

1. Simplify the expression $7^3 \times 7^3$

- (i)
- 4^6
- (ii)
- 7^6
- (iii)
- 9^6
- (iv)
- 7^5
- (v)
- 7^7

2. Simplify the expression $6^{-3} \times 6^{-3} \times 6^{-3}$

- (i)
- 6^{-8}
- (ii)
- 6^{-9}
- (iii)
- 4^{-9}
- (iv)
- 8^{-9}
- (v)
- 6^{-10}

3. Simplify the expression $(-5)^6 \times (-5)^6 \times (-5)^6$

- (i)
- $(-5)^{17}$
- (ii)
- $(-3)^{18}$
- (iii)
- $(-7)^{18}$
- (iv)
- $(-5)^{18}$
- (v)
- $(-5)^{19}$

4. Simplify the expression $(-9)^{-2} \times (-9)^{-2}$

- (i)
- $(-9)^{-4}$
- (ii)
- $(-9)^{-5}$
- (iii)
- $(-11)^{-4}$
- (iv)
- $(-9)^{-3}$
- (v)
- $(-6)^{-4}$

$$\left(\frac{4}{3}\right) \quad \left(\frac{4}{3}\right) \quad \left(\frac{4}{3}\right)$$

5. Simplify the expression $5 \times 5 \times 5$

- (i)
- 2^4
- (ii)
- 5^5
- (iii)
- 8^4
- (iv)
- 5^3
- (v)
- 5^4

6. Simplify the expression $3^{-3} \times 3^{-3} \times 3^{-3}$

- (i)
- 3^{-10}
- (ii)
- 3^{-12}
- (iii)
- 3^{-8}
- (iv)
- 3^{-9}
- (v)
- 6^{-9}

$$\left(\frac{3}{2}\right) \quad \left(\frac{3}{2}\right) \quad \left(\frac{3}{2}\right)$$

7. Simplify the expression $(-4) \times (-4) \times (-4)$

- (i)
- $(-7)^{\frac{9}{2}}$
- (ii)
- $(-4)^5$
- (iii)
- $(-4)^{\frac{9}{2}}$
- (iv)
- $(-1)^{\frac{9}{2}}$
- (v)
- $(-4)^{\frac{17}{4}}$

$$\left(\frac{-8}{7}\right) \quad \left(\frac{-8}{7}\right)$$

8. Simplify the expression $(-4) \times (-4)$

- (i)
- $(-4)^{\frac{-16}{7}}$
- (ii)
- $(-7)^{\frac{-16}{7}}$
- (iii)
- $(-4)^{\frac{-12}{5}}$
- (iv)
- $(-2)^{\frac{-16}{7}}$
- (v)
- $(-4)^{\frac{-20}{9}}$

3 3

9. Simplify the expression $\left(\frac{8}{7}\right)^3 \times \left(\frac{8}{7}\right)^3$

- (i) $\left(\frac{6}{7}\right)^6$ (ii) $\left(\frac{8}{7}\right)^5$ (iii) $\left(\frac{8}{7}\right)^7$ (iv) $\left(\frac{10}{7}\right)^6$ (v) $\left(\frac{8}{7}\right)^6$

10. Simplify the expression $6^{-2} \times 6^{-2} \times 6^{-2}$

- (i) 6^{-7} (ii) 6^{-6} (iii) 6^{-5} (iv) 8^{-6} (v) 4^{-6}

11. Simplify the expression $(-4)^4 \times (-4)^4 \times (-4)^4$

- (i) $(-4)^{11}$ (ii) $(-1)^{12}$ (iii) $(-4)^{12}$ (iv) $(-4)^{13}$ (v) $(-7)^{12}$

12. Simplify the expression $\left(\frac{-9}{5}\right)^{-6} \times \left(\frac{-9}{5}\right)^{-6} \times \left(\frac{-9}{5}\right)^{-6}$

