Scientific Notation

Scientific notation *expresses numbers in the following format:*

Scientific notation *helps us express…*

How wide is our Universe?

_____

That number has _____ zeros. It would be much easier to write in scientific notation!

To convert numbers into scientific notation, ask yourself 3 questions:

1) Where does the decimal point start?
2) Where do I need to move the decimal point to make a number that is between 1 and almost 10?
3) How many places does the decimal point move and in what direction?

Example 1:	**Example 2:**
1)	1)
2)	2)
3)	3)
When the original number is…	*When the original number is…*

Name _____ Period _____

SCIENTIFIC NOTATION PRACTICE

Scientific notation takes the form of $M \times 10^n$ where $1 \leq M \leq 10$ and n represents the number of decimal places to be moved. Positive n indicates the standard form is a large number. Negative n indicates a number between zero and one.

Example 1: Convert 1,500,000 to scientific notation

Move the decimal point so that there is only one digit to the left, for a total of 6 places.

$$1{,}500{,}000 = 1.5 \times 10^6$$

Example 2: Convert 0.000025 to scientific notation.

For this, move the decimal point 5 places to the right.

$$0.000025 = 2.5 \times 10^{-5}$$

★Note: when the number starts out less than one, the exponent is always negative.

Part 1: *Convert each number into scientific notation.*

1) 0.005 _____

2) 0.0018 _____

3) 1,065,000 _____

4) 3,025 _____

5) 550 _____

Part 2: *Convert the number out of scientific notation and back to standard (decimal) notation.*

6) 1.5×10^3 _____

7) 3.75×10^{-2} _____

8) 2.25×10^5 _____

9) 1.21×10^{-4} _____

10) 1.10×10^{-1} _____