

Table Number: _____

Group Name: _____

Group Members: _____

Scientific Notation

THE BASICS

Scientific Notation is used to simplify the writing of either very large or very small numbers. For example, in physics, the speed of light can be stated many different ways, depending on the rate of a person is concerned with. In miles per second, the speed of light is 186,000 mps or 1.86×10^5 mps in scientific notation.

Mechanically, the process involves moving the decimal point as many places it needs to move until there is only one value to the left of the decimal. From the example above, the decimal moves 5 positions, leaving only a 1 on the left of the decimal and the power on 10 becomes equivalent to the number of movements. As a point of fact, moving a decimal to the left represents a positive exponential value and moving the decimal point to the right represents a negative decimal value. Moving the decimal point to the left is equivalent to dividing by a power of 10 and moving the decimal point to the right is equivalent to multiplying by a power of 10.

Now you practice:

1. The speed of light in miles per HOUR is 671,000,000. Rewrite this in scientific notation.
2. The probability of getting a royal flush in a five card poker hand is .000000154. Rewrite this in scientific notation.

SCIENTIFIC NOTATION AND THE GRAPHING CALCULATOR

Graphing calculators (TI-83/84 to be specific) have a hard time writing scientific notation. As a “work around,” the value E (the button actually reads EE above the “,”) is used to represent “times ten to the”. For example: (Note: Statcrunch will also use this notation for sufficiently small values)

a) Scientific Notation: 3.897×10^{11}
Calculator: 3.897E11

b) Scientific Notation: 4.9834×10^{-5}
Calculator: 4.9834E-5

Rewrite the scientific notations above in standard form.

a)

b)

3. Rewrite $8.92E-4$ in true scientific notation and standard form.

EXTRA PRACTICE

4. Complete the following table of scientific notation. The first one is done for you

Actual Value	Scientific Notation	Calculator Notation
440,000,000	4.4×10^8	4.4E8
	3.75×10^6	
		5.834E11
46,800,000,000		
		4.382E-5
	1.2368×10^{-8}	
.00003555		