- (i) $\left(\frac{-9}{5}\right)^{-18}$ (ii) $\left(\frac{-7}{5}\right)^{-18}$ (iii) $\left(\frac{-11}{5}\right)^{-18}$ (iv) $\left(\frac{-9}{5}\right)^{-17}$ (v) $\left(\frac{-9}{5}\right)^{-19}$

(6/5) (6/5)

13. Simplify the expression $\left(\frac{8}{7}\right)^{(6/5)} \times \left(\frac{8}{7}\right)^{(6/5)}$

- (i) $\left(\frac{8}{7}\right)^{(8/3)}$ (ii) $\left(\frac{8}{7}\right)^{(16/7)}$ (iii) $\left(\frac{8}{7}\right)^{(12/5)}$ (iv) $\left(\frac{6}{7}\right)^{(12/5)}$ (v) $\left(\frac{10}{7}\right)^{(12/5)}$

14. Simplify the expression $6^{\left(\frac{-3}{8}\right)} \times 6^{\left(\frac{-3}{8}\right)}$

- (i) $6^{\left(\frac{-3}{4}\right)}$ (ii) $6^{\left(\frac{-1}{2}\right)}$ (iii) $6^{\left(\frac{-3}{2}\right)}$ (iv) $4^{\left(\frac{-3}{4}\right)}$ (v) $9^{\left(\frac{-3}{4}\right)}$

(9/7) (9/7)

15. Simplify the expression $\left(\frac{-2}{5}\right) \times \left(\frac{-2}{5}\right)$

(14/5)

(22/9)

(18/7)

(20/7)

(18/7)

(i) $\left(\frac{-2}{5}\right)$

(ii) $\left(\frac{-2}{5}\right)$

(iii) $\left(\frac{-4}{5}\right)$

(iv) $\left(\frac{-2}{5}\right)$

(v) $\left(\frac{-2}{5}\right)$

16. Simplify the expression $\left(\frac{-5}{6}\right)^{-4} \times \left(\frac{-5}{6}\right)^{-4}$

-7

-8

-9

-8

-8

(i) $\left(\frac{-5}{6}\right)^{-7}$

(ii) $\left(\frac{-5}{6}\right)^{-8}$

(iii) $\left(\frac{-5}{6}\right)^{-9}$

(iv) $\left(\frac{-1}{2}\right)^{-8}$

(v) $\left(\frac{-7}{6}\right)^{-8}$

17. Simplify the expression $\frac{\left(\frac{8}{3}\right)}{7} \times \frac{\left(\frac{9}{7}\right)}{7} \times \frac{\left(\frac{3}{2}\right)}{7}$

(i) $\frac{\left(\frac{219}{40}\right)}{7}$

(ii) $\frac{\left(\frac{239}{44}\right)}{7}$

(iii) $\frac{\left(\frac{229}{42}\right)}{10}$

(iv) $\frac{\left(\frac{229}{42}\right)}{5}$

(v) $\frac{\left(\frac{229}{42}\right)}{7}$

18. Simplify the expression $\frac{\left(\frac{-2}{9}\right)}{2} \times \frac{\left(\frac{-2}{3}\right)}{2}$

(i) $\frac{\left(\frac{-8}{9}\right)}{5}$

(ii) $\frac{\left(\frac{-8}{9}\right)}{2}$

(iii) $\frac{\left(\frac{-8}{7}\right)}{2}$

(iv) $\frac{\left(\frac{-8}{9}\right)}{(-1)}$

(v) $\frac{\left(\frac{-8}{9}\right)}{2}$

19. Simplify the expression $\frac{\left(\frac{7}{5}\right)}{(-5)} \times \frac{\left(\frac{8}{3}\right)}{(-5)} \times \frac{\left(\frac{5}{4}\right)}{(-5)}$

