

EXTRA PRACTICE 10

Scientific Notation

Use after Section 4.9

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} _____

EXTRA PRACTICE 10 (continued)**Scientific Notation****Use after Section 4.9**

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?
