



Problem 1 – Writing Scientific Notation in Expanded Form

Scientific notation is a way of writing very large and very small numbers. Numbers in scientific notation include two parts, a number greater than or equal to 1 and less than 10, and a power of 10. Examples include:

$$5.6 \times 10^5 = 5,600,000 \quad \text{and} \quad 2.3 \times 10^{-8} = 0.00000023$$

Write each of the following numbers in expanded notation. Check your answer with a calculator.

1. -3.77×10^8

Write the answer. _____

3. 4.224×10^{-6}

Write the answer. _____

2. 1.202×10^5

Write the answer. _____

4. -5.24×10^{-12}

Write the answer. _____

Problem 2 – Writing Numbers in Scientific Notation

To write numbers in scientific notation, place a decimal point so there is one non-zero digit to the left. Count the number of decimal places the decimal point moved. The number of places the decimal point moves to the left is the positive exponent power of 10. The number of places the decimal point moves to the right is the negative exponent power of 10.

$$156,000,000 = 1.56 \times 10^8 \quad \text{and} \quad 0.0000045 = 4.5 \times 10^{-6}$$

5. The following are salaries for the 5 top paid players of the Cincinnati Bengals. Write each salary in scientific notation.

Player	Salary	Scientific Notation
Carson Palmer	\$13,980,000	
Stacy Andrews	\$7,455,000	
Chad Johnson	\$6,415,370	
Antwan Odom	\$5,700,000	
Levi Jones	\$5,266,666	

6. The 2007 median American household income was $\$5.0233 \times 10^4$. How does this compare to the salaries above? _____

7. Imagine you could fold a piece of paper 0.004 inches thick 50 times. About how many inches thick would the resulting paper be after the 50th fold?

```
0.004      .004
Ans*2     .008
Ans*2     .016
Ans*2     .032
```

To solve, type 0.004 on the home screen and press **ENTER**. Then, type **2** **ENTER**. Each time **ENTER** is pressed, the previous value is doubled.

8. What is the answer in expanded form? _____

9. What is the percent chance of flipping a coin 40 times and having it come up heads each time?

```
0.5      .5
Ans*.5   .25
Ans*.5   .125
Ans*.5   .0625
```

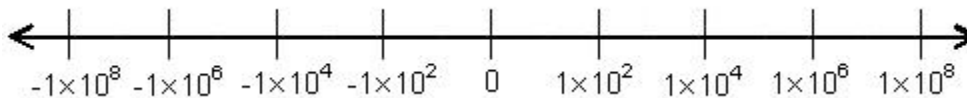
To solve, type 0.5 on the home screen and press **0.5** **ENTER**. Each time **ENTER** is pressed, the previous value is multiplied by 0.5. This shows the probability of heads three times in a row, four times in a row, etc.

10. What is the answer in expanded form? _____

Problem 3 – Ordering Numbers in Scientific Notation

11. Place the following numbers on the number line. After placing them on the number line, switch with a partner to check answers.

- | | | |
|--------------------------|------------------------|-----------------------|
| a. 1.25×10^{-3} | c. -4.45×10^4 | e. 1.8×10^2 |
| b. 5.5×10^4 | d. -3.11×10^6 | f. 7.79×10^8 |



12. Draw an appropriate number line for the following numbers. Explain your choice.

- | | | |
|-----------------------|------------------------|------------------------|
| 2.25×10^{-3} | -1.05×10^{-4} | 5.603×10^{-2} |
|-----------------------|------------------------|------------------------|
