

St. Ninian's High School



S1 Science Unit 4 - Chemistry Self-Checks



Self-Check 4.1 (Solids, Liquids and Gases)

1) Copy and complete the following statements:

Solids: have a _____ shape and a _____ volume.

Liquids: have a _____ volume but _____ fixed shape.

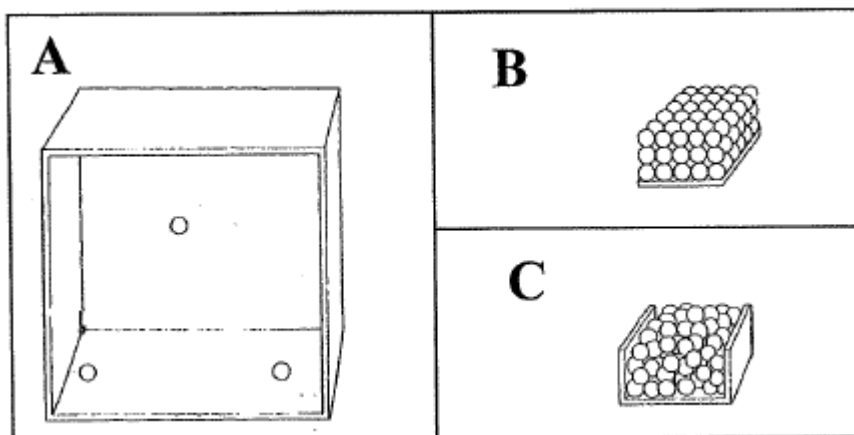
Gases: have _____ fixed shape and no fixed _____.

2) What state of matter are the following

Substance	Fixed Volume / No Fixed Volume	Fixed Shape / No Fixed Shape	Solid, liquid or gas
Shower Gel			
Shaving Foam			
Toothpaste			
Hairspray			
Sand			
Carbon dioxide			
Helium			
Soap/Hand wash			
Sugar			

Self-Check 4.2 (Arrangement of Particles)

1) Look at the drawings A, B and C below.



- (a) Which shows the arrangement of atoms in a solid?
- (b) Which shows the arrangement of atoms in a liquid?
- (c) Which shows the arrangement of atoms in a gas?

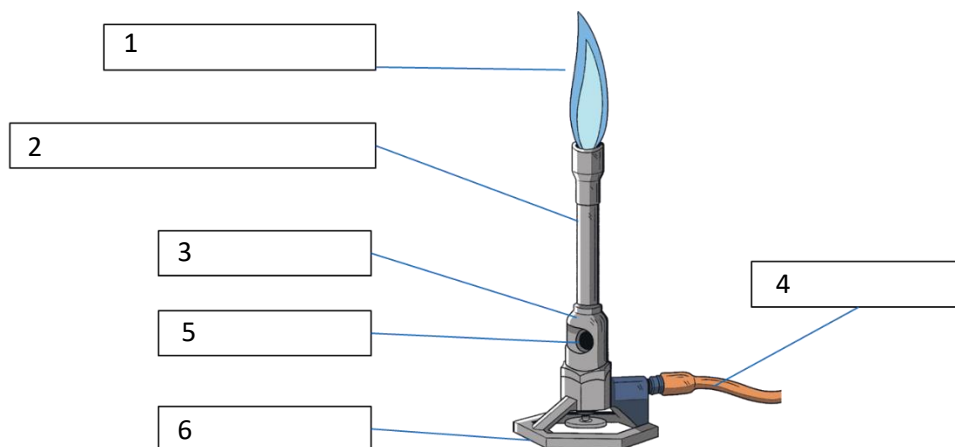
2) Comparing Solids, Liquids and Gases

- (a) Which have the biggest spaces between atoms?
- (b) Which have a regular arrangement of atoms?

