

Exact numbers: numbers we use in counting and defining other quantities are assumed to be exact and to have an infinite number of significant figures. The number "1" is exact as well and could be expressed as 1.000000000000000

$$2.54 \text{ cm} = 1 \text{ in}$$

$$100 \text{ pennies} = \$1.00$$

$$12 \text{ in} = 1 \text{ ft}$$

$$3 \text{ ft} = 1 \text{ yd}$$

$$144 \text{ pencils} = 1 \text{ gross}$$

$$500 \text{ sheets of paper} = 1 \text{ ream}$$

$$60 \text{ sec} = 1 \text{ min.}$$

$$60 \text{ min.} = 1 \text{ hr}$$

$$24 \text{ hr} = 1 \text{ day}$$

$$365 \text{ day} = 1 \text{ yr.}$$

$$1000 \text{ mm} = 1 \text{ m}$$

$$10 \text{ mm} = 1 \text{ cm}$$

$$1,000,000 \mu\text{m} = 1 \text{ m}$$

$$1 \text{ t (ton, short)} = 2000 \text{ lb}$$

$$4 \text{ qt} = 1 \text{ gal}$$

$$16 \text{ oz (dry)} = 1 \text{ lb}$$

$$5,280 \text{ ft} = 1 \text{ mile}$$

$$1 \text{ L} = 1 \text{ dm}^3$$

$$\text{The } 1.8 \text{ \& } 32 \text{ in } F = 1.8^\circ C + 32$$

$$\text{The } 273.15 \text{ in } K = ^\circ C + 273.15$$

$$2 \text{ cups} = 1 \text{ pint}$$

$$2 \text{ pints} = 1 \text{ qt}$$

$$1 \text{ mL} = 1 \text{ cm}^3$$

$$1 \text{ quart} = 32 \text{ fl oz}$$

$$1 \text{ bar} = 10^5 \text{ pascals}$$

$$760 \text{ torr} = 760 \text{ mm Hg} = 1 \text{ atm}$$

*This is not a definitive list and certainly can be enhanced. Please feel free to explore this problem of exact versus inexact. Please tell me if you spot any errors and I will amend the list. **Keep this sheet handy because it contains many of the conversion factors that you need for this class.**

Inexact numbers: approximate numbers, numbers obtained from measurements. Again, the "1" can be considered exact. Usually when one is going across units, the numbers are not exact and you want to use conversion factors that have more precision than the numbers being converted.

$$1 \text{ mi} = 1.6093 \text{ km}$$

$$1 \text{ m} = 1.0936 \text{ yd}$$

$$1 \text{ lb} = 453.59237 \text{ g}$$

$$1 \text{ oz} = 28.35 \text{ g}$$

$$1 \text{ ton (short)} = 907.18 \text{ kg}$$

$$1 \text{ kg} = 2.2046 \text{ lb}$$

$$1 \text{ qt} = 9.4635 \times 10^{-4} \text{ m}^3$$

$$1 \text{ qt} = 0.94635 \text{ L}$$

$$1 \text{ L} = 1.0567 \text{ qt}$$

$$1 \text{ amu} = 1.6606 \times 10^{-24} \text{ g}$$

$$1 \text{ gallon} = 3.7854 \text{ L}$$

$$1 \text{ atm} = 101.325 \text{ k Pascals}$$

$$1 \text{ mole} = 6.022 \times 10^{23} \text{ particles}$$

$$1 \text{ atm} = 14.700 \text{ pds/in}^2$$