

How to do calculations:

On your scientific calculator:

Make sure that the number in scientific notation is put into your calculator correctly.

Read the directions for your particular calculator. For inexpensive scientific calculators:

1. Punch the number (the digit number) into your calculator.
2. Push the EE or EXP button. Do NOT use the x (times) button!!
3. Enter the exponent number. Use the +/- button to change its sign.
4. Voila! Treat this number normally in all subsequent calculations.

To check yourself, multiply 6.0×10^5 times 4.0×10^3 on your calculator. Your answer should be 2.4×10^9 .

On your non-scientific calculator:

You will need to be familiar with exponents since your calculator cannot take care of them for you. For an introduction to rules concerning exponents, see this section on Manipulation of Exponents.

Addition and Subtraction:

All numbers are converted to the same power of 10, and coefficient terms are added or subtracted.

$$\text{Example: } (4.215 \times 10^2) + (3.2 \times 10^2) = (4.215 \times 10^2) + (0.032 \times 10^2) = 4.247 \times 10^2$$

$$\text{Example: } (8.97 \times 10^4) - (2.62 \times 10^3) = (8.97 \times 10^4) - (0.262 \times 10^4) = 8.71 \times 10^4$$

Multiplication:

The coefficient terms are multiplied in the normal way and the exponents are added. The end result is changed so that there is only one nonzero digit to the left of the decimal.

$$\text{Example: } (3.4 \times 10^6)(4.2 \times 10^3) = (3.4)(4.2) \times 10^{(6+3)} = 14.28 \times 10^9 = 1.4 \times 10^{10}$$

(to 2 significant figures)

$$\text{Example: } (6.73 \times 10^{-5})(2.91 \times 10^2) = (6.73)(2.91) \times 10^{(-5+2)} = 19.58 \times 10^{-3} = 1.96 \times$$

10^{-2} (to 3 significant figures)

Division:

The digit terms are divided in the normal way and the exponents are subtracted. The quotient is changed (if necessary) so that there is only one nonzero digit to the left of the decimal.

$$\text{Example: } (6.4 \times 10^6)/(8.9 \times 10^2) = (6.4)/(8.9) \times 10^{(6-2)} = 0.719 \times 10^4 = 7.2 \times 10^3$$

(to 2 significant figures)

$$\text{Example: } (3.2 \times 10^3)/(5.7 \times 10^{-2}) = (3.2)/(5.7) \times 10^{(3-(-2))} = 0.561 \times 10^5 = 5.6 \times 10^4$$

(to 2 significant figures)