Self-Check 4.3 (Bunsen burner)

Keywords

- collar
- tubing
- air hole
- roaring flame
- yellow flame
- chimney
- base



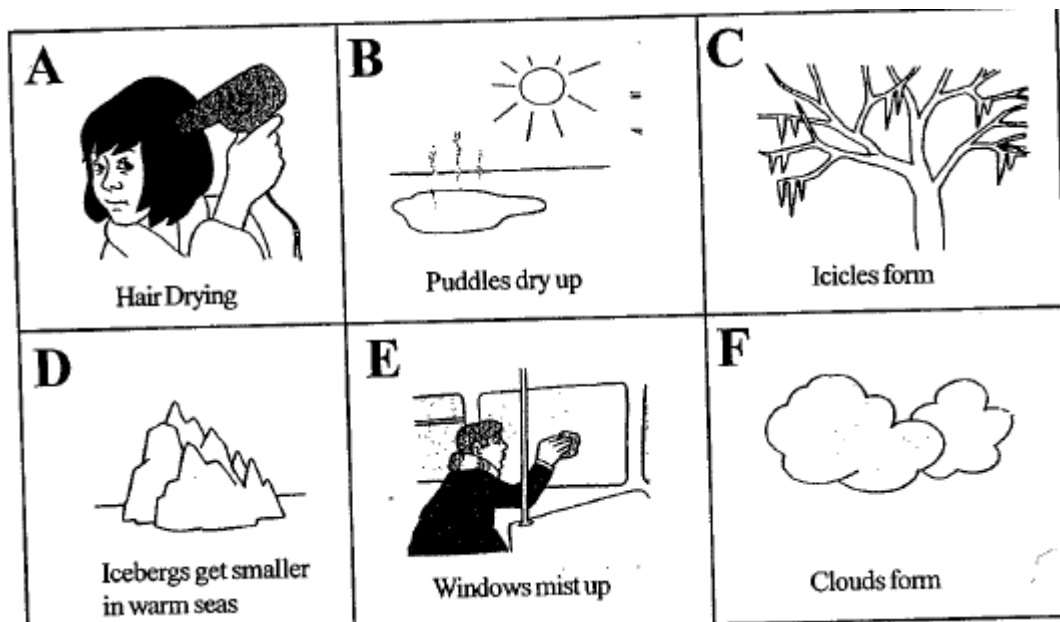
1) Complete the labelling for the parts of the Bunsen burner 1-6 in the diagram above

2) Copy and complete the table below

	Colour of the Flame	Sound of the Flame	When Is It used?	Amount of Oxygen
Air Hole Open				
Air Hole Half Open				
Air Hole Fully Closed				

Self-Check 4.4 (Changes of State)

- 1) Use the words Evaporation, Condensation, Melting and Freezing to describe what is happening in the pictures below.



- 2) When water evaporates the molecules.

- A get bigger
- B get smaller
- C move closer together
- D move further apart

- 3) When water freezes the molecules

- A get bigger
- B get smaller
- C move closer together
- D move further apart

Self-Check 4.5 (The Periodic Table)

Using the data book from the trolley to help you. Answer the following.

1) What are the atomic numbers of the following elements?

- | | | |
|-------------|---------------|---------------|
| (a) Silicon | (b) Chlorine | (c) Helium |
| (a) Neon | (e) Calcium | (f) Sulfur |
| (g) Lithium | (h) Magnesium | (i) Aluminium |

2) Identify the elements which have the following symbols

- | | | |
|--------|-------|--------|
| (a) Na | (b) K | (c) O |
| (d) Pb | (e) I | (f) Ne |
| (g) Al | (h) P | (i) Kr |

3) What are the chemical symbols for the following elements?

- | | | |
|---------------|--------------|---------------|
| (a) Magnesium | (b) Silicon | (c) Germanium |
| (d) Strontium | (e) Xenon | (f) Bromine |
| (g) Arsenic | (h) Antimony | (i) Silver |

Self-Check 4.6 (Elements, mixtures and compounds)

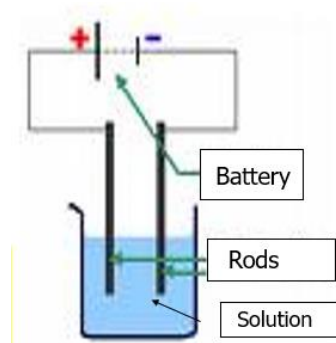
1) Look at the names of the compounds below. Name the elements which are present in each compound.

