

## Adding And Subtracting Scientific Notation Worksheet Questions and Answers PDF

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### Part 1: Building a Foundation

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**What is the general form of a number expressed in scientific notation?**

*Hint: Think about the standard representation of scientific notation.*

- a)  $a \times 10^n$  ✓
- b)  $a + 10^n$
- c)  $a - 10^n$
- d)  $a / 10^n$

The general form of a number in scientific notation is expressed as a coefficient multiplied by 10 raised to an exponent.

**Which of the following are true about the coefficient in scientific notation?**

*Hint: Consider the range of values that the coefficient can take.*

- a) It must be greater than or equal to 1. ✓
- b) It must be less than 10. ✓
- c) It can be any integer.
- d) It can be negative.

The coefficient in scientific notation must be greater than or equal to 1 and less than 10.

**Explain why scientific notation is useful in scientific calculations.**

*Hint: Think about the size of numbers and ease of calculations.*

Scientific notation is useful because it allows for the representation of very large or very small numbers in a compact form, making calculations easier and reducing the risk of errors.

List two fields where scientific notation is commonly used.

Hint: Consider areas that deal with large or small quantities.

1. Field 1

Physics

2. Field 2

Chemistry

Scientific notation is commonly used in fields such as physics and chemistry, as well as in engineering and astronomy.

## Part 2: Understanding and Interpretation

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When adding numbers in scientific notation, what must be true about the exponents?

Hint: Think about the rules for adding numbers with different powers.

- a) They must be different.
- b) They must be the same. ✓
- c) One must be zero.
- d) They must be negative.

When adding numbers in scientific notation, the exponents must be the same.

**Which steps are necessary to add  $3.2 \times 10^4$  and  $5.1 \times 10^5$ ?**

*Hint: Consider the process of aligning exponents before performing the addition.*

- a) Adjust the exponents to be the same. ✓
- b) Add the coefficients directly.
- c) Convert to decimal form first.
- d) Keep the exponent of the larger number.

To add these numbers, you need to adjust the exponents to be the same and then add the coefficients.

**Describe the process of converting a number from decimal form to scientific notation.**

*Hint: Think about how to express the number in the required format.*

To convert a number from decimal form to scientific notation, you move the decimal point to create a coefficient between 1 and 10 and adjust the exponent accordingly.

### Part 3: Application and Analysis

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**What is the result of adding  $2.5 \times 10^3$  and  $3.5 \times 10^3$ ?**

*Hint: Make sure the exponents are the same before adding.*

- a)  $6.0 \times 10^3$  ✓
- b)  $6.0 \times 10^6$
- c)  $6.0 \times 10^2$
- d)  $6.0 \times 10^4$

The result of adding these two numbers is  $6.0 \times 10^3$ .

**If you have  $4.0 \times 10^6$  and  $2.0 \times 10^5$ , what steps would you take to subtract them?**

*Hint: Consider how to align the exponents before performing the subtraction.*

- a) Adjust the exponents to be the same. ✓
- b) Subtract the coefficients.
- c) Keep the exponent of the larger number.
- d) Add the coefficients.

To subtract these numbers, you need to adjust the exponents to be the same and then subtract the coefficients.

**Solve: Subtract  $7.8 \times 10^2$  from  $1.2 \times 10^3$  and express the answer in scientific notation.**

*Hint: Make sure to align the exponents before performing the subtraction.*

The result of the subtraction is  $4.2 \times 10^2$ .

## Part 4: Evaluation and Creation

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**What is the main reason for converting a number like 0.00056 into scientific notation?**

*Hint: Think about the benefits of using scientific notation for small numbers.*

- a) To make it larger.
- b) To simplify calculations. ✓
- c) To make it a whole number.
- d) To change its value.

The main reason for converting to scientific notation is to simplify calculations and make the number easier to read.

**Which expression is a valid scientific notation for the number 0.00078?**

*Hint: Consider the correct format for scientific notation.*

- a)  $7.8 \times 10^{-4}$  ✓
- b)  $7.8 \times 10^4$
- c)  $78 \times 10^{-5}$
- d)  $0.78 \times 10^{-3}$

■ The valid scientific notation for 0.00078 is  $7.8 \times 10^{-4}$ .

**Evaluate the following statements about scientific notation and select the correct ones:**

*Hint: Think about the advantages and limitations of scientific notation.*

- a) It simplifies multiplication and division of large numbers. ✓
- b) It is only used for numbers greater than 1,000.
- c) It is used to represent very small numbers efficiently. ✓
- d) It is not suitable for financial calculations.

■ The correct statements are that scientific notation simplifies multiplication and division of large numbers and is used to represent very small numbers efficiently.

**Create a real-world problem that involves adding or subtractING numbers in scientific notation, and solve it.**

*Hint: Think about a scenario where large or small quantities are involved.*

■ An example problem could involve calculating distances in space or measuring small quantities in chemistry.