Measurements

Metric System

Measurements are observations that are expressed as numbers.

Measurement = number + unit

S.I.- International system of measurement (metric system)

Important to use the same system:

Never equal when you convert (Round).

In science you must be able to reproduce results.

Why use measurements?

vs personal observations

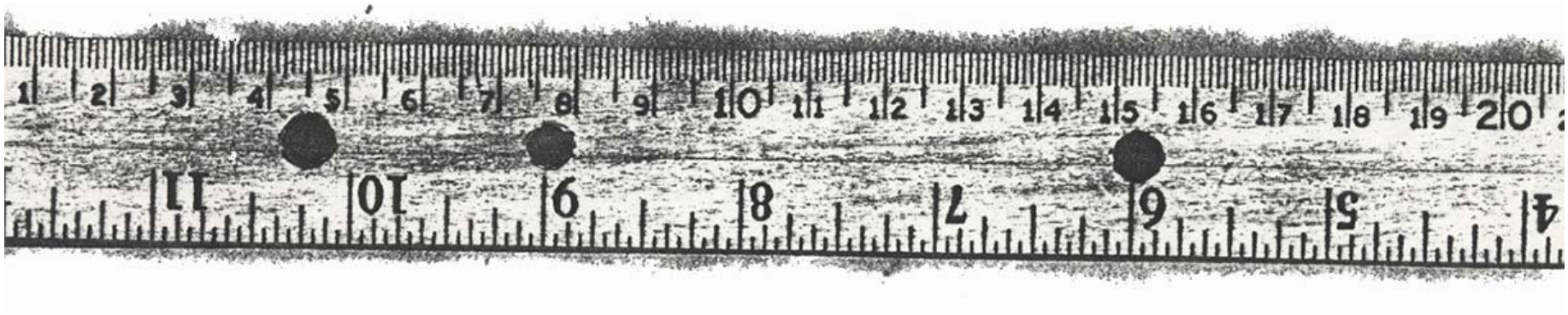
Subjective

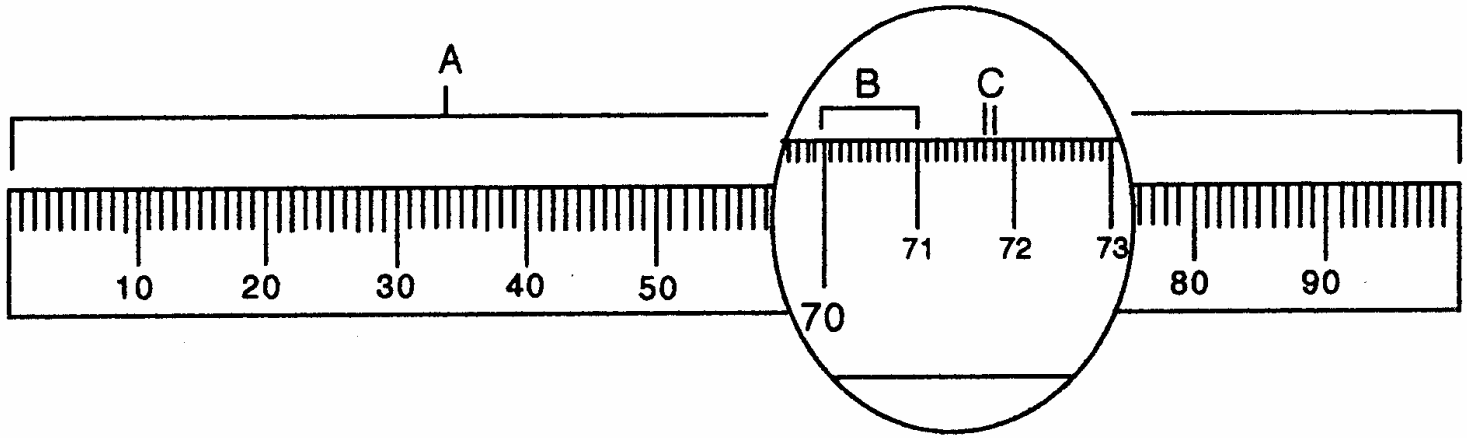
Objective- BEST

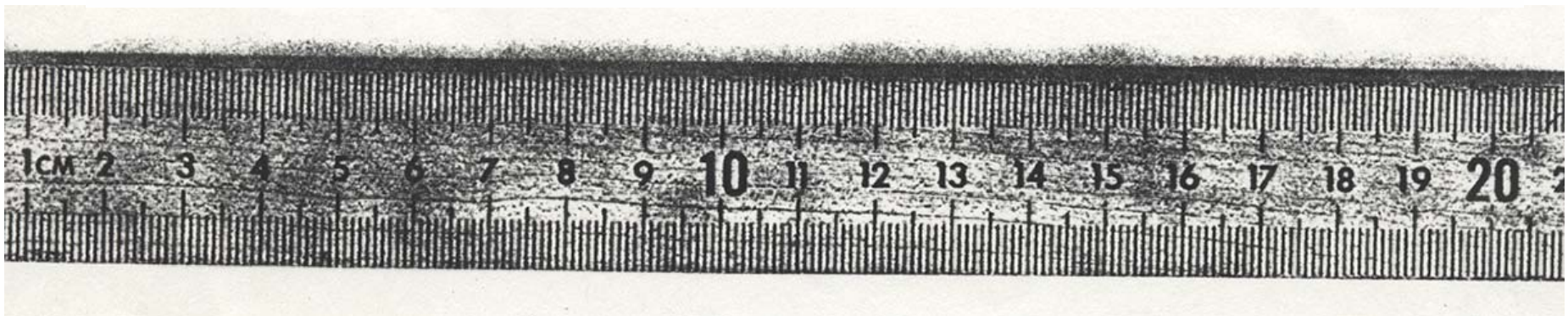
5 ways to measure (units)

