Name _____ Date _____ Class _____

LESSON 15

Skills Readiness

Scientific Notation

Definition: A number is in scientific notation if it is written as the product of a number between 1 and 10 and a power of 10 ($a \times 10^n$).
Examples: 6×10^7 and 4.99×10^{-15}

To write from standard form to scientific notation
Step 1: Make sure the number has a decimal point. If it doesn't, place a decimal after the last digit in the number: 47,000,000 = 47, 000,000.
Step 2: Move the decimal point until the number is between 1 and 10.
Step 3: Count the number of places you moved the decimal point—this will be your exponent of 10. If the original number was a very large number, the exponent will be positive; if the number was a very small number, the exponent will be negative.
To write from scientific notation to standard form
Case 1: If the exponent of 10 is positive, move the decimal point to the right as many times as the value of the exponent. Fill in zeros as needed and drop the power of 10.
Case 2: If the exponent of 10 is negative, move the decimal point to the left as many times as the value of the exponent. Fill in zeros as needed and drop the power of 10.

Example: Write 46,000,000 in scientific notation. $4.6\,0\,0\,0\,0\,0\,0\,. = 4.6 \times 10^7$

Practice on Your Own

Write in scientific notation.

1. 5,400,000,000 _____

2. 0.00026 _____

3. 6 million _____

4. 0.00000000859 _____

5. $112\frac{3}{4}$ _____

6. $\frac{61}{100{,}000}$ _____

Write in standard notation.

7. 4.22×10^6 _____

8. 7.1×10^{-4} _____

9. 9×10^3 _____

10. 1.365×10^{-9} _____

11. 6.84×10^8 _____

12. 2×10^{-12} _____

Check

Write in scientific notation.

13. 0.00000000000012 _____

14. 62,500,000,000 _____

15. $206\frac{12}{25}$ _____

Write in standard notation.

16. 4.1×10^2 _____

17. 2.08×10^{-10} _____

18. 1.001×10^6 _____