# Measurement and Experimental Techniques

Content 🚄

## Physical Quantities and their related S.I Units and Basic Conversion

Physical Quantity	S.I Unit	Conversions
Mass	kilogram (kg)	1kg = 1000g
		1 tonne = 1000kg
Time	second (s)	1h = 60mins
		1 min = 60s
Temperature	Kelvin (K)	Degrees (K) = Degrees in Celsius
		+273
Volume	Cubic metre ( $m^3$ )	$1m^3 = 1000dm^3$
		$1dm^3 = 1000cm^3$

## Physical Quantities and the Apparatus used

Physical Quantity	Apparatus Name	Degree of Accuracy
Mass	Beam Balance	$\pm 0.05g$
	Electronic Balance	$\pm 0.01g$
Time	Stopwatch (Analogue)	$\pm 0.1s$
	Stopwatch (Digital)	$\pm 0.01s$
Temperature	Mercury/Alcohol in-glass thermometer	±0.5°C
	Data Logger with Temperature Sensor	Undefined (more accurate)
Volume (Liquid)	Measuring Cylinder	nearest 0.5cm <sup>3</sup>
	Burette	nearest 0.05cm <sup>3</sup>
	Pipette	Fixed Volumes
Volume (Gas)	Gas Syringe	nearest 1cm <sup>3</sup>

## Chemicals used for drying Gases

Drying Reagent Name	What it <b>cannot</b> dry
Concentrated Sulfuric Acid	Alkaline gases
Quicklime	Acidic Gas
Fused Calcium Chloride	-

#### Methods of Gas Collection



#### Test yourself

- 1. What is the SI Unit for? Give appropriate conversions of units
  - i. Mass
  - ii. Volume
  - iii. Temperature
  - iv. Gas Volume
- 2. State 3 drying agents and what gases is can and cannot dry?
- 3. 3 gases, Ammonia, Hydrogen, Oxygen are meant to be collected, suggest an acceptable setup to obtain a clean dry measurable sample?