

The Scientific Method: Where is your learning at?

Green : I know it all
 Orange : I have some idea – study the sections in more detail
 Red : I need to start studying this section

	By the end of this unit I should be able to:	Green	Orange	Red
1.1.1	Biology.			
	Define the term: Biology.			
	Name three areas of study incorporated in Biology.			
1.1.2	Scientific Method			
	State the process of the Scientific Method Including Observation, Hypothesis, Design Experiment, Collect & Interpret Data, Conclusions, Compare to Existing Knowledge Reporting,			
	Developing Theory & Principle			
	State the limitations of value of the Scientific Method including Extent of basic knowledge, basis of investigation, application to the natural world in a state of change, accidental discovery.			
1.1.3	Experimentation			
	State the principles of experimentation including Planning & Design, Safety Procedure, Experimental Control, explaining why Sample Size, Random Selection, Replicates and Double-Blind Testing are important.			
	State some possible sources of errors			

The Characteristics of Life: Where is your learning at?

	By the end of this unit I should be able to:	Green	Orange	Red
1.2.1	A Search for a Definition of Life			
	Present an outline of the diversity of living things			
	List the common features & behaviours identified as living.			
	Define the term: metabolism.			
	Define the expression: continuity of life.			
1.2.2	Definition of Life			
	Define the term: life.			
1.2.3	Characteristics of Life			
	Definition and identification of the "characteristics of life", through fundamental principles and interactions of organisation nutrition, excretion, response and reproduction.			

Nutrition: Where is your learning at?

	By the end of this unit you should be able to:	Green	Orange	Red
1.3.1	Function of Food Name three reasons for requiring food			
1.3.2	Chemical Elements Name six common chemical elements in food:CHNOPS Name five elements present in dissolved salts:Na,Mg,Cl,K,Ca Name 3 trace elements required: Fe, Cu, Zn			
1.3.3	Biomolecular Structures State that simple biomolecular units are composed of a combination of elements in different ratios. Eg carbohydrates $C_x(H_2O)_y$			
1.3.4	Biomolecular Sources & Components of Food Name the element components, biomolecular components and sources of: carbohydrates, fats & oil, protein & vitamin. State that carbohydrates are composed of indivisible units and give examples of these. Eg. monosaccharide-glucose. Disaccharides- maltose & polysaccharides-starch/cellulose. Name one water soluble vitamin. Name one water in-soluble vitamin.			
1.3.5	Energy Transfer Reactions Definition of the term: Anabolic: Catabolic. Give an example of each			
1.3.6	Structural Role of Biomolecules State carbohydrates role as cellulose in cell walls State proteins role as fibrous protein eg keratin or as myosin State the role of lipids as Phospholipids in cell membranes			
1.3.7	Metabolic Role of Biomolecules State that carbs & lipids act as a primary source of energy. State that proteins act as enzymes and are made of amino acids State that hormones (protein) act as regulators of metabolic act. State that vitamin C & D are used for tissue growth, cell production and health maintenance. Name disorders associated with deficiency of a water soluble and a water in-soluble vitamin.			
1.3.8	Minerals State the requirements & use of any 2 minerals in plants. State the requirements & use of any 2 minerals in animals.			
1.3.9	Water State 5 good reasons why water is important for organisms.			
1.3	Prac: Food Tests conduct a qualitative test for: starch, fats, a reducing sugar, protein			

Ecology: Where is your learning at?

