

Mix and Flow of Matter Summary & Review

Key Concepts Science Focus 8 (Unit At A Glance p. 90)	Guiding Questions and Activities to Help you Study
Topic 1 <u>The Particle Model of Matter</u>	<ul style="list-style-type: none"> - What properties distinguish solids, liquids and gases (p.7)? - What are the key ideas in the Particle Model of Matter (p. 8)? - Describe the action of particles in solids, liquids and gases. (p. 9-10) - Describe the Changes of State and the terminology used, when a substance undergoes a specific change of state. (p. 11-12)
Topic 2 Classification of Matter <u>WHMIS</u>	<ul style="list-style-type: none"> - How is matter classified? (p. 13) - What is the difference between a homogenous and a heterogeneous mixture? (p.14) - Describe a suspension, a colloid, and an emulsion. (p.15) - What conditions must be present to enable a material to dissolve in another material? (p.17) - Explain the difference between a solute and a solvent. (p.18) - Why is water called 'the universal solvent'? (p.19) - What affects the rate at which a material will dissolve? (p.19) - What is a saturated solution? (p.21) - Why are some substances insoluble? (p.24)
Topic 3 Solutions (mixing, dissolving, solute, solvent)	<ul style="list-style-type: none"> - Describe the 'desert tent' method of separation. (p.28) - What is desalination? (p.28) - Describe how distillation is able to separate the parts of a solution. (p.29) - How is petroleum separated and the fractional parts collected? (p.30) - How is ore (such as gold) mined and collected? (p.31) - Describe, in general terms, how sugar is processed from sugar cane. (p.36)
Topic 4 Viscosity and Flow Rate	<ul style="list-style-type: none"> - How is the thickness or a thinness of a fluid measured and what is it called? (p. 40) - Describe some practical applications of the knowledge about viscosity. (p.45) - How is viscosity in different fluids affected by temperature? (p. 48-49)
Topic 5 Density	<ul style="list-style-type: none"> - Calculate density using a formula. (p.57) - How are mass and volume related, when determining density? - Describe the density of solids liquids and gases, using the particle model. (p.51) <p>(Calculated by dividing mass by volume) Response to change in temperature</p>
Topic 6 Buoyancy	<ul style="list-style-type: none"> - How is buoyancy determined? - Describe how a ship (made out of steel) can float.. - How does a '<i>cartesian diver</i>' work? - What is average density and what benefits does it have? - Explain '<i>Archimedes Principle</i>' and how he came to formulate it. - Describe how scuba gear works. (p. 69)
Topic 7 Fluid Pressure (Calculated by dividing force by area)	<ul style="list-style-type: none"> - Calculate pressure using a formula. - What conditions must be met to compress a gas? (p. 73) - Provide some examples of the advantages of compression. - What effect does atmospheric pressure have on our body? (p.75) - How is atmospheric pressure affected by altitude? (p.75)
Topic 8 Fluid Systems Hydraulics Pneumatics	<ul style="list-style-type: none"> - Describe how a fire extinguisher works. (p.79) - Describe the components needed to make a hydraulic system. (p.80) - What is the primary difference between hydraulic systems and pneumatic systems? (p.81)
<p>Design a Concept Map linking the ideas introduced and reinforced in this Unit on Mix and Flow of Matter</p>	
<p>Try some of the <u>Practice Quizzes</u> to see how much you have recalled from this Unit</p>	