1. Length - meter

   Solid, liquid and gas

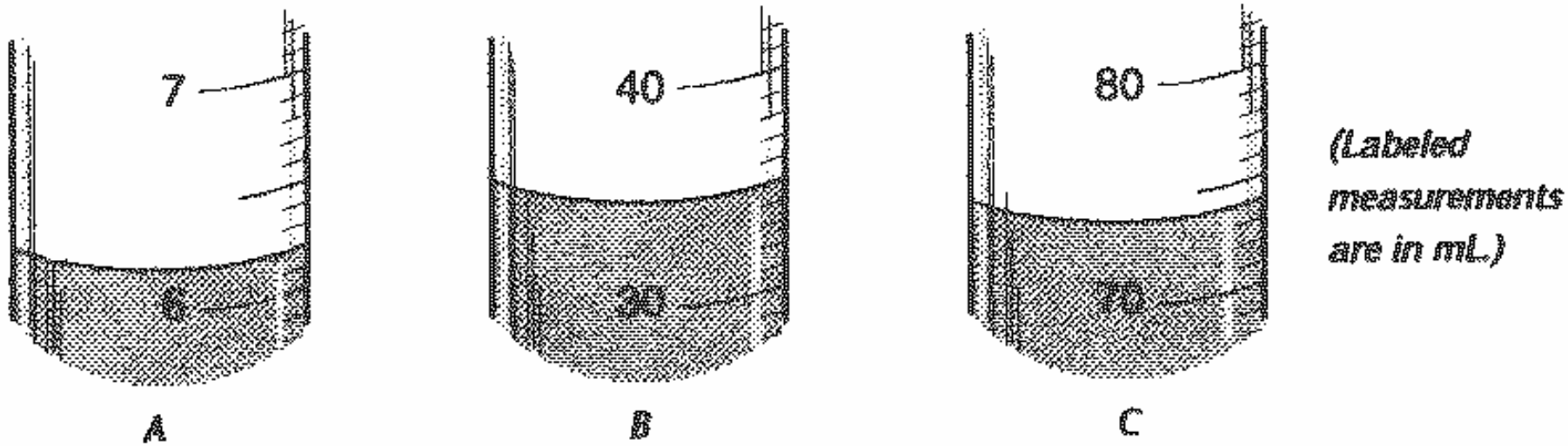



A
B
C
10
20
30
40
50
70
71
72
73
80
90


1CM
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

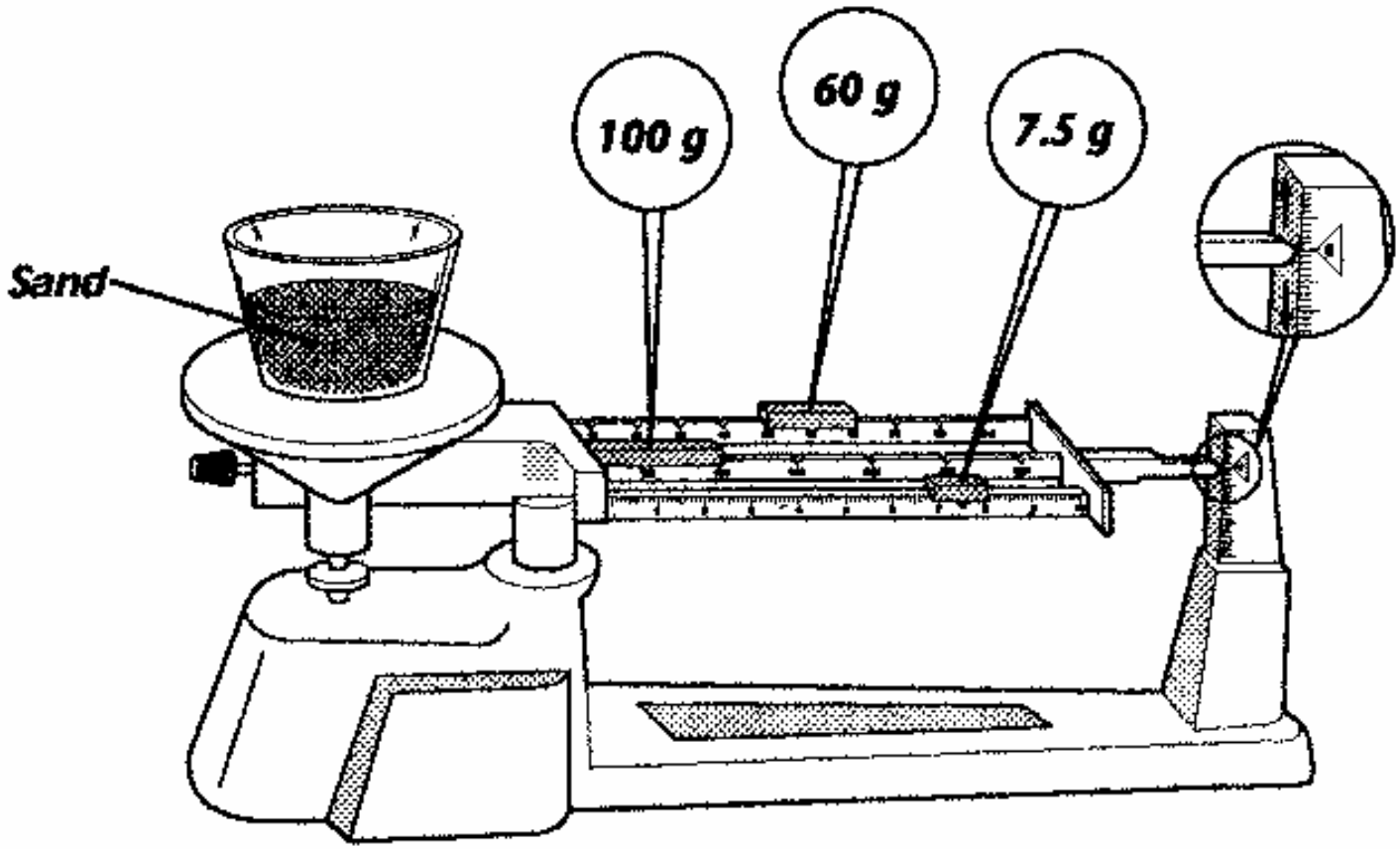
2. Volume - liter

Solid, liquid and gas

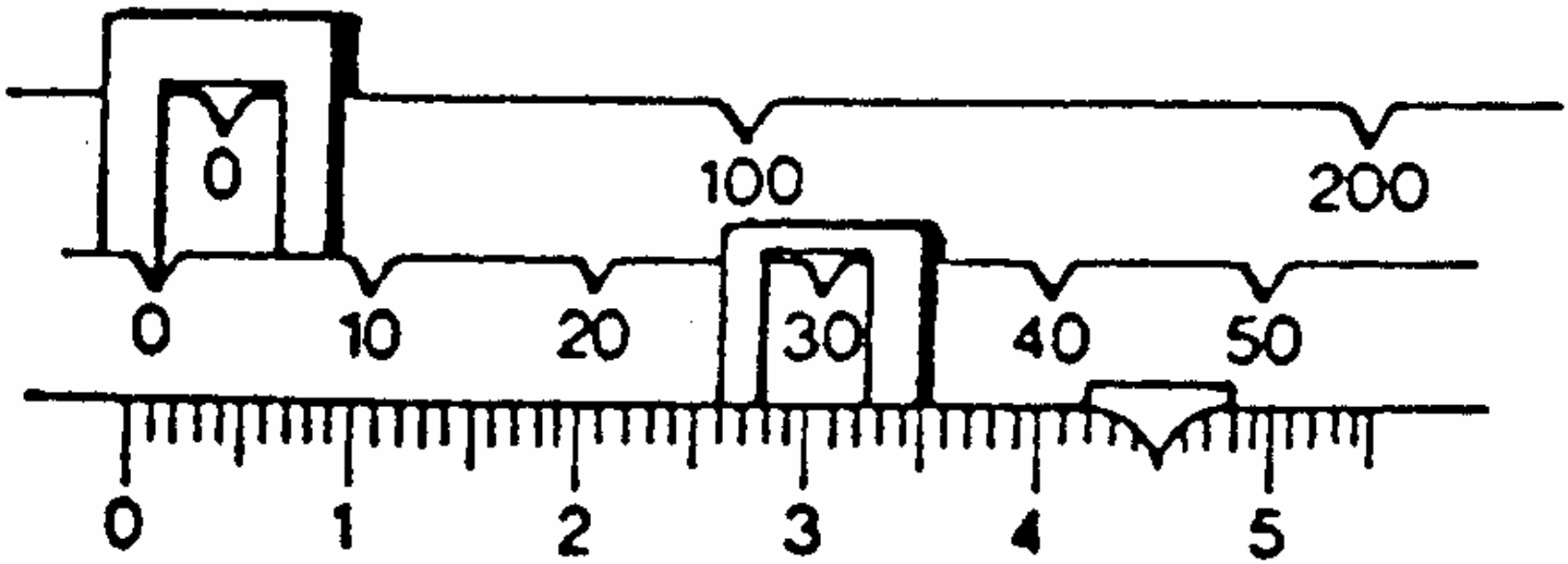


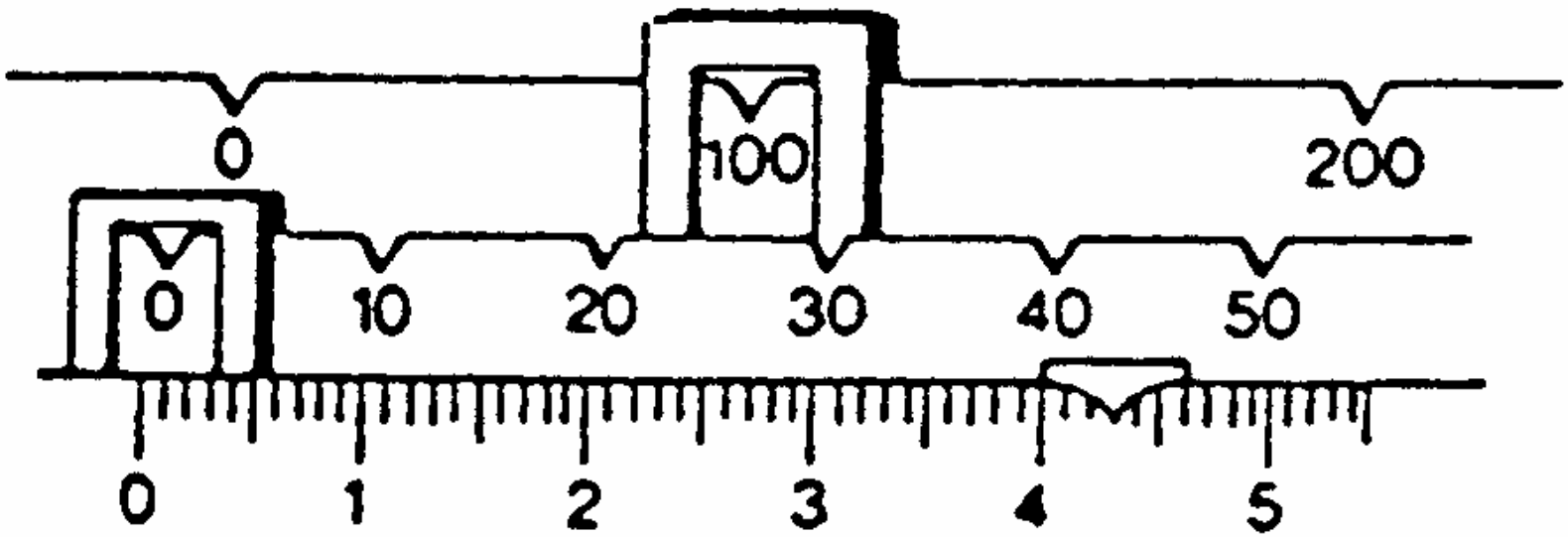