	By the end of this unit you should be able to:	Green	Orange	Red
1.4.1	Ecology			
	Define the term: ecology.			
1.4.2	Ecosystem			
	Define the term: ecosystem.			
	Name a range of ecosystems demonstrating diversity.			
1.4.3	Biosphere			
	Explain the term: biosphere.			
1.4.4	Habitat			
	Define the term: habitat.			
	Name examples of habitats.			
1.4.5	Environmental Factors			
	Define and give examples of the following as applied to terrestrial (land) and aquatic (water) environments:			
	Abiotic, Biotic , Climatic and edaphic factors			
1.4.6	Energy Flow			
	Name the sun as the primary source of energy.			
	Name feeding as the pathway of energy flow.			
	Present a grazing food chain.			
	Present a food web.			
	Draw and construct a pyramid of numbers and explain their use.			
1.4.7	Niche			
	Explain the term: niche and give examples.			
1.4.8	Nutrient Recycling			
	Define the term: nutrient recycling by organisms.			
	Outline and draw the Carbon Cycle.			
	Outline and draw the Nitrogen Cycle.			
1.4.9	Human Impact on an Ecosystem			
	Define the term: Pollution.			
	State areas affected by pollution.			
	State mechanisms to control pollution.			
	Explain the difference between the terms pollutant and pollution.			
	Examine the ecological impact of one human activity.			
	Define the term: Conservation.			
	Outline any 1 practice from agriculture, forestry or fisheries.			
	State problems associated with waste management & disposal.			
	Explain the importance of waste minimisation.			
	Explain the role of microorganisms in pollution control.			

		Green	Orange	Red
1.4.10	Pyramid of Numbers			
	Explain the limitations of use regarding the size of organisms and the relationship to scale.			
	State two inferences that can be made regarding the shape of the pyramid. For example large tree or parasites			
	Explain the energy loss shown in the pyramid.			
1.4.11	Ecological Relationships			
	Name factors that can control populations.			
	Define and give one example of the following factors: Competition			
	Predation			
	Parasitism			
	Symbiosis			
1.4.12	Population Dynamics			
	Outline the contributory factors or variables in the Predator/Prey Relationship			
	State the effects on the Human Population due to: War			
	Famine			
	Contraception			
	Disease			

	The study of an Ecosystem	Green	Orange	Red
1.5	Overview Selected Ecosystem			
	Present an overview of diversity of life forms in an ecosystem.			
1.5	Observation & Study of Ecosystem			
	Identify a number of habitats from the selected ecosystem.			
	Identify five plants and animals using simple keys.			
	Identify and use various apparatus required for collection methods in an ecological study.			
1.5	Organism Distribution			
	Explain the difference between a Qualitative & Quantitative study for plants and animals.			
	Complete frequency & % Cover techniques.			
1.5	Choice of Habitat			
	Correlate choice of habitat for organisms to Abiotic Factors			
	Investigate and report on any 3 Abiotic Factors.			
1.5	Organisms Adaptations			
	Explain the necessity for and give examples of Structural/Competitive/Behavioural adaptations			
	state one adaptation by one organism in the selected ecosystem.			
1.5	Organisms Role in Energy Transfer			
	Explain and identify the role of the organism in energy transfers.			
	Draw a food chain of the study area.			
	Draw a food web of the study area.			
	Draw a food pyramid of the study area.			

The Cell: Where is your learning at?

	The Cell	Green	Orange	Red
2.1.1	Microscopy			
	Compare the use of the light m/scope to the TEM.			
2.1.2	Cell Structure & Function			
	Name the components of the plant cell seen under the light m/scope including cell wall, cytoplasm, nucleus, vacuole and chloroplast.			
	Name the components of the animal cell seen under the light m/scope including cytoplasm & nucleus.			
	State the position & function of the cell membrane			
2.1.3	Cell Ultrastructure			
	Identify and name the structure & function of cell membrane mitochondrion, chloroplast, nucleus, nuclear pores, ribosomes & DNA.			
	Draw ultrastructure of mitochondrion & chloroplast.			
2.1.4	Prokaryotic & Eukaryotic			
	Define the terms: prokaryotic & eukaryotic.			
2.1	Prac: Use of light microscope			
2.1	Prac: Plant & Animal Cells			
	Cell Metabolism			
2.2.1	Cell Metabolism			
	Define the term: metabolism.			
2.2.2	Sources of Energy			
	State that solar energy is source of energy on Earth.			
	State that cellular energy sourced from chemical energy in ATP			
2.2.6	Movement Through Cell Membranes			
	Osmosis			
	Define the term: Selectively permeable			
	Explain the role of selectively permeable membranes.			
	Define the terms: osmosis & diffusion			
	Give examples of diffusion and osmosis.			
	Define the term: turgor.			
	Explain turgidity in plant cells.			
	Describe the application of high salt or sugar concentration in food preservation.			
2.2	Prac: Activity to demonstrate osmosis			

Enzymes: Where is your learning at?

