

lesson thirty one - student resource sheet

Lesson Objective: Read and write numbers in scientific notation, and perform calculations without a calculator.

Vocabulary Box

scientific notation – A method for writing extremely large or small numbers concisely that shows a number as the product of two factors (one of which is a multiple of 10).
Examples: $4.25 \bullet 10^{25}$ and $6 \bullet 10^{-13}$.



Guided Practice

You will complete the following practice problems with your partner. Then your teacher will review the answers. Make sure that you show all important work.

I. Directions: Write each number in scientific notation.

1. 7,000,000,000

2. 0.00000043

II. Directions: Write each number in standard form.

1. $7.5 \bullet 10^8$

2. $5 \bullet 10^{-9}$

III. Directions: Simplify the following expression. Write your answer in scientific notation.

$(6 \bullet 10^8) \bullet (1.2 \bullet 10^8)$



Summary/Closure

A. Vocabulary Words

Directions: Fill in the blanks.

_____ is a method for writing very _____ or _____ numbers concisely. The number is shown as the _____ of two factors.

B. Summarize What We Learned Today

Directions: First, write a very large number and a very small number in standard form, and rewrite each number in scientific notation. Next, write two different numbers in scientific notation, and rewrite them in standard form. Then, write a few sentences to explain how to change numbers between forms. Finally, write a sentence or two explaining how to multiply two numbers that are in scientific notation. You will use this explanation as a personal reminder.

lesson thirty two - student resource sheet

Lesson Objective: Read and write numbers in scientific notation, and perform calculations without a calculator.

Vocabulary Box

scientific notation – A method for writing extremely large or small numbers concisely that shows a number as the product of two factors (one of which is a multiple of 10). Examples: $4.25 \bullet 10^{25}$ and $6 \bullet 10^{-13}$.



Independent Practice

Please complete the following practice problems on your own. Your teacher will review the answers. Make sure that you show all of your work.

Directions: Write each number in scientific notation.

1. 8,000,000
2. 0.00000055
3. 40,800,000,000
4. 0.0000000007

Directions: Write each number in standard form.

1. $4.3 \bullet 10^8$
2. $2 \bullet 10^{-9}$
3. $1.025 \bullet 10^{-8}$
4. $8 \bullet 10^7$

Directions: Simplify the following expressions. Write your answers in scientific notation.

1. $(5 \bullet 10^7) \bullet (1.2 \bullet 10^{11})$

2. $(1.5 \bullet 10^8) \bullet (1.1 \bullet 10^{-5})$

3. $(1.25 \bullet 10^{-6}) \bullet (4 \bullet 10^{-7})$



Directions: Simplify the following expressions. Write your answers in scientific notation.

1. $(8 \bullet 10^7) \bullet (4 \bullet 10^{10})$

2. $(9.6 \bullet 10^{12}) \div (6 \bullet 10^3)$

3. $(6 \bullet 10^{-5}) \div (3 \bullet 10^{-9})$

lesson thirty two - student resource sheet



Is There Anybody Out There?

1 astronomical unit (AU) \approx 149,597,871 kilometers (km)

1 mile (mi) \approx 1.609344 km

The average distance from the Earth to the Sun is 1 AU.

Directions: Based on the information above, answer the following questions. Use your skills with scientific notation and rounding to make estimates, as appropriate.

1. Jupiter is approximately 5.203 AU from the Sun. How many kilometers is Jupiter from the Sun?
2. Neptune is approximately 30.06 AU from the Sun. How many miles is Neptune from the Sun?
3. If Pluto is approximately 1.31 times as far from the Sun as Neptune, how many miles is Pluto from the Sun?
4. If Pluto is approximately 59.58 times as far from the Sun as Venus, how many miles is Venus from the Sun?
5. If Uranus is approximately 26.53 times as far from the Sun as Venus, how many kilometers is Uranus from the Sun?



Directions: Answer each question.

1. Write 0.000000021 in scientific notation.

2. Write $2.04 \bullet 10^9$ in standard form.

3. Simplify $(1.3 \bullet 10^5) \bullet (7 \bullet 10^9)$, and write your answer in scientific notation.

lesson thirty three - student resource sheet

Lesson Objective: Simplify polynomials using addition and subtraction.

Vocabulary Box

coefficient – A constant that multiplies a variable. Example: the 4 in $4x$.

polynomial – An algebraic expression consisting of two or more rational and integral terms. Example: $x^3 + 4x^2 - 7x + 1$.



Guided Practice

You will complete the following practice problems with your partner. Then your teacher will review the answers. Make sure that you show all important work.

Directions: Add or subtract as indicated. Use the horizontal and vertical method at least once each.

1. $(a^3 + 4a^2 + 6a + 7) + (4a^3 + 6a^2 - 3a - 4)$

2. $(c^2 - 6c + 9 - c^4) + (18 - 9c + 3c^2 - c^3)$

3. $(d^3 - 5d^2 + 4d - 40) - (3d^2 - 5d - 30)$

4. $(f^2 - f + 6) - (4f - 3f^2 + 6f^3 - f^4)$



Summary/Closure

A. Vocabulary Words

Directions: In the polynomials below, list the coefficients and the constant term of each.

1. $5v^2 + 7v - 8$

coefficients:

constant term:

2. $8y^3 - 6y^2 - y$

coefficients:

constant term:

3. $48 - 16p + p^2 - p^3$

coefficients:

constant term:

B. Summarize What We Learned Today

Directions: Write two problems requiring addition of polynomials. Simplify one using the horizontal method and one using the vertical method. Then, write and simplify a problem involving subtraction of polynomials. Write a few sentences to explain how to add and subtract polynomials. You will use this explanation as a personal reference sheet.