Chemistry 20	Review of Science 10
Unit Conversion and Significant Figures	84 Mins

Unit Conversations

- Refers changing numerical figures from one unit of measurement to another.
- Ex: meters to centimeters, seconds to nanoseconds, milliliters to litres.
- Most follow the nomicature below.

Prefix	Symbol	Multiplication factor		
exa	E	10^{18}	=	1 000 000 000 000 000 000
peta	P	10^{15}	=	1 000 000 000 000 000
tera	T	10^{12}	=	1 000 000 000 000
giga	G	10^{9}	=	1 000 000 000
mega	M	10^{6}	=	1 000 000
kilo	k	10^{3}	=	1 000
hecto	h	10^{2}	=	100
deca	da	10^{1}	=	10
deci	d	10^{-1}	=	0.1
centi	c	10^{-2}	=	0.01
milli	m	10^{-3}	=	0.001
micro	μ	10^{-6}	=	0.000 001
nano	n	10^{-9}	=	0.000 000 001
pico	p	10^{-12}	=	0.000 000 000 001
femto	f	10^{-15}	=	0.000 000 000 000 001
atto	a	10^{-18}	=	0.000 000 000 000 000 001

- Time is the Odd Man Out
    - 3600 sec in 1 hr
    - 60 min in 1 hr
    - 60 sec in 1 min
    - 1000 ms in 1 sec
    - 1000000

Mass:	Distance:
1.55 kg = _____ g	2896 mm = _____ cm
642 g = _____ kg	0.086 cm = _____ mm

Volume:	Time:
0.127 L = _____ mL	4 hrs = _____ min
15.8 mL = _____ L	180 sec = _____ min
981 cm^3 = _____ L	452 μs = _____ sec
2.65 m^3 = _____ cm^3	

Ratios:
Convert numerator and denominators separately, using multiplication inverses when necessary.

How many mL are in 80g of ethanol? (d = 0.79 g/mL)
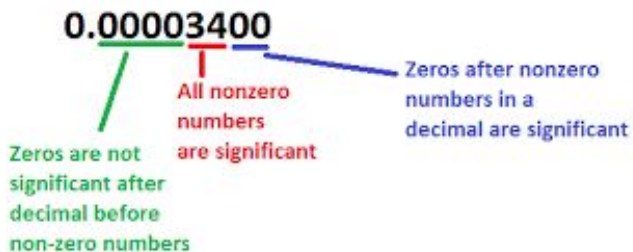
Significant Figures

- Most numbers involved in technical and scientific work are approximate, having been arrived at through some process of measurement.
- However, certain other numbers are exact, having been arrived at through some definition or counting process.

Scientific Notation

- writing large/small numbers using less digits. Using multiplication of powers of 10.
- An example of **scientific notation** is when you write 4×10^3 for 4,000.

NOTES HANDOUT

Significant Figures

0.00003400

Zeros are not significant after decimal before non-zero numbers

All nonzero numbers are significant

Zeros after nonzero numbers in a decimal are significant

1. Convert each of the following numbers to a number having 3 significant figures.
   a. 34.579
   b. 193.405
   c. 23.995
2. Convert each of the following numbers to a number having 4 significant figures.
   a. 99.9975
   b. 11,687.42
   c. 874.992

QUIZ TOMORROW

Chemistry 20 - Unit 0 - Unit Conversions and Significant Figures Practice

Name: _____

1. Convert 25 mL into litres.

2. How many seconds are in 250 µs?

3. Convert 9.5 g into milligrams.

4. Express 1.5 L in kilolitres.

5. Convert 3×10^{-2} mg into decigrams.

6. How many megagrams are in 125 cg?

7. Express $\frac{3.5\ g}{mL}$ in $\frac{kg}{L}$.

8. Express $\frac{0.15\ kmol}{dg}$ in $\frac{mmol}{g}$.

9. Convert each value into correct scientific notation.

a. 0.000 934	d. 496×10^6
b. 7 983 000 000	e. $0.000\ 06 \times 10^1$
c. 0.000 000 000 820 57	f. $309\ 72 \times 10^{-8}$

10. Express each answer using the correct number of significant digits.

a. 55.671 g + 45.78 g	d. 0.350 mL + 1.70 mL +1.019 mL
b. 1.9 mm + 0.62 mm	e. 5.841 cm x 6.03 cm
c. 87.9478 L – 86.25 L	f. 17.51 g ÷ 2.2 cm^3