

## Biology

- Characteristics of life
- Cell theory
- Diffusion & Osmosis
- Hierarchical organization
- Prokaryote vs eukaryote
- Organelles
  - structure, function, type of cell
- Cell cycle & stages of mitosis
  - explain & draw
- Cancer in relation to cell cycle
- Stem cells & differentiation
- Tissues
  - 4 main types, structures & functions
- Organ systems:
  - main functions & organs
  - **Digestive** – nutrient & water absorption, accessory organs
  - **Respiratory** – pathway of air in & out of lungs, details of gas exchange
  - **Circulatory** – arteries & veins, blood, circulation
  - **Interactions** between systems (specific locations/ anatomy)
- Plant: main tissues & organ systems

## Optics

- Production of light – methods
- Speed of light
- Light travels in a straight line
- Reflection
  - Law of reflection – normal, angle of incidence, angle of reflection, how to measure angles
  - Plane & curved (convex & concave) mirrors - Image **characteristics (SALT), calculate, locate & draw** images
- Refraction
  - Describe light passing through different media – speed, direction change
  - Index of refraction – **trends & calculate**
  - Angle of incidence, angle of refraction, critical angle
  - Lenses (diverging & converging)- Image **characteristics (SALT), calculate, locate & draw** images

*Formulas will NOT be provided*

$$n = c/v$$

$$m = \frac{hi}{ho} = - \frac{di}{do}$$

$$\frac{1}{f} = \frac{1}{di} + \frac{1}{do}$$

## Chemistry

- Physical vs chemical changes
  - Inc. indicators of chemical change
- Atoms
  - Atomic structure & subatomic particles (properties of each)
  - Ions – how/why they form
  - Valence shell & octet rule
  - Counting atoms & elements in compounds
- Periodic table
  - Groups/families & series/periods
  - Patterns (# orbits, # valence e<sup>-</sup>)
- Bonding – **naming, formulas, properties**
  - Ionic compounds – transfer of electrons
  - Covalent compounds (molecules) – sharing of electrons, draw molecules & bonds
- Chemical equations – write & balance
- Types of reactions – **identify, predict & balance**
- Law of conservation of mass
- Acids
  - Donate protons (H<sup>+</sup>)
  - Characteristics & common reactions (ex. metals & carbonates)
  - Naming
- Bases
  - Accept protons (H<sup>+</sup>), often release OH<sup>-</sup>
  - Characteristics & common reactions
- pH scale
- Neutralization

## Climate Change

- Greenhouse gases
- Greenhouse effect
- Recording atmospheric conditions
- Effects of climate change

# Key Topics



## Biology

Anaphase  
Alveoli/alveolus  
Artery  
Cancer  
Capillary  
Carcinogen  
Cell cycle  
Cell membrane  
Cell wall  
Cellular Differentiation  
Centriole  
Centromere  
Chlorophyll  
Chloroplast  
Chromatid  
Chromatin  
Chromosome  
Connective Tissue  
Cytokinesis  
Cytoplasm  
Diffusion  
DNA  
Endoplasmic Reticulum  
Epithelial Tissue  
Eukaryote  
Golgi Apparatus  
Hemoglobin  
Interphase  
Meristematic Cell  
Metaphase  
Metastasis  
Mitochondria  
Mitosis  
Multipotent  
Muscle Tissue  
Mutation  
Nerve Tissue  
Nucleus  
Organ  
Organelle  
Organ System  
Osmosis  
Phloem  
Pluripotent  
Prokaryote  
Prophase  
Ribosome  
Sister chromatids  
Specialized Cell  
Spindle fiber  
Stem Cell  
Tissue  
Telophase  
Totipotent  
Tumour (malignant/benign)  
Vacuole  
Vein  
Xylem

## Optics

Angle of Incidence ( $\theta_i$ )  
Angle of Reflection ( $\theta_r$ )  
Angle of Refraction ( $\theta_r$ )  
Apparent Depth  
Attitude  
Bioluminescence  
Centre of Curvature (C)  
Chimiluminescence  
Concave (converging) Mirror  
Converge  
Convex (diverging) Mirror  
Critical Angle ( $\theta_c$ )  
Diffuse Reflection  
Dispersion  
Diverge  
Electromagnetic Spectrum  
Fluorescence  
Focus (F) / Focal point  
Image  
Incandescence  
Incident Ray  
Index of Refraction (n)  
Lateral Inversion  
Light-Emitting Diode (LED)  
Location of image  
Luminous  
Medium  
Mirage  
Mirror  
Non-Luminous  
Normal  
Object  
Opaque  
Optical Centre (O)  
Phosphorescence  
Plane  
Principal Axis (PA)  
Principal Focus (F)  
Real Image  
Reflected Ray  
Reflection  
Refracted Ray  
Refraction  
Secondary Focus (F')  
Specular Reflection  
Total Internal Reflection  
Translucent  
Transparent  
Triboluminescence  
Type of image  
Virtual Image  
Visible Light  
Visible Spectrum

## Chemistry

Acid  
Alkali Metals  
Alkaline Earth Metals  
Anion  
Atom  
Atomic number  
Base  
Bohr-Rutherford  
Cation  
Chemical Change  
Chemical Equation  
Chemical Property  
Coefficient  
Combustion  
Complete Combustion  
Compound  
Covalent Bond  
Decomposition Reaction  
Diatomic Molecule  
Double Displacement  
Electron  
Element  
Group  
Halogens  
Incomplete Combustion  
Indicator  
Ion  
Ionic Bond  
Ionic Charge  
Ionic Compound  
Law of Conservation of Mass  
Molecular Compound  
Molecule  
Neutralization  
Neutron  
Noble Gases  
Period  
Periodic Table  
pH Scale  
Physical Change  
Physical Property  
Polyatomic Ion  
Product  
Proton  
Pure Substance  
Reactant  
Single Displacement  
Synthesis Reaction  
Valence electrons  
Valence Shell  
Word Equation

## Climate Change

Carbon dioxide  
CFC  
Climate  
Fossil Fuels  
Greenhouse Effect  
Greenhouse Gases  
Ice cores  
Methane  
Nitrous Oxide  
Ozone  
Tree rings

# Key Terms

NOT an inclusive list of  
terms

