

SCIENCE 8- UNIT 1- REVIEW PACK

Unit 1 – Mix and Flow of Matter









Complete each of the following questions, relating to the specific learner outcomes, covered this year in Grade 8. The questions in this review reflect what you should have mastered and will be tested on in the Final Achievement Exam. The answers will be covered in class.

Part 1 – ~~WHMIS Symbols and Safety Procedures~~

What does the acronym W.H.M.I.S. stand for?

Workplace Hazardous Materials InformationSystem

Identify the WHMIS symbols illustrated and explain what Safety procedures should be followed. **P. 481**

Symbol	Type of Hazard	Safety Procedure
	Compressed Gas	
	Flammable and Combustible Material	
	Oxidizing Material	
	Poisonous and Infectious Material Causing Immediate and Serious Toxic Effects	
	Poisonous and Infectious material causing other toxic effects.	
	Biohazardous Infectious	
	Corrosive Material	
	Dangerously Reactive.	

Describe 'Slurry' technology

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Part 2 – Properties of matter, using the Particle Model

What properties distinguish solids, liquids and gases (p.7)?

Solids	Liquids	Gases
Definite Shape/Volume	Definite Volume No Definite Shape	No Definite Volume /Shape
Particles Tightly Packed	Particles have some space between them	Particles have large spaces between them
Particles Vibrate in place.	Particles move "slowly" from place to place.	Particles move "quickly" from place to place.

What are the key ideas in the Particle Model of Matter (p. 8)?

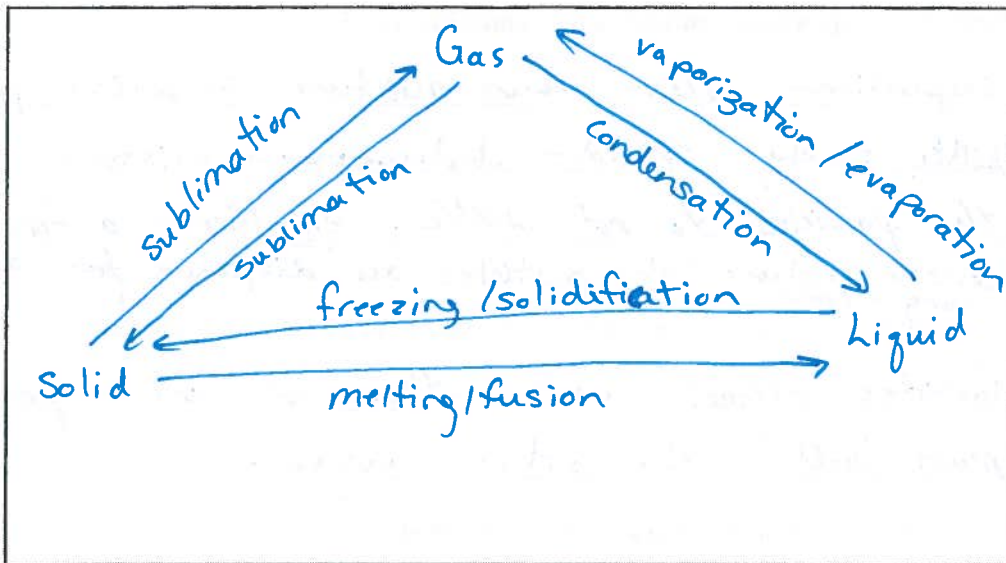
All substances are made of tiny particles. All particles in a pure substance are the same and different from other substances. The particles have space between them. The particles are always in motion. The particles are attracted to one another.

Describe the action of particles in solids, liquids and gases. (p. 9-10)

Solids	Liquids	Gases
vibrate in place	vibrate in place	vibrate in place
do not move freely	move freely	move very freely
very strong attraction	some attraction	weak attractions

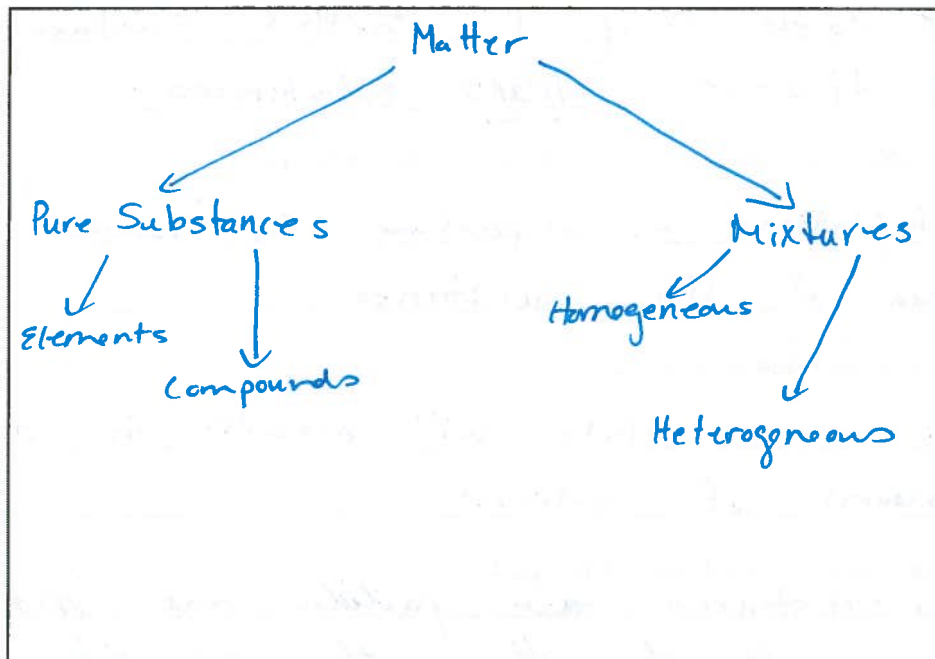
Part 3 – Changes of State

Describe the Changes of State and the terminology used, when a substance undergoes a specific change of state. (p. 11-12)



Part 4 – Classification of Matter

How is matter classified? (p. 13)



Part 5 - Solutions

Describe a suspension, a colloid, and an emulsion. (p.15)

suspension - heterogeneous mixture in which particles settle slowly. colloid - heterogeneous mixture where the particles do not settle. emulsion - a form of colloid where the particles are dispersed for an exceptionally long time.

