Calculators & Scientific Notation

It seems that the hardest part about the universal gravitation unit is student's struggles with scientific notation and their calculators. This sheet was designed to get you comfortable using your calculator. Please remember that every calculator is a little different, so we strongly suggest you remember to bring in your own scientific calculator for use - this way you know how to use it.

The key to successful scientific notation is using your calculator correctly. Every calculator has a method for typing in a number with scientific notation - but it is not always obvious. Look at your calculator - there will be one of the following buttons on it:

[EXP] [EE] [E] or [x10^n]

The first three buttons shown allow you to do scientific notation without using parentheses. You must use parentheses if your calculator has the fourth button. Again, your calculator will only have one of the shaded buttons - use whichever one your calculator has. The difficulties with scientific notation happen mostly when dividing numbers, and it is an issue of order of operations: you need to make sure the calculator "knows" exactly what to do. Try the following example

example $\dfrac{2000}{4x10^2} = ?$

If you have a "EXP", "EE" or "E" button on your calculator, press these buttons:

[2] [0] [0] [0] [÷]

[4] [EXP] [2] [=]

If you have the "x10^n" button, press these:

[2] [0] [0] [0] [÷]

[(] [4] [x10^n] [2] [)] [=]

Hopefully, you got 5 for an answer. If not, try again or ask your teacher for help. Now try these on your own to make sure you get the right answer. If you are still making mistakes, call your teacher over for a hand.

1. $\dfrac{3x10^4}{2x10^2}$

2. $\dfrac{5000}{7.5x10^3}$

3. $\dfrac{3x10^5}{(4x10^3)^2}$

4. $\dfrac{(5x10^9)(6x10^5)}{(4x10^9)^2}$

5. $(6.67x10^{-11})\dfrac{65(7.8x10^{23})}{(2.3x10^6)^2}$

Answers: 1) 150 2) 0.667 3) 0.019 4) 1.875 x 10^{-4} 5) 639.3