	Enzymes	Green	Orange	Red
2.2.3	Enzymes			
	Define the term: enzymes			
	State the nature, folded shape & functions of enzymes.			
	Explain the role of enzymes in plants and animals including role in metabolism			
	Explain the effects of pH & temperature on enzyme activity.			
	State the procedure and advantages of Bioprocessing.			
	State the use of Bioprocessing.			
H2.2.7	Enzymes (Higher Level)			
	Explain the active site theory to examine enzyme function & specificity.			
	Explain the term: optimum activity relating to pH.			
	Explain the nature of heat denaturation.			
2.2	Prac: Investigate effect of pH on enzyme rate			
2.2	Prac: Investigate effect of temperature on enzyme rate			
2.2	Prac: Prepare one enzyme immobilisation and examine its application			

Genetics: Where is your learning at?

	By the end of this unit you should be able to:	Green	Orange	Red
2.5.1	Variation of Species			
	Explain the diversity of organisms.			
	Define the term: species.			
2.5.2	Heredity & Gene Expression			
	Define the terms: heredity & gene expression.			
	State examples of heredity and gene expression.			
2.5.3	Genetic Code			
	Define the term: gene.			
	State the role of the gene.			
	Explain the chromosome structure.			
2.5.4	DNA Structure, Replication & Profiling			
	State a simple structure for DNA.			
	Explain the coding and non-coding segments of DNA.			
	State that RNA is a complementary structure to DNA.			
	State the function mRNA			
	State the nature of replication for DNA			
	Define the term: DNA profiling			
	Name two applications for DNA profiling.			
	Explain the process of genetic screening.			
2.5.5	Protein Synthesis			
	Describe the nature of protein synthesis.			
2.5.6	Genetic Inheritance			
	Define the term: Gamete formation.			
	Define the term: gamete.			
	State the function of gametes in sexual reproduction.			
	Define the following terms: fertilization, allele/ homozygous & heterozygous, genotype/ phenotype, dominance/ recessive recessive/ incomplete dominance.			
	Explain the F1 (unlinked traits)-homozygous parents (gametes of parents & offspring)			
	Explain the F1 (unlinked traits)-heterozygous parents (gametes of parents & offspring)			
	Explain the F1 (unlinked traits)-sex determination (gametes of parents & offspring)			
	Explain & use Pedigree Charts & Punnett Squares			
2.5.7				
	Causes of Variation			
	<i>Explain the term: variation & give examples within human populations (height/weight)</i>			
	State that variation is caused by: Sexual Reproduction & mutation			
	<i>Define the term: mutation.</i>			
	Name 2 agents of mutation. (Chromosomal & genetic).			

2.5.8	Evolution			
	Define the term: evolution.			
	State the Theory of Natural Selection.			
	Outline the contribution of Darwin/Wallace.			
	Explain the evidence from any one source regarding evolution.			
2.5.9	Genetic Engineering			
	Explain the process of genetic engineering as manipulation & alteration of genes.			
	Outline the process involving: isolation/transformation/expression			
	Name 3 Applications of genetic engineering			
H2.5.10	Origin of Science of Genetics			
	Outline the work of Gregor Mendel.			
H2.5.11	Law of Segregation			
	State & explain the Law of Segregation.			
H2.5.12	Law of Independent Assortment			
	State & explain the Law of Independent Assortment.			
H2.5.13	Dihybrid Cross			
	Show the F2 using Punnett Squares			
	Define the term: linkage.			
	Show Linkage: 1:1:1:1 with dihybrid het X recess			
	Explain the term: Sex-Linkage			
	Explain the term: Non-nuclear inheritance using mito & chloroplast as examples.			
H2.5.14	Nucleic Acid Structure & Function (Ext)			
	State that DNA structure includes: Sugar, phosphate & bases			
	Draw the nucleotide structure.			
	Name the Purine-pyrimidine couples			
	Name the complementary bases			
	Name the existence of hydrogen bonds in the structure.			
	Name the structure as the Double helix.			
H2.5.15	Protein Synthesis (Ext)			
	State the location of protein synthesis.			
	Explain protein synthesis in relation to DNA, mRNA, tRNA, rRNA			
2.5	Prac: Isolate DNA from a plant tissue			

Microbiology: Where is your learning at?