What conditions must be present to enable a material to dissolve in another material? (p.17)

Different particles attract each other and one particle must "pull" the other away.

Explain the difference between a solute and a solvent. (p.18)

Solute - substance that dissolves.
solvent - substance that does the dissolving.

Why is water called 'the universal solvent'? (p.19)

It covers $\frac{2}{3}$ of the Earth's surface and it dissolves many substances.

What affects the rate at which a material will dissolve? (p.19)

1. Agitation 2. Temperature 3. Pressure 4. Surface Area of the substance

What is a saturated solution? (p.21)

No more solute will dissolve in a set amount of solvent

Why are some substances insoluble? (p.24)

The substances ~~are~~ particles are more attracted to each other than the solvent's particles.

Part 6 - Separation Methods

Describe the 'desert tent' method of separation. (p.28)

Energy (Sun) causes water to evaporate. The steam contacts the tent (plastic), cools and turns to a liquid and is then collected.

What is desalination? (p.28)

→ Removing the salt from salt water.

Describe how distillation is able to separate the parts of a solution. (p.29)

Distillation evaporates a solvent to separate it from the solute, then condenses it to a liquid in order to collect it.

How is petroleum separated and the fractional parts collected? (p.30)

Gas is heated travelling up a tower. In separate chambers the gas is cooled & recondenses. The liquid is collected in separate containers. Different products are formed from each re-condensed liquid.

How is ore (such as gold) mined and collected? (p.31)

Ore is crushed, mixed with water to create a suspension. Chemicals are added to dissolve the gold; it is then passed thru filters to separate it from waste.

Describe, in general terms, how sugar is processed from sugar cane. (p.36)

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Part 7 – Properties of gases and liquids (using the Particle Model)

Viscosity – Density - Buoyancy - Pressure

How is the thickness or a thinness of a fluid measured and what is it called? (p. 40)

Thickness/thinness is called viscosity it can be measured by determining flow rate.


Describe some practical applications of the knowledge about viscosity. (p.45)

Cosmetic Industry
Paint Industry
Maple Syrup production. [Food Industry]

How is viscosity in different fluids affected by temperature? (p. 48-49)

liquid: as temp increases viscosity decreases.
gas: " " " " increases.

Calculate density using a formula. (p.57)

$$D = \frac{m}{V}$$


How are mass and volume related, when determining density?

→ Mass is divided by volume. When Density remains constant: if mass is increased volume decreases
if " is decreased " increases.

Describe the density of solids liquids and gases, using the particle model. (p.51)

Solids - usually most dense because particles are tightly packed.

Liquids - usually medium density because particles are somewhat packed.

Gases - usually low density because particles are loosely packed.

How is buoyancy determined?

Buoyancy is based on the upward force, (buoyant force) compared to the objects weight/gravitational force.

Describe how a ship (made out of steel) can float.

Its average density is lowered by increasing the surface area in contact with the water and/or adding air pockets to its design.

How does a 'cartesian diver' work?

Squeezing the bottle causes air to flow out of the "diver" making it sink. Releasing the bottle causes air to flow into the "diver" making it rise.

What is average density and what benefits does it have?

Total mass of all substances divided by total volume. If average density is lowered it is more likely the object(s) would float in water.

Explain 'Archimedes Principle' and how he came to formulate it.

Buoyant force acting on an object equals the weight of the fluid displaced.

He formulated it by submerging himself into a full bath and collecting the water that ran out of it -

Describe how scuba gear works. (p. 69)

Filling the gear with air lowers ^{average} density allows the diver to rise.

Releasing air from the gear increases average density causing the diver to sink.

Calculate pressure using a formula.

$$p = \frac{F}{A}$$

What conditions must be met to compress a gas? (p. 73)

1. Gas must be in a sealed container. 2. There is enough space between the particles for the substance to act like a gas. 3. A force is applied to the container.
Provide some examples of the advantages of compression.

Counterforces - pushing back on forces applied
e.g. wheels for vehicles, airbags, air mattresses, tobogganing tubes etc.

What effect does atmospheric pressure have on our body? (p.75)

As it increases it will cause our ears to "pop".

How is atmospheric pressure affected by altitude? (p.75)

As altitude increases atmospheric pressure decreases.

Describe how a fire extinguisher works. (p.79)

As liquid CO_2 exits the chamber they gain energy changing into a gas and removing the heat from its surroundings extinguishing the fire.

Describe the components needed to make a hydraulic system. (p.80)

Force is exerted on a continuous, enclosed liquid.

The applied force moves the liquid which causes motion at the other end of the system.

What is the primary difference between hydraulic systems and pneumatic systems? (p.81)

hydraulic systems involve "compressed" liquids and pneumatic systems involve compressed gases.