3. Mass - gram <u>NOT weight</u>

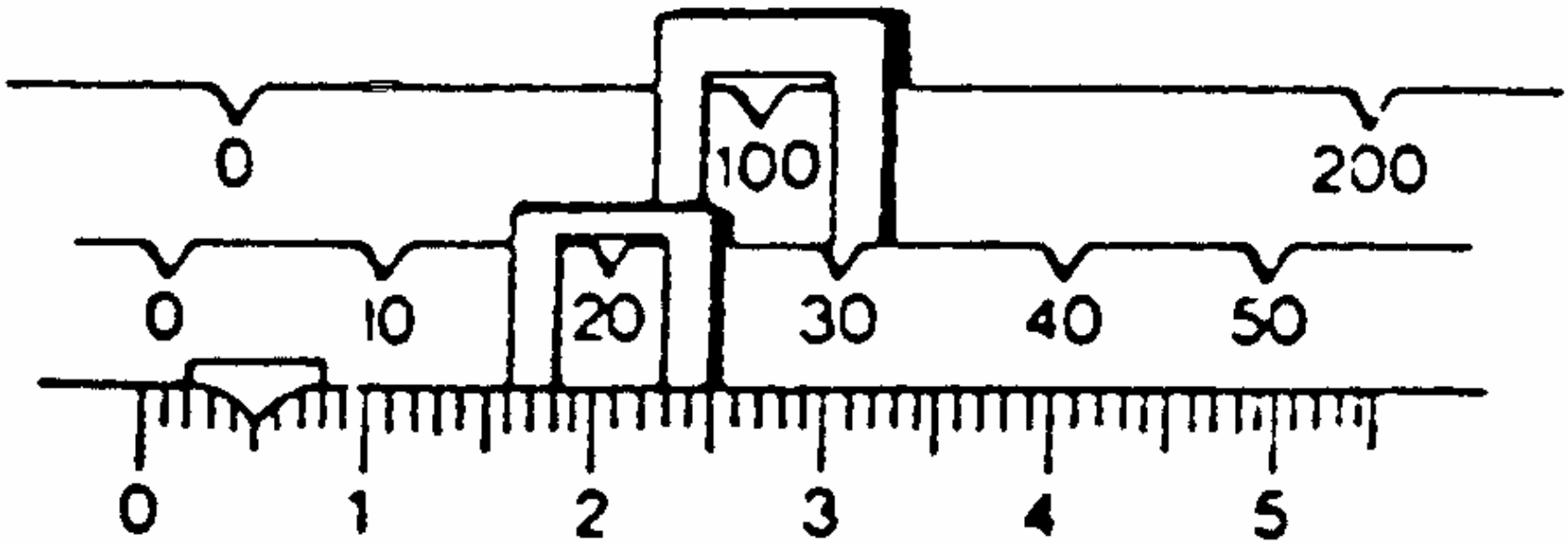
Solid, liquid and gas



http://www.exploratorium.edu/ronh/weight/index.html


0
100
200
0
10
20
30
40
50
0
1
2
3
4
5


0
100
200
0
10
20
30
40
50
0
1
2
3
4
5


0
100
200
0
10
20
30
40
50
0
1
2
3
4
5

4. Temperature - Centigrade/ Celsius

$32\ ^0F = 0\ ^0C$