	By the end of this unit you should be able to:	Green	Orange	Red
3.1.2	Micro-organisms			
	Outline the distribution of fungi & bacteria in nature.			
3.1.3	Monera			
	Name 3 main types of bacterial cells.			
	Explain reproduction of bacteria.			
	Explain nutrition of bacteria.			
	State the factors affecting growth of micro-organisms.			
	Define the term: Pathogenic			
	Define the term: antibiotics			
	State the role of antibiotics.			
	Outline the potential abuse of antibiotics			
	Name 2 Beneficial & 2 Harmful bacteria			
3.1.4	Fungi			
	Define the terms: saprophytic & parasitic.			
	State the structure & life cycle of Rhizopus.			
	Explain nutrition in fungi.			
	Outline the structure & reproduction of Yeast.			
	Name 2 Beneficial & 2 Harmful fungi.			
	Mention that there are Edible and Poisonous fungi.			
	<i>Identify and state functions for the following structures: rhizoid, sporangium, gametangium, zygospore.</i>			
3.1.5	Laboratory Procedures for Micro-organisms			
	State precautions used when working with micro-organisms.			
	Define the terms: Asepsis & Sterility			
	Outline containment & disposal methods in relation to microbes.			
3.1.6	Protista			
	Explain the structure of Amoeba: nucleus & sub-cellular structure			
3.1.7	Plant			
	Plant kingdom as exemplified by the flowering plant.			
3.1.8	Animal			
	Animal kingdom as exemplified by the human.			
H3.1.9	Nature of Bacteria & Fungi			
	Explain the Prokaryotic nature of bacteria.			
	Explain the Eukaryotic nature of fungi.			
H3.1.10	Growth Curves			
	Compare Batch and Continuous Flow Food Processing			
3.1	Prac: Investigate growth of leaf yeasts using agar plates			

Structure of the Flowering Plant: Where is your learning at?

		Green	Orange	Red
3.2.1	Organisational Complexity of Flowering Plants			
	State the structure & function for the following:			
	Root, stem, leaves, flower, seed, vascular structure			
	Explain the term, Meristem and name locations this tissue may be found.			
	Locate the following tissue types (Location in sections)			
	Dermal/Ground/Vascular.			
	Name the xylem and phloem as examples of vascular tissue.			
	Vascular tissue-structure & function			
	Identify Monocots & Dicots under the headings: Woody/Herbaceous.			
	Arrangement of floral parts, Arrangement of vascular bundles,			
	Cotyledon (Seed Leaf) number.			
3.2	Prac: Prep & examine dicot stem			

Transport in Humans – the heart and the blood

		Green	Orange	Red
3.2.2	Describe the structure & organisation of the Circulatory System. including heart & blood vessels(arteries, veins, capillaries, venules, arterioles)			
	State the role of heart muscle tissue & valves.			
	Outline the 2 circuit circulatory system.			
	Draw structure of the heart, main blood pathways (inc hepatic portal system).			
	State that cardiac supply is via cardiac artery & vein.			
	Present an understanding of Heartbeat/control/pulse/blood pressure			
	Explain the effect of smoking, diet & exercise on circulatory system.			
	Outline the structure & function of the Lymph System including: lymph nodes/vessels			
	Name 3 functions of the Lymphatic System.			
	State blood composition, including the role of blood cells/platelets/plasma			
	Explain blood grouping: (A,B,AB,O) and the Rhesus factors.			
H3.2.3	Blood Cells (Ext)			
	Give a detailed treatment of red blood cells including: no nucleus no mitochondria			
	Classify white blood cells as lymphocytes/monocytes			
H3.2.4	Heartbeat Control			
	State existence & location of SA and AV nodes			
	Explain the heart cycle (Systole/Diastole).			
3.2	Prac: Dissect, display & identify sheep's heart			
3.2	Prac: Investigate effect of exercise on breathing rate			

Breathing System: Where is your learning at?