(i) $\frac{\left(\frac{309}{58}\right)}{(-5)}$

(ii) $\frac{\left(\frac{319}{60}\right)}{(-2)}$

(iii) $\frac{\left(\frac{329}{62}\right)}{(-5)}$

(iv) $\frac{\left(\frac{319}{60}\right)}{(-5)}$

(v) $\frac{\left(\frac{319}{60}\right)}{(-8)}$

20. Simplify the expression $\frac{\left(\frac{-2}{5}\right)}{(-5)} \times \frac{\left(\frac{-3}{2}\right)}{(-5)} \times \frac{\left(\frac{-4}{3}\right)}{(-5)}$

(i) $\frac{\left(\frac{-103}{32}\right)}{(-5)}$

(ii) $\frac{\left(\frac{-97}{30}\right)}{(-5)}$

(iii) $\frac{\left(\frac{-13}{4}\right)}{(-5)}$

(iv) $\frac{\left(\frac{-97}{30}\right)}{(-8)}$

(v) $\frac{\left(\frac{-97}{30}\right)}{(-2)}$

5 7

21. Simplify the expression $\left(\frac{9}{8}\right) \times \left(\frac{9}{8}\right)$

- (i) $\left(\frac{9}{8}\right)^{13}$ (ii) $\left(\frac{9}{8}\right)^{11}$ (iii) $\left(\frac{9}{8}\right)^{12}$ (iv) $\left(\frac{7}{8}\right)^{12}$ (v) $\left(\frac{11}{8}\right)^{12}$

-3 -6 -5

22. Simplify the expression $\left(\frac{7}{6}\right)^{-3} \times \left(\frac{7}{6}\right)^{-6} \times \left(\frac{7}{6}\right)^{-5}$

- (i) $\left(\frac{3}{2}\right)^{-14}$ (ii) $\left(\frac{7}{6}\right)^{-13}$ (iii) $\left(\frac{5}{6}\right)^{-14}$ (iv) $\left(\frac{7}{6}\right)^{-14}$ (v) $\left(\frac{7}{6}\right)^{-15}$

23. Simplify the expression $(-8)^3 \times (-8)^7$

- (i) $(-8)^{11}$ (ii) $(-8)^{10}$ (iii) $(-5)^{10}$ (iv) $(-8)^9$ (v) $(-11)^{10}$

-5 -4

24. Simplify the expression $\left(\frac{-7}{9}\right)^{-5} \times \left(\frac{-7}{9}\right)^{-4}$

- (i) $\left(\frac{-7}{9}\right)^{-10}$ (ii) $(-1)^{-9}$ (iii) $\left(\frac{-7}{9}\right)^{-9}$ (iv) $\left(\frac{-7}{9}\right)^{-8}$ (v) $\left(\frac{-5}{9}\right)^{-9}$

(4/3) 7 (5/4)

25. Simplify the expression $\left(\frac{9}{7}\right)^{(4/3)} \times \left(\frac{9}{7}\right)^7 \times \left(\frac{9}{7}\right)^{(5/4)}$

- (97/10) (19/2) (115/12) (115/12)
- (i) $\left(\frac{9}{7}\right)^{(97/10)}$ (ii) 1 (iii) $\left(\frac{9}{7}\right)^{(19/2)}$ (iv) $\left(\frac{9}{7}\right)^{(115/12)}$ (v) $\left(\frac{11}{7}\right)^{(115/12)}$

(-7/8) -7

26. Simplify the expression $\left(\frac{9}{7}\right)^{(-7/8)} \times \left(\frac{9}{7}\right)^{-7}$

- (-77/10) (-49/6) (-63/8) (-63/8)
- (i) $\left(\frac{9}{7}\right)^{(-77/10)}$ (ii) 1 (iii) $\left(\frac{9}{7}\right)^{(-49/6)}$ (iv) $\left(\frac{9}{7}\right)^{(-63/8)}$ (v) $\left(\frac{11}{7}\right)^{(-63/8)}$