$212\ ^0F = 100\ ^0C$

Convert between ^0F and ^0C

$(\ ^0F - 32)\ 5/9 = \ ^0C$

$(9/5\ ^0C) + 32 = \ ^0F$

http://www.sciencemadesimple.com/conversions.html

5. Time - seconds

LIST 9–2. STANDARD METRIC UNITS

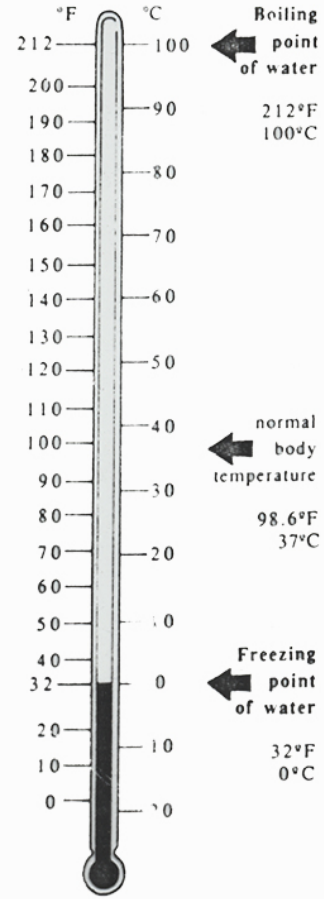
METRIC UNIT	*NAME*	*ABBREVIATION*
Standard unit of mass	gram	g
Standard unit of length	meter	m
Standard unit of volume	liter	l

Metric/English Conversions

TO CONVERT FROM	*TO*	*MULTIPLY BY*
inches	centimeters	2.54
feet	centimeters	30.5
centimeters	inches	0.39
millimeters	inches	0.039

Temperature Conversion

TEMPERATURE	*SOME EQUIVALENTS*
$°C = \frac{(°F - 32)}{9} \times 5$	0°C = 32°F 1°C = 1.8°F 10°C = 18°F
or	
$C = (°F - 32) \div 1.8$	
$°F = \frac{°C \times 9}{5} + 32$	16°C = 61°F 37°C = 98.6°F 100°C = 212°F
or	
$°F = (°C \times 1.8) + 32$	



Accuracy -

The smallest calibration on your equipment.

You MUST use significant figures to show this accuracy in your data.

Degree of certainty of measured values.

Precision-

The ability to get the same measurement EVERY time.