		Green	Orange	Red
3.4.4	Breathing System in Humans			
	Outline the macrostructure & function of the breathing tract in humans.			
	Outline the essential features of the alveoli & capillaries (as surface) for gas exchange.			
	Describe the mechanism of the breathing system in gas exchange .			
	Outline a breathing disorder:			
	Cause/prevention/treatment (Asthma/Bronchitis)			

Plant Excretion: Where is your learning at?

		Green	Orange	Red
3.4.5	Plant Excretion			
	Outline the role of leaves as an excretory organ of plants.			
3.4.3	Structure of Exchange System in Flowering Plants			
	Explain the role of the leaf (stomata) & stem (Lenticel) to gas exchange.			
H3.4.7	Carbon Dioxide			
	Explain how CO ₂ is a controlling factor in stomata & breathing system			

Excretion in humans: Where is your learning at?

		Green	Orange	Red
3.4.6	Excretory System in Humans			
	Explain the role of the excretory system in homeostasis.			
	State the function, location, products of the skin/lungs/urinary system.			
	Outline the basic macrostructure & function for urinary excretory system - Kidney/Ureters/Urinary Bladder/Urethra			
	Explain the role of Kidney in regulating body fluids.			
	Describe the processes of filtration , reabsorption and e in the medulla & renal pelvis.			
	Describe pathway of urine from kidney to urethra			
H3.4.8	Nephron			
	Outline the structure & associated blood supply & draw a diagram.			
	Explain urine formation, including: Bowman's capsule/glomerulus/proximal convol tubule/Loop of Henle/distal convoluted tubule/pelvis/bladder			
	Outline the sites & action of reabsorbing glucose /amino acids/salts/water			
	State that reabsorbing water occurs in the collecting duct & is under the influence of ADH.			

Homeostasis: where is your learning at?

		Green	Orange	Red
3.4.1	Homeostasis			
	Define the term: homeostasis.			
3.4.2	Necessity for Homeostasis			
	Explain the need for homeostasis.			

Photosynthesis: Where is your learning at?

		Green	Orange	Red
2.2.4	Photosynthesis			
	Define the term: photosynthesis.			
	Express photosynthesis as a balanced reaction.			
	State the nature of photosynthesis from the syllabus.			
	State the role & location of chlorophyll.			
	Explain the nature of electron carriage.			
	Identify the light source, CO ₂ & water for photosynthesis.			
	Explain how human intervention can play a role in photosynthesis.			
H2.2.8	Role of ATP & NAD (Ext)			
	Explain the nature & role of ATP.			
	Explain the production of ATP from ADP + P.			
	Explain the role NADP ⁺ in trapping & transferring electrons & H ions.			
H2.2.9	Photosynthesis (Ext)			
	Explain the Light Stage/Dark Stage			
	State the two-pathway system of electron carriage.			
	1. Direct to chlorophyll			
	2. Trapped by NADP ⁺			
2.2	Prac: Investigate influence of light intensity on rate of photosynthesis			

Respiration: Where is your learning at?

		Green	Orange	Red
2.2.5	Respiration			
	Definition of the term: aerobic respiration.			
	Explain the role of aerobic respiration.			
	Express aerobic respiration by a balanced equation.			
	State the nature of respiration from syllabus.			
	Definition of the term: anaerobic respiration.			
	Express anaerobic respiration by a balanced equation.			
	State the nature and role of fermentation.			
	State the cellular location of the first & second stage.			
	Explain the role of microorganisms in fermentation.			
	Explain the role of microorganisms including bioprocessing.			
	<i>Bioreactors</i>			
H2.2.9	Respiration (Ext)			
	State the first stage reaction: Glycolysis			
	Explain the difference in the fermentation option.			
	State the second stage reaction: Krebs			
2.2	Prac: Prepare & show the production of alcohol by yeasts			

Human Nutrition: Where is your learning at?

