



Name _____ Date _____

Scientific Notation (Pages 265–267)

When a number is written in scientific notation, it is expressed as the product of a number between 1 and 10 and a power of 10.

Converting Scientific Notation to Standard Form

- Multiplying by a positive power of 10 moves the decimal point to the right the number of places shown by the exponent.
- Multiplying by a negative power of 10 moves the decimal point to the left the number of places shown by the absolute value of the exponent.

EXAMPLES

A Express 4.6×10^{-3} in standard form.

The exponent is negative so move the decimal point 3 places to the left.

$$4.6 \times 10^{-3} = 0.0046$$

B Express 89,450 in scientific notation.

Move the decimal to make a number between 1 and 10. 8.9450

You moved the decimal point 4 places, so $89,450 = 8.945 \times 10^4$.

Try These Together

1. Express 4.5×10^3 in standard form.

HINT: Move the decimal point 3 places to the right.

2. Express 1.201×10^5 in standard form.

HINT: Move the decimal point to the right.

PRACTICE

Express each number in standard form.

3. 3.65×10^{-2}

4. 21.549×10^{-3}

5. 2.3×10^6

6. 8.95×10^{-4}

7. 10.567×10^8

8. 0.505×10^3

Express each number in scientific notation.

9. 1,200

10. 4,000,000

11. 0.00015

12. 0.0148

13. 30,300

14. 0.0000068

15. 0.000547

16. 702,000

17. Space Science Some satellites orbit Earth at a specific altitude that lets them stay above one point on Earth's equator at all times. This is called a geostationary equatorial orbit and is about 35,800 kilometers above Earth. Express this number in scientific notation.



18. Standardized Test Practice When the space shuttle returns to Earth's atmosphere, it needs to withstand tremendous heat. 2.4×10^4 special tiles are installed by hand to help protect the shuttle from this heat. What is 2.4×10^4 in standard form?

A 24,000

B 2,400

C 240,000

D 240

Answers: 1. 4,500 2. 120,100 3. 0.0365 4. 0.021549 5. 2,300,000 6. 0.000895 7. 1,056,700,000 8. 505 9. 1.2×10^5 10. 4×10^6 11. 1.5×10^{-4} 12. 1.48×10^{-2} 13. 3.03×10^4 14. 6.8×10^{-6} 15. 5.47×10^{-4} 16. 7.02×10^5 17. 3.58×10^4 18. A