(7/3) (8/7) 5

27. Simplify the expression $\left(\frac{-9}{5}\right) \times \left(\frac{-9}{5}\right) \times \left(\frac{-9}{5}\right)$

(194/23)

(178/21)

(178/21)

(178/21)

(162/19)

(i) $\left(\frac{-9}{5}\right)$

(ii) $\left(\frac{-7}{5}\right)$

(iii) $\left(\frac{-9}{5}\right)$

(iv) $\left(\frac{-11}{5}\right)$

(v) $\left(\frac{-9}{5}\right)$

(-8/5) (-6/5) (-7/5)

28. Simplify the expression $\left(\frac{-5}{3}\right) \times \left(\frac{-5}{3}\right) \times \left(\frac{-5}{3}\right)$

(-21/5)

(ii) $\left(\frac{-21}{5}\right)$

(-13/3)

(-21/5)

(-29/7)

(i) $\left(\frac{-7}{3}\right)$

(ii) (-1)

(iii) $\left(\frac{-5}{3}\right)$

(iv) $\left(\frac{-5}{3}\right)$

(v) $\left(\frac{-5}{3}\right)$

29. Simplify the expression $7^8 \times 5^8 \times 5^8$

(i) 173^8 (ii) 175^8 (iii) 175^7 (iv) 178^8 (v) 175^9

30. Simplify the expression $2^{-4} \times 7^{-4} \times 6^{-4}$

(i) 86^{-4} (ii) 82^{-4} (iii) 84^{-4} (iv) 84^{-5} (v) 84^{-3}

31. Simplify the expression $(-3)^6 \times (-9)^6 \times (-5)^6$

(i) $(-133)^6$ (ii) $(-135)^7$ (iii) $(-135)^5$ (iv) $(-138)^6$ (v) $(-135)^6$

32. Simplify the expression $(-9)^{-8} \times (-7)^{-8} \times (-4)^{-8}$

(i) $(-252)^{-9}$ (ii) $(-252)^{-8}$ (iii) $(-252)^{-7}$ (iv) $(-250)^{-8}$ (v) $(-254)^{-8}$

$\left(\frac{3}{2}\right) \quad \left(\frac{3}{2}\right) \quad \left(\frac{3}{2}\right)$

33. Simplify the expression $6^{\left(\frac{3}{2}\right)} \times 2^{\left(\frac{3}{2}\right)} \times 5^{\left(\frac{3}{2}\right)}$

(i) $60^{\left(\frac{3}{4}\right)}$ (ii) $62^{\left(\frac{3}{2}\right)}$ (iii) $58^{\left(\frac{3}{2}\right)}$ (iv) 60^3 (v) $60^{\left(\frac{3}{2}\right)}$

34. Simplify the expression $5^{-9} \times 5^{-9}$

(i) 25^{-8} (ii) 27^{-9} (iii) 23^{-9} (iv) 25^{-9} (v) 25^{-10}

35. Simplify the expression $(\frac{4}{3})^{-4} \times (\frac{4}{3})^{-2} \times (\frac{4}{3})^{-3}$

- (i) $(\frac{4}{3})^{-21}$ (ii) $(\frac{4}{5})^{-24}$ (iii) $(\frac{4}{3})^{-24}$ (iv) $(\frac{4}{3})^{-26}$ (v) $(-24)^4$

36. Simplify the expression $(\frac{-8}{3})^{-6} \times (-4)^{-8} \times (-5)^{-3}$

- (i) $(\frac{-8}{3})^{-120}$ (ii) $(-120)^{-8}$ (iii) $(\frac{-8}{3})^{-122}$ (iv) $(\frac{-8}{3})^{-118}$ (v) $(\frac{-8}{5})^{-120}$

37. Simplify the expression $(\frac{5}{4})^8 \times (\frac{7}{4})^8$

- (i) $(\frac{37}{16})^8$ (ii) $(\frac{33}{16})^8$ (iii) $(\frac{35}{16})^8$ (iv) $(\frac{35}{16})^9$ (v) $(\frac{35}{16})^7$