		Green	Orange	Red
3.3.3	Nutrition in Humans			
	Define the term: Heterotrophic.			
	Define the terms: Omnivore/Carnivore/Herbivore			
	Explain the term and the need for, Digestion.			
	Explain the need for a digestive system.			
	Define the following terms: ingestion/digestion/absorption/egestion, as they relate to the human digestive system.			
3.3.4	Human Digestive System			
	Describe the macrostructure and function of the alimentary canal & glands in the digestion and transport of nutrients.			
	Explain the mechanical breakdown and transport of food including teeth, peristalsis, stomach			
	Explain the term: Chemical Breakdown including bile/role, production site pH & location of action & products of Amylase, a protease & a lipase enzyme.			
	Name 2 functions of symbiotic bacteria.			
	Explain the benefits of Fibre			
	Outline the basic structure & function of the small & large intestine.			
3.3.5	Blood Transport of Nutrients			
	Describe the composition of blood fluid as a transport system of nutrients, the absorption of nutrients from the villi, transport from the hepatic portal vein to the liver			
	State the function of the Liver.			
	Outline the transport of nutrients to cells, and the transport of wastes to the kidney.			
3.3.6	Balanced Human Diet			
	Explain the concept of a balanced diet, variety & moderation.			
	Relate the concept of a balanced diet to age/sex/activity.			
	Relate variety to a selection of food groups.			

Nutrition in plants: Where is your learning at?

		Green	Orange	Red
3.3.1	Nutrition in Flowering Plants			
	State the autotrophic nature of plants.			
	Describe the uptake of water including root hairs/cortex/xylem/osmosis/diffusion/root pressure/transpiration/stomata			
	Describe the uptake of minerals including: solubility/transport from roots by water.			
	Describe the uptake of CO ₂ including: respiring cells/stomata			
	Describe the transport of PHS products including: phloem sieve tube cells			
3.3.2	Modified Plant Food Storage Organs			
	Name 1 example of root, stem, leaf modifications as food storage organs.			
H3.3.7	Cohesion-Tension Model			
	Explain attractive forces of water molecules as it relates to Cohesion.			
	Explain the role of cohesive properties of water.			
	Explain the role of transpiration for this model.			
	Outline the work of Dixon/Joly.			

The Nervous System: Where is your learning at?

3.5.3	Responses in Humans			
	Outline the nervous system components: CNS & PNS			
	Outline the structure & function of the neuron including: axon, myelin sheath, Schwann cell, neurotransmitter vesicles & synaptic cleft.			
	Outline impulse movement & synapse.			
	Explain activation & inactivation of neurotransmitter.			
	Explain the role & position of 3 types of neurons: sensory/motor/inter			
	Outline the senses with the brain as an interpreting centre.			
	Outline the CNS, brain & spinal cord.			
	State location & function of cerebrum/hypothalamus/pituitary gland/ cerebellum/medulla oblongata			
	Label &/or draw diagrams of spinal cord(cross section) indicating white matter, gray matter, central canal,			
	3 layer protective tissue-meninges. .			
	Dorsal & ventral roots of the spinal cord			
	Outline disorders from NS disorders: paralysis/Parkinson's including:			
	Cause/Prevention/Treatment			
	Outline PNS including the location nerve fibres & cell bodies.			
	State the role, structure & mechanism of the Reflex arc.			

The Endocrine System: Where is your learning at?

	Define the term: hormone.			
	Outline the Endocrine System.			
	Compare action distinguishing between exocrine & endocrine glands.			
	State the location of the principal glands in the human.			
	Outline for each gland, one hormone & its' function.			
	Explain 1 Hormone giving a description of its deficiency symptoms, . excess symptoms & corrective measures			
	Name 2 examples of hormone supplements & their use.			

The Immune System: Where is your learning at?

	Outline the Defence System including skin/mucous membranes of breathing, reproduction and digestive systems			
	Outline the nature & role of phagocytic white blood cells.			
	Outline the Specific Defence System, incl antigen/antibody response			
	Define the term: Induced Immunity			
	Explain the terms: Vaccination & Immunisation			
H3.5.7	Human Immune System (Ext)			
	Outline the role of lymphocytes(B and T cells)			
	Explain the role of B cells in antibody production &			
	T cells as helpers/killers/suppressors/memory			

The Musculoskeletal System: Where is your learning at?