Cells and Systems Summary & Review

<p>What do living organisms have in common? What variations do we find in their structure and function? How do body systems work together to keep organisms healthy?</p>	
<p>Key Concepts Science Focus 8 ((Unit At A Glance p. 168)</p>	<p style="color: purple;">Guiding Questions and Activities to Help you Study</p>
<p>Topic 1 Living organisms are made from cells Structures and Functions Levels</p>	<ul style="list-style-type: none"> - What are the basic functions of all living things, and what are the structures that enable organisms to perform those functions? (p. 98) - How are living organisms organized. (p. 100-101)
<p>Topic 2 The Microscope Calculating Field of View</p>	<ul style="list-style-type: none"> - Describe the changes that took place in the development of the microscope over time. - What are the main parts of the microscope? (p.107) - Describe how to calculate the field of view. (p.111)
<p>Topic 3 Structures of Cells (Plant and Animal)</p>	<ul style="list-style-type: none"> - Identify the main component parts of both the plant cell and the animal cell.
<p>Topic 4 Fluids in Cells Diffusion Osmosis Transpiration</p>	<ul style="list-style-type: none"> - What is a selectively permeable membrane? (p.128) - Describe Diffusion. (p.129) - Describe Osmosis. (p.130) - What is Transpiration? (p.135) - Explain how a plant transports fluids, from the roots to the leaves.
<p>Topic 5 Specialized Cells Organization of Cells</p>	<ul style="list-style-type: none"> - Identify and describe the differences between different specialized cells. (p.138) - What are the primary advantages of multi-cellular organisms (compared to unicellular organisms)? - Describe the levels of cellular organization in a multi-cellular organism. (p.140)
<p>Topic 6 Respiratory System Circulatory System Digestive System Excretory System Nervous System</p>	<ul style="list-style-type: none"> - Can you identify the important parts of each of the body systems? - Describe how each body system has a particular function. (p.153) - How do the different body systems work together? Give specific examples.
<p>Topic 7 Disorders Healthy Life Choices and Styles</p>	<ul style="list-style-type: none"> - How can you keep each of your body systems healthy? - What disorders are common in each of the body systems? - What life style choices should be made if we want healthy bodies?
<p style="color: purple;">Design a Concept Map linking the ideas introduced and reinforced in this Unit on Cells and Systems</p>	
<p>Try some of the <u>Practice Quizzes</u> to see how much you have recalled from this Unit</p>	

Light and Optical Systems Summary & Review

<p>What do we know about <u>the nature of light</u>?</p> <p>What <u>technologies have been developed</u> that use light?</p> <p>What <u>principles of light</u> do these technologies show?</p>	
<p>Key Concepts Science Focus 8 (Unit At A Glance p. 262)</p>	<p>Guiding Questions and Activities to Help you Study</p>
<p>Topic 1 <u>Principles of Light</u> <u>Sources</u> Cost <u>Ray Model of Light</u></p>	<ul style="list-style-type: none"> - <u>What is light</u> (p.176)? - <u>What are the basic principles of light</u> (p.177-178)? - Describe and give examples of natural and artificial light (p.179-183) - How is the cost of lighting calculated. (p.184) - Know how to draw and label a ray diagram (p.185)
<p>Topic 2 <u>Reflection</u></p>	<ul style="list-style-type: none"> - Give an operational definition for reflection (p.188) - State the Law of Reflection (p.194) - Draw and label a diagram to show the Law of Reflection (p.194) - How is an image formed in a mirror? (p.194) - How is this Law of Reflection applied in everyday life? (p.198-199) - What are <u>fiber optics</u>?
<p>Topic 3 <u>Refraction</u></p>	<ul style="list-style-type: none"> - Give an operational definition for refraction (p.200) - State the Law of Refraction (p.204) - Draw and label a diagram to show the Law of Refraction (p.204)
<p>Topic 4 Concave and Convex lenses <u>Eye</u> <u>Camera</u></p>	<ul style="list-style-type: none"> - Describe the difference between concave and convex <u>lenses</u>? (p.208) - <u>What happens to light when it passes through a lens</u>? (p.209) - <u>How does your eye form an image</u>? (p.210) - Identify the similarities and differences between your eye and a camera. - What is accommodation? (p.215) - What is a blind spot? (p.217)
<p>Topic 5 <u>Telescopes</u> Binoculars <u>Microscopes</u></p>	<ul style="list-style-type: none"> - Describe the difference between a reflecting and a refracting telescope (p.221) - How are prisms used in binoculars? (p.223) - How has the development of the microscope and the telescope lead to increasing scientific knowledge? (p.224)
<p>Topic 6 - The Source of Colour - No longer part of the curriculum</p>	
<p>Topic 7 <u>Wave model of light</u> <u>Frequency and Wavelength</u> Lasers <u>The Science of Light</u></p>	<ul style="list-style-type: none"> - How is wavelength determined? - Draw a wavelength model of light and label the crest, trough, wavelength and amplitude. (p.238) - What is the wave model of light? (p.239) - How is a sunset made? - What makes a <u>rainbow</u>? - How do <u>lasers</u> work?
<p>Topic 8 <u>Electromagnetic Spectrum</u></p>	<ul style="list-style-type: none"> - What is the <u>electromagnetic spectrum</u>? (p.249) - Describe the differences, and give examples of all the different types of waves in the <u>electromagnetic spectrum</u>.
<p>Design a Concept Map linking the ideas introduced and reinforced in this Unit on Light and Optical and Systems</p>	
<p>Try some of the <u>Practice Quizzes</u> to see how much you have recalled from this Unit</p>	

