

Multiplying & Dividing in Scientific Notation

Write in scientific notation.

$$\textcircled{1} \quad \underline{58.1} \times 10^8 \\ 5.81 \times 10^1 \times 10^8 = \boxed{5.81 \times 10^9}$$

$$\textcircled{2} \quad \underline{0.125} \times 10^{11} \\ 1.25 \times 10^{-1} \times 10^{11} = \boxed{1.25 \times 10^{10}}$$

$$\textcircled{3} \quad \underline{0.378} \times 10^{-9} \\ 3.78 \times 10^{-1} \times 10^{-9} = \boxed{3.78 \times 10^{-10}}$$

$$\textcircled{4} \quad \underline{64.2} \times 10^{-7} \\ 6.42 \times 10^1 \times 10^{-7} = \boxed{6.42 \times 10^{-6}}$$

Multiply or divide

$$\textcircled{5} \quad \left(\underline{8.4} \times 10^5 \right) \left(2 \times 10^7 \right) \begin{array}{l} \xrightarrow{\text{multiply}} \\ \xrightarrow{\text{Add exponents}} \end{array}$$
$$16.8 \times 10^{12} \\ 1.68 \times 10^1 \times 10^{12} = \boxed{1.68 \times 10^{13}}$$

$$\textcircled{6} \quad \begin{array}{l} \xrightarrow{\text{Divide}} \\ \xrightarrow{\text{subtract exponents } -12-5} \end{array} \frac{4 \times 10^{-12}}{16 \times 10^5}$$

$\frac{4}{16} = \frac{1}{4} = 0.25$

$$0.25 \times 10^{-17} \\ 2.5 \times 10^{-1} \times 10^{-17} = \boxed{2.5 \times 10^{-18}}$$

Express each number in scientific notation.

1. 6387

6.387×10^3

2. 560,000

3. 41,000,000

4. 0.003157

3.157×10^{-3}

5. 0.00009621

6. 0.00000000814

7. 4740×10^5

$4.74 \times 10^3 \times 10^5$
 4.74×10^8

8. 56×10^7

9. 0.0057×10^3

10. 0.076×10^{-3}

11. 915,600,000,000

12. 0.0000000000112

Evaluate. Express each result in scientific and decimal notation.

standard form

13. $\frac{5.1 \times 10^6}{1.5 \times 10^2}$

$3.4 \times 10^4 = 34000$

14. $\frac{3 \times 10^{-2}}{1.2 \times 10^3}$

15. $\frac{7.2 \times 10^{-5}}{4 \times 10^{-3}}$

16. $\frac{1.17 \times 10^2}{5 \times 10^{-1}}$

17. $\frac{1.82 \times 10^5}{9.1 \times 10^7}$

18. $\frac{1.68 \times 10^4}{8.4 \times 10^{-4}}$

19. $\frac{1.2 \times 10^7}{6.0 \times 10^3}$

20. $\frac{6.72 \times 10^3}{4.2 \times 10^8}$

21. $\frac{9.6 \times 10^{-4}}{1.6 \times 10^{-5}}$

22. $(3.1 \times 10^7)(2 \times 10^{-6})$

23. $(5 \times 10^{-2})(1.4 \times 10^{-4})$

24. $(8.3 \times 10^2)(9.1 \times 10^{-7})$
 $75.53 \times 10^{-5} = 7.553 \times 10^{-4}$
 0.0007553

25. $(9.72 \times 10^7)(4.8 \times 10^{-10})$

26. $(1.39 \times 10^{-3})(5.82 \times 10^{-6})$

27. $(2.5 \times 10^5)(3.62 \times 10^{-5})$

28. $(9.8 \times 10^6)(1.12 \times 10^2)$

29. $(7.8 \times 10^5)(3.45 \times 10^{-6})$