

EXAM TOPIC OUTLINE-GRADE 9 SCIENCE
YOU SHOULD BE ABLE TO:

I. THE POWER OF REPRODUCTION

Terminology:

Animal & Plant Cell	Nucleus	DNA (Deoxyribonucleic Acid)
Nucleotides	Genes	Genome
Chromosome Pairs	Allele	Trait
Dominant Trait	Recessive Trait	Genotype
Phenotype	Homozygous	Heterozygous
Punnett Squares	Cell Division	Prophase
Genetically Identical	Programmed Cell Death (Apoptosis)	
Prometaphase	Daughter Cells	Cell Cycle
Metaphase	Parent Cell	Interphase
Anaphase	Cancer	G1 Phase
Telophase	Asexual Reproduction	Synthesis Phase
Cytokinesis	Binary Fission	G2 Phase
Centrioles	Budding	Chromosomes
Spindle fibers	Spore Formation	Chromatin
Metaphase Plate	Fragmentation	(Sister) Chromatids
Nucleus/Nuclear Membrane		Regeneration
Centromeres	Cell Plate	Vegetative Propagation

- Understand and describe the 4 statements of cell theory
- Label the parts of the animal and plant cell and give the function of each cell part.
- Give the similarities and difference between a plant and animal cell.
- Illustrate and describe the process of mitosis. (Interphase, Prophase, Metaphase, Anaphase, Telophase)
- Explain the cell cycle of your body (Interphase, G1, S, G2, Mitosis) as well as cancer, regeneration etc
- Name and describe the methods of asexual reproduction (binary fission, fragmentation, budding, spore, Vegetative Propagation, Regeneration)
- Illustrate and describe the process and phases of meiosis (Meiosis I and Meiosis II); what is crossing over and when does it happen and why?
- What is a diploid and haploid cell
- Give some advantages and disadvantages for asexual and sexual reproduction.
- What is DNA (what does it stand for, what is the purpose?)

2. ATOMS, ELEMENTS AND THE PERIODIC TABLE

Vocabulary:

Matter	Mixtures	Pure Substances
Molecules	Compounds	Elements
Homogeneous Mixtures		Heterogeneous Mixtures
Atoms	Protons	Neutrons
Electrons	Atomic Number	Atomic Mass
Atomic Symbol	Element Name	Neutrally Charged
Positive Charge	Negative Charge	Atomic Theory
Gold Foil Experiment	Atomic Mass Unit	Electron Cloud
Energy Shells (Aka: Orbitals, Energy Levels)		Valence Electrons
Metals	Non Metals,	Metalloids
Staircase	Groups and Periods	Hydrogen
Alkali Metals	Alkaline Earth Metals	Transition Metals
Boron Family	Carbon Family	Nitrogen Family
Oxygen family	Halogens	Noble Gases
Rare Earth Metals (Lanthanides/Actinides)		

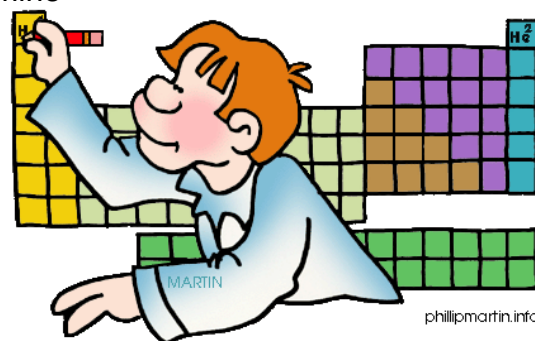
- Understand materials and describe them in terms of their physical and chemical properties
- Describe changes in properties of materials in terms of physical and chemical changes
- Basic WHMIS symbols

You should know and be aware of the contributions of the following people to the periodic table/atom

- Democritus, Dmitri Mendeleev, Dalton
- Dalton, JJ Thompson, Rutherford, Bohr, Chadwick, Modern Model

You should be able to explain and understand the following using a Periodic Table:

- How to find the Atomic Number, Mass, Symbol and Element name
- How to find the number of protons, neutrons and electrons
- How to find the number of Shells an element has
- How to find the number of Valence Electrons an element has
- What family the Element belongs too (and how to label the families on the table)
- How to draw the Bohr model for the first 20 Elements (know the rules of labelling electrons on shells, where to place protons and neutrons)
- Where is the staircase, what does it determine about an element?
- What type of reactivity does each family have?
- How does the number of valence electrons determine reactivity/non-reactivity?



3. STATIC AND CURRENT ELECTRICITY

Vocabulary:

Neutral	Positive	Negative
Electrons	Protons	Induced Charge
Conductor	Insulator	lightning
Spark	battery	components
Current	Coulomb	Ampere
Ammeter	potential difference	Switch
Volt	voltmeter	Ohm
Resistance		

Static Electricity:

- Explain the difference between a conductor and an insulator
- State and explain in detail how objects acquire a static charge
- Explain the generation of static in lightning (how is lightning formed? How is it different from a spark?)
- Explain the uses of static electricity and its presence in our everyday (photocopier, lightning and lightening rods etc)
- Compare qualitatively static and current electricity

Current

- Name the three components necessary for a current.
- Draw and label a circuit diagrams for a simple, series and parallel circuits
- Identify the units and symbols used to measure quantities in a circuit. (coulomb, amperes, current, potential difference, volt, resistance, ohm)
- Be able to describe series and parallel circuits in terms of current and voltage
- Explain and understand the relationship between resistance, voltage and current
- Calculate the current (I), the potential difference (V), the resistance (R) using information provided in a word problem (triangles provided)