38. Simplify the expression $(\frac{6}{5})^{-9} \times (\frac{8}{7})^{-9}$

- (i) $(\frac{10}{7})^{-9}$ (ii) $(\frac{48}{35})^{-9}$ (iii) $(\frac{48}{35})^{-8}$ (iv) $(\frac{46}{35})^{-9}$ (v) $(\frac{48}{35})^{-10}$

39. Simplify the expression $(\frac{-7}{4})^6 \times (-2)^6$

- (i) $(\frac{5}{2})^6$ (ii) $(\frac{7}{2})^5$ (iii) $(\frac{9}{2})^6$ (iv) $(\frac{7}{2})^6$ (v) $(\frac{7}{2})^7$

40. Simplify the expression $(\frac{-2}{9})^{-6} \times (\frac{-3}{4})^{-6} \times (\frac{-7}{2})^{-6}$

- (i) $(\frac{-3}{4})^{-6}$ (ii) $(\frac{-7}{12})^{-7}$ (iii) $(\frac{-7}{12})^{-6}$ (iv) $(\frac{-5}{12})^{-6}$ (v) $(\frac{-7}{12})^{-5}$

(7/6) (7/6)

41. Simplify the expression $(\frac{9}{5})^{-6} \times (\frac{9}{8})^{-6}$

- (i) $(\frac{81}{40})^{-8}$ (ii) $(\frac{81}{40})^{-6}$ (iii) $(\frac{81}{40})^{-4}$ (iv) $(\frac{79}{40})^{-6}$ (v) $(\frac{83}{40})^{-5}$

(-2/7) (-2/7)

42. Simplify the expression $(\frac{7}{2})^{-2} \times (\frac{9}{5})^{-3}$

- (i) $(\frac{63}{10})^{-7}$ (ii) $(\frac{63}{10})^{-5}$ (iii) $(\frac{61}{10})^{-7}$ (iv) $(\frac{63}{10})^{-3}$ (v) $(\frac{13}{2})^{-4}$

(4/3) (4/3) (4/3)

43. Simplify the expression $(\frac{-7}{2})^{-4} \times (\frac{-2}{7})^{-3} \times (\frac{-3}{2})^{-3}$

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

-3 -3 -3

44. Simplify the expression $(\frac{-7}{9})^{-2} \times (\frac{-3}{7})^{-3} \times (\frac{-5}{3})^{-3}$

- (i) $(\frac{-5}{9})^{-2}$ (ii) $(\frac{-5}{9})^{-3}$ (iii) $(\frac{-7}{9})^{-3}$ (iv) $(\frac{-5}{9})^{-4}$ (v) $(\frac{-1}{3})^{-3}$

45. Simplify $\frac{3^{-2}}{2^{-2}}$

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

46. Simplify $\frac{3^{-2} \times (-3)^{-2}}{2^2 \times (-5)^{-2}}$

- (i) $\left(\frac{5}{18}\right)^3$ (ii) $\left(\frac{5}{18}\right)^2$ (iii) $\left(\frac{1}{6}\right)^2$ (iv) $\left(\frac{7}{18}\right)^2$ (v) $\frac{5}{18}$

47. Simplify $\frac{3^2 \times 3^{-2} \times (-3)^{-2}}{3^{-2} \times 3^{-2} \times (-2)^2}$

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

48. Simplify $\frac{(-3)^{-2} \times 3^{-2} \times 3^2 \times (-2)^2}{(-5)^2 \times (-2)^2 \times 3^{-2} \times 5^2}$

- (i) 3^{-4} (ii) 8^{-4} (iii) 5^{-3} (iv) 5^{-4} (v) 5^{-5}

49. Simplify $\frac{(-2)^{-2} \times 4^3}{5^2 \times 3^{-3}}$

- (i) $\frac{2^4 \times 3^2}{5^2}$ (ii) $\frac{2^4 \times 3^4}{5^2}$ (iii) $\frac{2^4 \times 3^3}{3^2}$ (iv) $\frac{2^4 \times 3^3}{5^2}$ (v) $\frac{2^4 \times 3^3}{8^2}$