Mechanical Systems Summary & Review

<p>What do we use machines to do work and to transfer energy? How can we design and use machines efficiently and responsibly? How have machines changed over time?</p>	
<p>Key Concepts Science Focus 8 ((Unit At A Glance p. 356)</p>	<p style="color: purple;">Guiding Questions and Activities to Help you Study</p>
<p>Topic 1 Levers and Inclined Planes</p>	<ul style="list-style-type: none"> - Describe the various types of simple machines. (additional notes) - Explain the differences between the three different class levers. (p. 271) - Know the scientific meaning of Work and how to calculate it. (p. 276) - How do machines make work easier? (p.278)
<p>Topic 2 The Wheel and Axle, Gears, and Pulleys</p>	<ul style="list-style-type: none"> - What is Mechanical Advantage and how is it calculated? (p.278-281) - Explain how machines can be designed and adapted to meet the specific needs of people. (p.283) - Describe what a winch is. (p. 285) How does a wheel and axle work? (p. 286) - Illustrate different gear ratios and combinations of gears. (notes, p. 287-289) - Describe how pulleys are used to change the direction of motion when objects are lifted. (p 292-293) - Illustrate different kinds of pulleys and practical applications for each. (p 292-293)
<p>Topic 3 Energy, Friction and Efficiency</p>	<ul style="list-style-type: none"> - Describe the difference between potential and kinetic energy. (p.296) - How do machines transfer energy? (p 298) - What does friction do to efficiency in a machine? (p.298-299)
<p>Topic 4 Force, Pressure and Area</p>	<ul style="list-style-type: none"> - What happens when you change the area over which force is applied? (p.304) - Provide some practical applications, which use the principle of 'spreading force over a larger area', to reduce the pressure. (p.305) - Describe Pascal's law and give practical examples, which apply the law. (p.307-309)
<p>Topic 5 Hydraulics and Pneumatics</p>	<ul style="list-style-type: none"> - Explain the difference between hydraulics and pneumatics. (p.313) - Create a comparison chart that illustrates the similarities and differences between open (pneumatic) and closed (hydraulic) systems. Identify practical everyday situations in which hydraulics and pneumatics are used to make work easier. (p 314-318) - Describe where hydraulics and pneumatics can be found in your body. (p.323-325)
<p>Topic 6 Combining Systems</p>	<ul style="list-style-type: none"> - Describe how large machines (systems), are created by combining simple machines (subsystems). (p.326-330)
<p>Topic 7 Machines throughout History</p>	<ul style="list-style-type: none"> - Illustrate a timeline of transportation machines throughout history (p.332-341)
<p>Topic 8 People and Machines</p>	<ul style="list-style-type: none"> - How does society change the way machines are developed and used? (p.342-343) - What impacts do machines have on people and the environment (p.344-346) - What reasons are there to develop better machines by using science and technology? (p 348) - What is the science of ergonomics? (p. 349)
<p style="color: purple;">Design a Concept Map linking the ideas introduced and reinforced in this Unit on Mechanical Systems</p>	
<p>Try some of the Practice Quizzes to see how much you have recalled from this Unit</p>	

