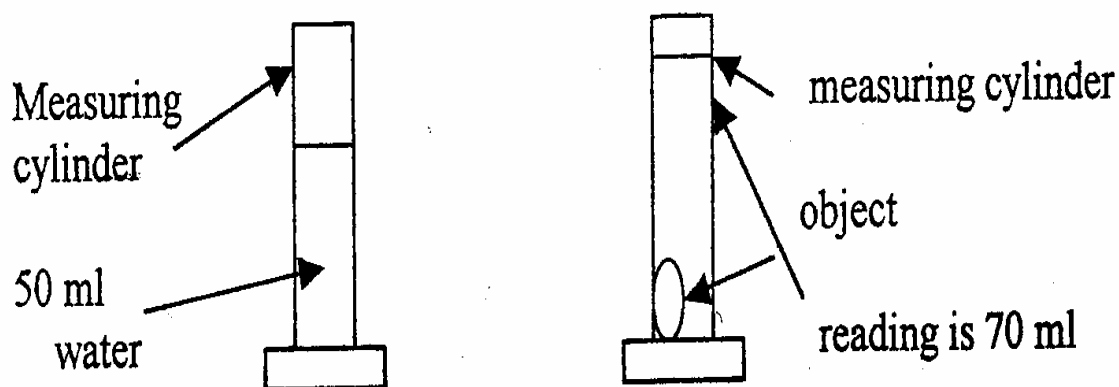


SENIOR PREP COURSE SUMARY SHEETS

1. We can measure various things using a variety of measuring devices.

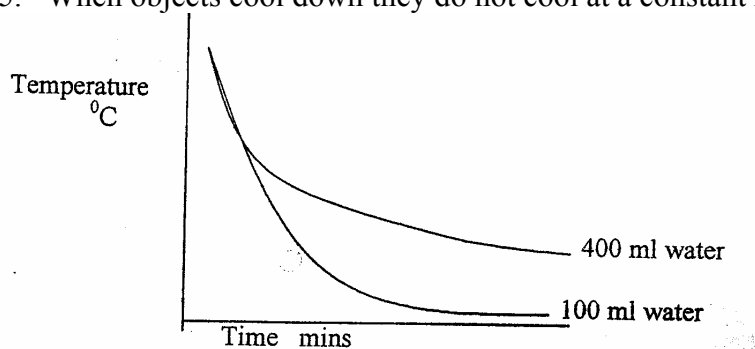
Thing to be measured	Units	Equipment used
Length, height	Metres (m), centimetres (cm)	Ruler, meter stick
Volume	Litres (l), millilitres (ml)	Measuring cylinder
Mass	Kilograms (kg), grams (g)	Beam balance, top pan balance
Time	Minutes (min), seconds (s)	Stopwatch
Temperature	Degrees centigrade (°C)	thermometer
Energy	Joules (J), kilojoules (kJ)	Joulemeter

2. Volumes of irregular shaped objects can be measured by displacement of water.



$$\text{volume of object} = 70 - 50 = 20\text{ml}$$

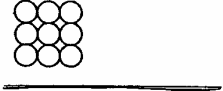
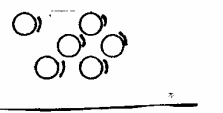
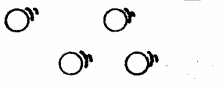
- The period of a pendulum is the time taken for a pendulum to return to its starting position.
- The period of a pendulum only depends upon the length of string used. The longer the string the greater the period.
- When objects cool down they do not cool at a constant rate.



A cooling curve

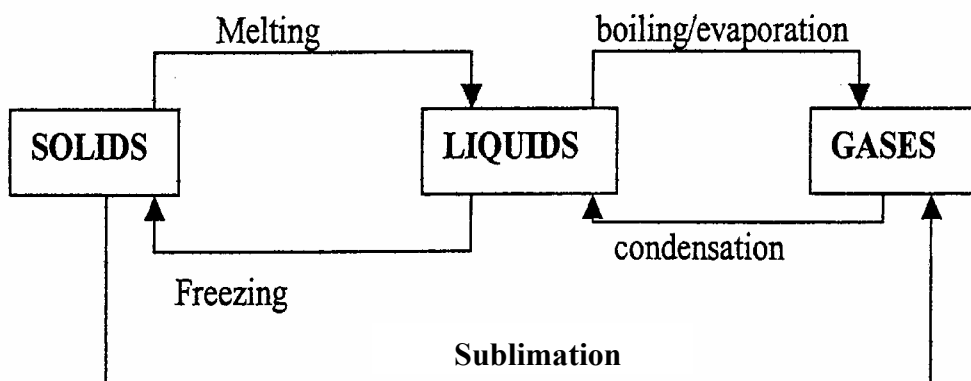
6. Substances exist in three different states. SOLIDS, LIQUIDS, and GASES.

