1.0 *Fluids are used in Technological devices and common everyday materials*

Key Concepts • Workplace Hazardous Materials Information System (WHMIS) and safety
• fluid properties

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

W _____ **H** _____ **M** _____ **I** _____ **S** _____

Recognition of **WHMIS** symbols is important to lab safety. Identify the following WHMIS symbols.

	_____		_____
	_____		_____
	_____		_____
	_____		_____

Fluids are used in many different ways. Describe how fluids are used in the following processes:

Slurries _____

_____

Glass Production _____

_____

Toothpaste _____

_____

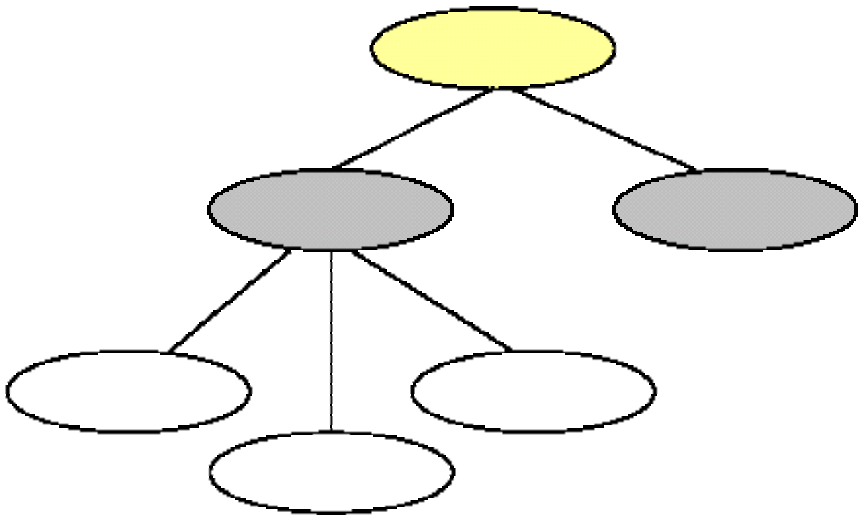
Give examples of practical applications for each of the following fluid properties:

viscosity			
density			
buoyancy			
hydraulics			
pneumatics			

2.0 ***The properties of mixtures and fluids can be explained by the particle model of matter.***

Key Concepts
- organization of pure substances and mixtures
- concentration and solubility
- factors affecting solubility
- The particle model

Matter can be organized in different ways. One way is as solids, liquids, and gases. Another way is as mixtures and solutions. Complete the Organizational Chart



Describe a **suspension**, a **colloid**, and an **emulsion**.

_____

_____

_____

Describe the process of **paper chromatography** and give examples of practical applications.

_____

_____

What conditions must be present to enable a material to **dissolve** in another material?

_____

Explain the difference between a **solute** and a **solvent**.

_____

_____

Describe the difference between **Concentration** and **Solubility**. (24-28)

_____

_____

What is a **saturated** solution? (p.21)

_____

Why are some substances **insoluble**?

_____

What factors affect **solubility**?

_____

Why is water referred to as the **universal solvent**?

_____

What is an **aqueous** solution?

_____

How does **temperature** affect solubility?

_____

The Particle Model of Matter (p.33)
What are the 4 key principles explained using the Particle Model of Matter?

_____

_____

_____

_____

Illustrate the action of particles in solids, liquids and gases.

Solids	Liquids	Gases

What factors affect the rate of dissolving?

_____

3.0 ***The properties of gases and liquids can be explained by the Particle Model of matter***

Key Concepts
- **Viscosity**
- **Density**
- **Buoyancy**
- **Pressure**

What is **viscosity**, how is it **measured**?

_____

_____

_____

Describe some **practical applications** using knowledge about viscosity.

How is viscosity affected by **temperature**?

What formula is used to **calculate density?**

How are **mass and volume related**, when determining density?

Describe the density of solids liquids and gases, using the **particle model**.

What is **buoyancy** and how is it determined?

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

How does a '***cartesian diver***' work? (p.50)

_____

_____

What is **average density** and what benefits does it have?

_____

_____

Explain '***Archimedes Principle***' and how he came to formulate it (Eureka!).

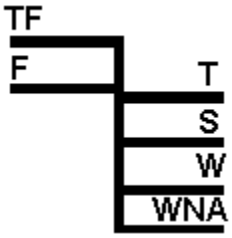
_____

_____

_____

_____

The Plimsoll Line



Legend

TF _____

F _____

T _____

S _____

W _____

WNA _____

_____

Describe how the **Plimsoll Line** works.

_____

_____

Describe how **Hot Air Balloons** use the principle of buoyancy.

_____

_____

Describe what **compressibility** is.

_____

_____

What conditions must be met to **compress** a gas?

_____

_____

Pascal's Law states:

_____

_____

Calculate pressure using a formula.

Provide some examples of the **advantages of compression**.

_____

_____

What effect does **atmospheric pressure** have on our body?

_____

_____

How is atmospheric pressure affected by **altitude**?

_____

_____

Describe the components needed to make a **hydraulic system**.

_____

_____

What is the primary difference between **hydraulic systems** and **pneumatic systems**?

_____

_____

4.0 ***Many technologies are based on the properties of fluids***

Key Concepts
- solubility
- compression and decompression
- flow rates to move fluids
- factors affecting reaction rates

Explain how **detergent** works.

_____

_____

What is a **hyperbaric chamber**?

_____

_____

Illustrate and describe how the following technologies work to move fluids.

Diaphragm Pump	***Bicycle Pump***
Archimedes Screw	***Pipeline pig***

What is a valve used for?

What is a bathyscaph?

Using pictures and a brief explanation describe how a submarine works. (p.71)
This website will help you - http://www.physics.sfasu.edu/astro/social/social016.htm
