**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**M8-U6: Notes #4 – Scientific Notation Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Definition:** A number in scientific notation is written as a product of two factors in the form of *a*10, where *n* is an integer and .

 **What does that mean in words?**

 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**What is the purpose of using scientific notation?**

 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Recognizing Scientific Notation**

Is each number written in scientific notation? If not, give a reason why it is not.

**1.**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3.**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4.**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**5.**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Understanding Powers of 10 (Numbers 10 or more):**

|  |  |  |
| --- | --- | --- |
| **Standard Form** | **Product of Factors** | **Scientific Notation** |
| 40 |  |  |
| 500 |  |  |
| 8000 |  |  |
| 9600 |  |  |
| 12 |  |  |

**Summary:**

The coefficient is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than 1 and \_\_\_\_\_\_\_\_\_\_\_\_than 10.

For numbers greater than or equal to 10, use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exponent.

**Understanding Powers of 10 (Numbers Less Than 1):**

|  |  |  |
| --- | --- | --- |
| **Standard Form** | **Product of Factors** | **Scientific Notation** |
| 0.2 |  |  |
| 0.04 |  |  |
| 0.005 |  |  |

**Summary:**

The coefficient is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than 1 and \_\_\_\_\_\_\_\_\_\_\_\_than 10.

For numbers less than 1, use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exponent.

**Writing a Number in Scientific Notation:**

**1.** 127,000,000 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **2.** 0.0000000024 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3.** 7200 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **4.** 0.000389 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Try It! – Write each number in scientific notation.**

 **a)** 427.7 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **b)** 856.2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **c)** 0.0007 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **d)** 0.00643\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Writing a Number in Standard Form:**

**1.**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **2.**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3.**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **4.**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Summary of Scientific Notation:**

Positive exponents make the decimal move to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 Negative exponents make the decimal move to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Try It! – Write each number in standard form.**

 **a)**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **b)**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **c)**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **d)** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_