Chemistry 101 Unit 2
Practice Problems

For each entry below, identify the coefficient, exponential, base and exponent:

Number	coefficient	exponential	base	exponent
5.91×10^{5}				
210×10^{-8}				
0.061×10^{-3}				
4.88×10^{-6}				
3.83×10^{9}				
6.023×10^{23}				
4.18×10^{0}				

Which of the above are not in scientific notation?
Re-write them in scientific notation.

Write the following in scientific notation:

570,000 4,820

0.00699 0.000000311

958×10^{4} 0.0744×10^{-3}

Write the following in ordinary decimal notation:

6.18×10^{4} 225×10^{-1}

3.86×10^{-5} 158×10^{2}

3.99×10^{-2} 1.64×10^{0}

Compute answers for each of the following, with correct units. Which cannot be calculated as written?

1. 15.3×10^{-7} m + 9.7×10^{-7} m =

2. $(4.86 \times 10^{10}$ mm) x $(7.20 \times 10^{6}$ mm) =

3. $(6.49 \times 10^{-3}$ cm^3) / $(1.56 \times 10^{-4}$ cm^2) =

4. 2.33×10^{4} L + 6.18×10^{3} L =

5. $(15.9 \times 10^{-3}$ g) / $(4.47 \times 10^{-3}$ mL) =

6. 2.14×10^{1} g/mL) x $(5.0 \times 10^{1}$ mL) =

7. 5.22×10^{-3} g - 2.18×10^{-3} g =

8. 9.78×10^{4} km - 6.91×10^{2} km =

9. The distance from the earth to the sun is 1.5×10^{8} kilometers. Calculate the number of millimeters this is.

10. Calculate the number of grams in 19.4×10^{-4} kilograms.

11. Calculate the number of milliliters of water in a pool that contains 5.0×10^{7} liters.

12. Calculate the number of ounces in 1.6×10^{4} tons of coal.

13. Determine the number of centimeters in 8.6×10^{-9} km.

14. The human eye is most sensitive to light having a wavelength of 5.55×10^{-9} meters. What is this wavelength in millimeters?

15. An experiment requires 3.59×10^{-2} kg of a chemical. What is this mass in mg?

16. In a water molecule the distance between any one hydrogen atom and the oxygen atom is 9.6×10^{-11} m. What is the distance in cm?