Fresh and Saltwater Systems Summary & Review

<p>What are the characteristics of water systems? How do water systems interact with the atmosphere and with Earth? How do water systems interact with human activities?</p>	
<p>Key Concepts Science Focus 8 ((Unit At A Glance. 474)</p>	<p style="text-align: center;">Guiding Questions and Activities to Help you Study</p>
<p>Topic 1 A World of Water</p>	<ul style="list-style-type: none"> - How is water recycled on Earth? (p.368) - What are vital environmental concerns regarding the quantity and quality of water on the Earth? (p. 366) (p. 374) - Describe the distribution of water on the Earth. (p. 372-373)
<p>Topic 2 Earth's Frozen Water</p>	<ul style="list-style-type: none"> - How does <i>glacial erosion</i> and <i>glacial deposition</i> affect the face of the Earth? (p. 380-382) - Describe the <i>natural freshwater storehouses</i>, such as <i>Icefields, glaciers and snow packs</i>. (p.375-379) - What clues to the past can <i>ancient ice</i> reveal? (p.384-385) - How does <i>global warming</i> and <i>natural disasters</i> affect our water supply? (p.386-387)
<p>Topic 3 Fresh Water Systems</p>	<ul style="list-style-type: none"> - In what forms does fresh water exist on the Earth? (p.390-391) - How does land use affect run-off and the health of a watershed? (p.392-394) - Describe how the <i>rate of flow of a stream</i> can affect erosion and sedimentation. (p.396-397) - How do scientists determine the impacts of pollutants on the aquatic environment? (p.400-401) - What is causing <i>aquifer depletion</i>? (p.403-405) - How can groundwater contamination magnify environmental contaminants? (p.406-407)
<p>Topic 4 The Oceans</p>	<ul style="list-style-type: none"> - How do the Oceans get <i>salty</i>? (p. 411) - What does the Ocean floor appear like and how was it formed? (p. 413-415) - Describe the effect of <i>Ocean waves</i> on shorelines and the creation of beaches. (p.417-422) - What causes <i>Tides</i>? (p. 423-425) - How do Ocean currents affect climate and aquatic life? (p. 426-429)
<p>Topic 5 Living In Water</p>	<ul style="list-style-type: none"> - Describe the diversity of freshwater and saltwater organisms. (p.432-433) - What adaptations do plants and animals develop to enable them to survive in aquatic environments? (p.434-444) - Describe the interactions (food chains and food webs) among aquatic organisms. (p.444-445) - Describe how <i>biomagnification</i> can affect organisms in a food chain. (p.446-447)
<p>Topic 6 Water Quality and Water Management</p>	<ul style="list-style-type: none"> - What scientific tests are used to determine the properties and quality of a water supply? (p.448-450) (p.453-454) - How do people and water interact negatively? (p.451-452) - Describe how biological organisms can be used as indicators of water quality. (p.455-459) - What is needed in order to maintain a safe, reliable water supply? (p.460-463) - How this be achieved while balancing the needs of people, industries, agriculture and wildlife? (p.465-468)
<p>Design a Concept Map linking the ideas introduced and reinforced in this Unit on Fresh and Saltwater Systems</p>	
<p>Try some of the Practice Quizzes to see how much you have recalled from this Unit</p>	

These Internet links may help you find out more information
about the key concepts from each of these Units.
(This will be updated throughout the year to improve the yearend review)

Mix and Flow of Matter

<u>WHMIS symbols and nomenclature</u>	particle model of matter
pure substances, mixtures and solutions	properties of fluids
solute and solvent	mass, volume, density
concentration	viscosity and flow rate
solubility and saturation points	buoyancy

Cells and Systems

organisms	structure and function
cells	systems
organs	response to stimuli
tissues	health and environmental factors

Light and Optical Systems

<u>microscopes and telescopes</u>	<u>contribution of technologies to scientific development</u>
<u>reflection and refraction</u>	<u>transmission and absorption of light</u>
<u>sources of light</u>	<u>wavelength and frequency</u>
<u>electromagnetic spectrum</u>	<u>images</u>
<u>vision and lenses</u>	<u>imaging technologies</u>

Mechanical Systems

design and function	systems and subsystems
transmission of force and motion	simple machines
mechanical advantage	speed ratios and force ratios
mechanical advantage	measurement of work in joules
hydraulics	

Fresh and Saltwater Systems

Water cycle	watershed	food chains and food webs
distribution of water	rate of flow of a stream	biomagnification
glacial erosion and glacial deposition	aquifer depletion	scientific tests
Icefields, glaciers and snow packs	Waves and Tides	safe, reliable water supply
global warming	Ocean currents	sustainability