- | | |
|------------------------|------------------------|
| (a) hydrogen sulfide | (b) magnesium oxide |
| (c) potassium chloride | (d) potassium sulfide |
| (e) sulphur chloride | (f) silicon oxide |
| (g) chlorine oxide | (h) magnesium chloride |
| (i) sodium chloride | (j) sodium iodide |
| (k) carbon chloride | (l) magnesium iodide |

2) Look at the names of the compounds below. Name the elements which are present in each compound.

- | | |
|---------------------|-----------------------|
| (a) calcium nitride | (b) copper chloride |
| (c) aluminium oxide | (d) magnesium nitride |
| (e) iron sulfide | (f) copper oxide |

Self-Check 4.7 (Breaking compounds)



- 1) What is the name of the technique you have used to break down compounds?
- 2) What do you use to break the compound?
- 3) Name the elements that would be found if you were to break the following compounds?
 - (a) hydrogen sulfide
 - (b) potassium chloride
 - (c) sulfur chloride
 - (d) chlorine oxide
 - (e) sodium chloride
 - (f) carbon chloride
 - (g) nitrogen iodide
 - (h) potassium oxide
 - (i) nitrogen oxide
 - (j) tin chloride
 - (k) magnesium oxide
 - (l) potassium sulfide
 - (m) silicon oxide
 - (n) magnesium chloride
 - (o) sodium iodide
 - (p) magnesium iodide
 - (q) aluminium chloride
 - (r) potassium iodide
 - (s) nitrogen chloride
 - (t) phosphorous oxide

Self-Check 4.8 (Filtration and Evaporation)

1) Comparing sand and salt

- (a) Which is soluble in water?
- (b) Which is insoluble in water?
- (c) Which can be removed by filtration?

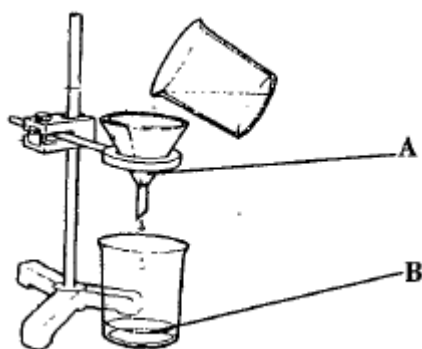
2) What would you do to muddy water to remove the mud?

- A melt it
- B evaporate it
- C filter it
- D dissolve it

3) What would you do to salty water to get the salt?

- A melt it
- B evaporate it
- C filter it
- D dissolve it

4) Look at the diagram below which shows filtration of a mixture of sand, salt and water.



(a) Using the letters A & B

- i) Where is the sand after it is filtered?
- ii) Where is the salt after it is filtered?
- iii) Where is the water after it is filtered?

(b) Salt dissolves in water, what word describes things which dissolve in water?

(c) Draw a diagram of the other technique required to separate the remaining mixture

Self-Check 4.9 (The pH Scale)

- 1)
 - (a) How can the pH of a solution be measured?
 - (b) What colour does universal indicator turn in acid solutions?
 - (c) What is the pH range for acids?
 - (d) What colour does universal indicator turn in alkaline solutions?
 - (e) What is the pH range of alkalis?
 - (f) What colour do neutral solutions turn universal indicator?
 - (g) What is the pH of neutral solutions?

- 2) A pupil measured the pH of a solution of vinegar. He found that it had a pH of 5.
 - (a) What does the pH tell us about the vinegar?
 - (b) What would happen to the colour of the universal indicator if it were added to the vinegar?

- 3) A pupil took some table salt and dissolved it in water. She found out that table salt is neutral.
 - (a) What pH would the solution of table salt have had?
 - (b) What would happen to the colour of the universal indicator if it were added to the salt solution?