\frac{81}{25}i^{15}j^{13}$ (iii) $-\frac{81}{25}hi^{11}j^{10}$ (iv) $\frac{27}{5}hi^{11}j^{5}$ (v) $\frac{27}{125}j^{10}hi^{6}$

46. Evaluate $\left(n^{2}+o^{2}\right)\left(n^{4}-n^{2}o^{2}+o^{4}\right)=$

(i) $n^{6}+o^{6}$ (ii) 0 (iii) $n^{6}+2o^{2}n^{4}+2o^{4}n^{2}+o^{6}$ (iv) $n^{6}-o^{6}$ (v) $n^{6}-2o^{2}n^{4}+2o^{4}n^{2}-o^{6}$

47. Evaluate $\left(h^{2}-1\right)\left(h^{4}+h^{2}+1\right)=$

(i) $h^{6}+2h^{4}-1$ (ii) $h^{6}-2h^{2}+1$ (iii) 0 (iv) $h^{6}-1$ (v) $h^{6}+2h^{4}+2h^{2}+1$

Assignment Key

1) (v)	2) (v)	3) (v)	4) (iv)	5) (iii)	6) (iv)
7) (v)	8) (v)	9) (iv)	10) (v)	11) (iv)	12) (iv)
13) (ii)	14) (ii)	15) (iv)	16) (iv)	17) (ii)	18) (ii)
19) (iv)	20) (i)	21) (i)	22) (iii)	23) (iv)	24) (ii)
25) (iv)	26) (iii)	27) (i)	28) (iii)	29) (ii)	30) (v)
31) (v)	32) (v)	33) (ii)	34) (iv)	35) (i)	36) (iii)
37) (iv)	38) (i)	39) (iii)	40) (v)	41) (ii)	42) (iv)
43) (v)	44) (i)	45) (iii)	46) (i)	47) (iv)	