50. Simplify $\frac{4^2 \times (-2)^2 \times (-3)^2}{2^{-2} \times (-2)^3 \times 4^{-3}}$

- (i) $-1 \times 2^{11} \times 3^2$ (ii) $1 \times 2^{11} \times 3^2$ (iii) $-1 \times 2^{11} \times 3^3$ (iv) $-2 \times 2^{11} \times 3^2$ (v) $-1 \times 2^8 \times 3^2$

51. Simplify $\frac{(-5)^3 \times 4^2 \times 3^3}{(-4)^3 \times (-4)^2 \times (-2)^2 \times (-2)^3}$

- (i) $\frac{-1 \times 3^3 \times 5^3}{5^{11}}$ (ii) $\frac{-1 \times 3^4 \times 5^3}{2^{11}}$ (iii) $\frac{-1 \times 3^3 \times 5^3}{2^{11}}$ (iv) $\frac{-1 \times 3^2 \times 5^3}{2^{11}}$ (v) $\frac{-1 \times 3^3 \times 5^3}{2^8}$

52. Simplify $\frac{3^{-3} \times (-2)^{-3} \times (-5)^{-3} \times (-3)^{-2}}{3^{-3} \times (-5)^{-3} \times (-2)^{-2}}$

- (i) $\frac{-1 \times 0}{2 \times 3^2}$ (ii) $\frac{-1 \times 1}{2^{-1} \times 3^2}$ (iii) $\frac{-1 \times 2}{2 \times 3^2}$ (iv) $\frac{-1 \times 1}{2 \times 6^2}$ (v) $\frac{-1 \times 1}{2 \times 3^2}$

53. Simplify the expression $7^5 \times 7^5$

- (i) 7^{11} (ii) 7^9 (iii) 9^{10} (iv) 4^{10} (v) 7^{10}

54. Simplify the expression $3^{-4} \times 3^{-4} \times 3^{-4}$

- (i) 3^{-12} (ii) 3^{-14} (iii) 3^{-13} (iv) 6^{-12} (v) 3^{-11}

55. Simplify the expression $(-9)^6 \times (-9)^6$

- (i) $(-9)^{11}$ (ii) $(-9)^{13}$ (iii) $(-11)^{12}$ (iv) $(-6)^{12}$ (v) $(-9)^{12}$

56. Simplify the expression $(-7)^{-6} \times (-7)^{-6} \times (-7)^{-6}$

- (i) $(-7)^{-18}$ (ii) $(-7)^{-17}$ (iii) $(-7)^{-19}$ (iv) $(-10)^{-18}$ (v) $(-5)^{-18}$

Assignment Key

1) (ii)	2) (ii)	3) (iv)	4) (i)	5) (v)	6) (iv)
7) (iii)	8) (i)	9) (v)	10) (ii)	11) (iii)	12) (i)
13) (iii)	14) (i)	15) (v)	16) (ii)	17) (v)	18) (ii)
19) (iv)	20) (ii)	21) (iii)	22) (iv)	23) (ii)	24) (iii)
25) (iv)	26) (iv)	27) (iii)	28) (iv)	29) (ii)	30) (iii)
31) (v)	32) (ii)	33) (v)	34) (iv)	35) (iii)	36) (i)
37) (iii)	38) (ii)	39) (iv)	40) (iii)	41) (ii)	42) (i)
43) (iv)	44) (ii)	45) (ii)	46) (ii)	47) (iv)	48) (iv)
49) (iv)	50) (i)	51) (iii)	52) (v)	53) (v)	54) (i)
55) (v)	56) (i)				