

EXTRA PRACTICE 9
Scientific Notation
Use after Section 4.8

Name _____

Examples:

a) Convert 3.12×10^7 to decimal notation.

$$3.12 \times 10^7 = 31,200,000$$

b) Convert 2.8×10^{-3} to decimal notation.

$$2.8 \times 10^{-3} = 0.0028$$

c) Convert 0.0000012 to scientific notation.

$$0.0000012 = 1.2 \times 10^{-6}$$

d) Convert 2,597,000,000 to scientific notation.

$$2,597,000,000 = 2.597 \times 10^9$$

e) Multiply and write the result in scientific notation.

$$\begin{aligned} (3.8 \times 10^6)(3.5 \times 10^{-9}) &= 13.3 \times 10^{-3} \\ &= 1.33 \times 10^{-2} \end{aligned}$$

f) Divide and write the result in scientific notation.

$$\begin{aligned} \frac{2.4 \times 10^{-2}}{3.2 \times 10^{-6}} &= 0.75 \times 10^4 \\ &= 7.5 \times 10^3 \end{aligned}$$

Convert to decimal notation.

1. 2.54×10^6 _____

2. 1.056×10^{-3} _____

3. 9.98423×10^3 _____

4. 1.5×10^{-7} _____

5. 3.141×10^{-2} _____

6. 1.5×10^4 _____

7. 10^5 _____

8. 10^{-5} _____

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Convert to scientific notation.

- | | | | |
|----------------|-------|-----------------------------|-------|
| 9. 0.000000427 | _____ | 10. 10,450,000,000 | _____ |
| 11. 2,700 | _____ | 12. 0.00000000000056 | _____ |
| 13. 95 | _____ | 14. 107,000,000,000,000,000 | _____ |
| 15. 0.0821 | _____ | 16. 38,400,000 | _____ |

Multiply or divide, and write scientific notation for the result.

- | | | | |
|--|-------|---|-------|
| 17. $(2.5 \times 10^3)(1.4 \times 10^{-6})$ | _____ | 18. $(3.2 \times 10^{-8})(2 \times 10^{-6})$ | _____ |
| 19. $(4.2 \times 10^5)(5.4 \times 10^4)$ | _____ | 20. $(8.7 \times 10^9)(7.4 \times 10^{-2})$ | _____ |
| 21. $\frac{(4.5 \times 10^3)}{(1.8 \times 10^{-7})}$ | _____ | 22. $\frac{(2.7 \times 10^{-5})}{(2.4 \times 10^{-6})}$ | _____ |
| 23. $\frac{(2.1 \times 10^7)}{(2.8 \times 10^3)}$ | _____ | 24. $\frac{(2 \times 10^6)}{(3.2 \times 10^{-7})}$ | _____ |

Write scientific notation for each answer.

25. *National debt.* In the 1980's the United States had a debt of about 1 trillion dollars (1 trillion = 10^{12}). During that time, the country's population was about 250 million. If everyone in the country had to contribute money to pay off the debt, about how much would each person have to pay? _____
26. *Chemistry.* Chemists use the term **mole** to mean a collection of 6.022×10^{23} particles. If a single electron weighs 9.1×10^{-31} kg, how much does a mole of electrons weigh?
