Blizzard Bag #2

Due:

Name_____

8th grade math

2-9 Study Guide and Intervention

Scientific Notation

A number in scientific notation is written as the product of a number between 1 and 10 and a power of ten.

EXAMPLE 1 Write 8.65×10^7 in standard form.

$8.65 \times 10^7 = 8.65 \times 10,000,000$ $10^7 = 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$ or 10,000,000

$ = 86,500,000$ Move the decimal point 7 places to the right.

EXAMPLE 2 Write 9.2×10^{-3} in standard form.

$9.2 \times 10^{-3} = 9.2 \times \dfrac{1}{10^3}$ $10^{-3} = \dfrac{1}{10^3}$

$\phantom{9.2 \times 10^{-3}} = 9.2 \times 0.001$ $\dfrac{1}{10^3} = \dfrac{1}{1,000}$ or 0.001

$\phantom{9.2 \times 10^{-3}} = 0.0092$ Move the decimal point 3 places to the left.

EXAMPLE 3 Write 76,250 in scientific notation.

$76,250 = 7.625 \times 10,000$ The decimal point moves 4 places.

$ = 7.625 \times 10^4$ The exponent is positive.

EXAMPLE 4 Write 0.00157 in scientific notation.

$0.00157 = 1.57 \times 0.001$ The decimal point moves 3 places.

$ = 1.57 \times 10^{-3}$ The exponent is negative.

EXERCISES

Write each number in standard form.

1. 5.3×10^1 2. 9.4×10^3

3. 7.07×10^5 4. 2.6×10^{-3}

5. 8.651×10^{-2} 6. 6.7×10^{-6}

Write each number in scientific notation.

7. 561   8. 14

9. 56,400,000   10. 0.752

11. 0.0064   12. 0.000581

Lesson 2-9

2-9 Practice: Skills

Scientific Notation

Write each number in standard form.

1. 6.7×10^1

2. 6.1×10^4

3. 1.6×10^3

4. 3.46×10^2

5. 2.91×10^5

6. 8.651×10^7

7. 3.35×10^{-1}

8. 7.3×10^{-6}

9. 1.49×10^{-7}

10. 4.0027×10^{-4}

11. 5.2277×10^{-3}

12. 8.50284×10^{-2}

Write each number in scientific notation.

13. 34

14. 273

15. 79,700

16. 6,590

17. 4,733,800

18. 2,204,000,000

19. 0.00916

20. 0.29

21. 0.00000571

22. 0.0008331

23. 0.0121

24. 0.00000018

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Practice: Word Problems

Scientific Notation

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1. MEASUREMENT There are about 25.4 millimeters in one inch. Write this number in scientific notation.

2. POPULATION In the year 2000, the population of Rahway, New Jersey, was 26,500. Write this number in scientific notation.

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3. MEASUREMENT There are 5,280 feet in one mile. Write this number in scientific notation.

4. PHYSICS The speed of light is about 1.86×10^5 miles per second. Write this number in standard notation.

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5. COMPUTERS A CD can store about 650,000,000 bytes of data. Write this number in scientific notation.

6. SPACE The diameter of the Sun is about 1.39×10^9 meters. Write this number in standard notation.

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7. ECONOMICS The U.S. Gross Domestic Product in the year 2000 was 9.87×10^{12} dollars. Write this number in standard notation.

8. MASS The mass of planet Earth is about 5.98×10^{24} kilograms. Write this number in standard notation.

Lesson 2-9