7. Properties of different states

STATE	SHAPE	VOLUME	PARTICLES
Solids	Fixed	Fixed	Particles close together can only vibrate back and forward 
Liquids	Unfixed	Fixed	Particles slightly further apart. Free to move over one another. 
Gases	Unfixed	Unfixed	Particles far apart. Free to move quickly throughout space. 

8. Gases can be compressed (squashed) solids and liquids cannot.

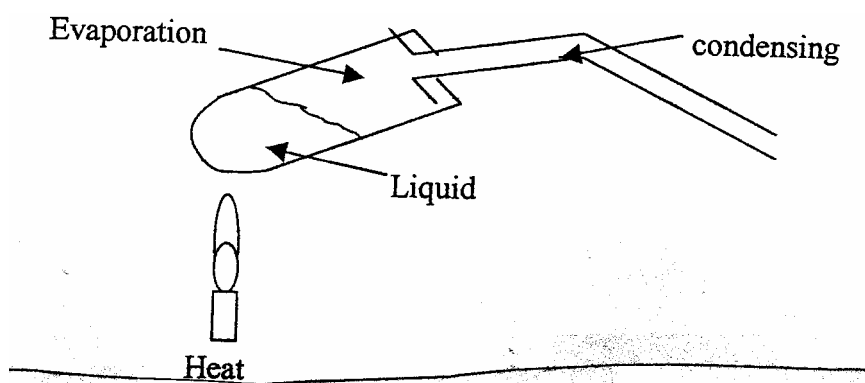
9. Substances can change from one state to another.



10. Boiling point is the temperature at which a liquid turns into a gas or a gas into a liquid.

11. Melting point is the temperature at which a solid turns into a liquid or a liquid into a solid.

12. Distillation



13. When gas particles move to totally fill a space, this is an example of DIFFUSION.
14. Gas particles move at different speeds. The heavier the particles the slower they move.
15. Particles move quicker as the temperature is increased.
16. An atom is the smallest particle from which everything is made.
17. A molecule is a group of atoms joined together.
18. When a solid dissolves in a liquid there is a smaller volume increase than expected due to the solid particles being able to fit between the spaces between the particles in the liquid.
19. Elements are the simplest type of substance.
20. The atoms in elements are all the same.
21. The names of all the known elements can be found in the PERIODIC TABLE.
22. Elements cannot be changed into other elements by chemical reactions.
23. Elements can join together to make compounds.

Copper + sulphur \longrightarrow copper sulphide

Copper + oxygen \rightarrow copper oxide

WORD EQUATIONS

24. Compounds can be changed back into elements by chemical reactions.

Methods

Copper oxide \longrightarrow copper

Copper oxide + carbon \longrightarrow copper + carbon dioxide

25. The air is a mixture of gases. Mostly Nitrogen (about 80%) and oxygen (about 20%) with small amounts of other gases.

26. TESTING GASES

Carbon dioxide is the only gas which changes limewater milky from clear.

Oxygen is the only gas which can relight a glowing splint.

There is not a simple test for nitrogen.

27. Energy is the ability for something to do work.

28. Energy cannot be created nor destroyed.

29. There are various forms of energy.

POTENTIAL ENERGY (STORED), KINETIC ENERGY (MOVING), HEAT ENERGY, NUCLEAR ENERGY, SOUND ENERGY, LIGHT ENERGY, ELECTRICAL ENERGY

30. Energy can be changed from one form to another.

Electric motor

Electrical \longrightarrow kinetic energy

Solar cell

Light \longrightarrow electrical energy

Dynamo

Kinetic \longrightarrow electrical energy

31. We use most energy in our homes for heating.
32. We obtain most of our energy from fossil fuels.
33. We must find other sources of energy because fossil fuels will run out.
34. We can reduce the amount of energy we use by saving energy in our house

- eg. Double glazing, good loft insulation.
35. We generate electricity for our homes in a power station.
 36. There are a number of different types of power stations: coal/gas, hydroelectric, geothermal, nuclear as well as other ways to make electricity such as wind farms, wave power and solar farms.
 37. Burning coal and gas damage the environment.