		Green	Orange	Red
	Describe the structure & function of the musculoskeletal system.			
	Name components of axial skeleton as: (skull/vertebra/ribs/sternum)			
	State the position & function of discs in vertebrae.			
	State the components of the appendicular skeleton: pectoral/pelvic girdle & limbs			
	Outline the macroscopic anatomy of a long bone including: medullary cavity, compact bone, spongy bone and cartilage.			
	State the function of the following: cartilage/compact bone/ spongy bone-including red & yellow marrows).			
	Classify, locate & state the function of joint types: (Immovable slightly free-moving and synovial)			
	Outline disorders from: arthritis/osteoporosis, include the Causes / Prevention and Treatment			
	Outline the role of cartilage & ligaments.			
	Outline the role of tendons.			
	Outline the general relation of muscle to skeleton.			
	State an example of an antagonistic pair of muscles.			
H3.5.8	Growth & Development in Bones			
	Explain the role of osteoblasts in bone growth & bone cell replacement.			
	Explain the process of terminating development of adult height.			
	Outline the process of bone renewal & the role of calcium in bone.			

Viruses: Where is your learning at?

		Green	Orange	Red
3.5.4	Viruses			
	Identify the problem of definition.			
	State that there is a variety of shapes.			
	Outline the basic structure of viruses.			
	Explain the process of viral reproduction.			
	State 2 harmful, 1 beneficial example of viruses.			

Responses in Plants: Where is your learning at?

		Green	Orange	Red
3.5.2	Responses in Flowering Plants			
	Explain the term: growth regulation.			
	Define the following terms: tropisms, phototropism, geotropism/ thigmotropism, hydrotropism, chemotropism.			
	Name examples of phototropism & geotropism.			
	Define the term: growth regulator.			
	Outline the transport of regulators via the vascular system.			
	Explain the term: Combined Effect			
	Explain the term: Growth Promoter.			
	Explain the term: Growth Inhibitor			
	Name 4 methods of anatomical/chemical adaptations that protect plants.			
	State 2 examples of the use of plant regulators.			
3.5	Prac: Effects of I.A.A. Growth Regulators on Plants			

Reproduction in Plants: Where is your learning at?

		Green	Orange	Red
3.6.1	Reproduction in Flowering Plants			
	Sexual:			
	State the structure & function of the floral parts including: (Sepal, petal, stamen, carpel) inc diag.			
	State that: Pollen grain produces male gamete.			
	State that: Embryo sac produces an egg cell & polar nuclei.			
	Define the terms: pollination, self-pollination			
	Outline methods of pollination including: cross-pollination (inc wind & animal) & self pollination.			
	Define the term: fertilisation.			
	Outline seed structure & function of following: testa, plumule radicle, embryo, cotyledon attachments.			
	Explain embryo & food supply (endosperm or seed leaves)			
	Classify plants as monocotyledon or dicotyledon & distinguish between them.			
	Make reference to non-endospermic seed.			
	Outline fruit formation.			
	Outline seedless fruit production. include genetic variety of plants & growth regulators			
	Outline fruit & seed dispersal with examples of wind/water/animal/self			
	Explain & emphasise the need for dispersal			
	Define the term: dormancy.			
	State advantages of dormancy.			
	Explain dormancy in agricultural & horticultural practice.			
	Define the term: Germination.			
	Explain the factors necessary, role of digestion and respiration in germination.			
	Outline the stages of seed development			
	State that vegetative propagation is asexual reproduction.			
	Name 1 example of vegetative propagation from stem, root, leaf, bud.			
	Compare reproduction by seed and by vegetative reproduction.			
	Outline 4 methods of artificial propagation in flowering plants.			
H3.6.3	Sexual Reproduction in Flowering Plants (Ext)			
	Outline pollen grain development from microspore mother cells including: Meiotic division, mitotic division, .			
	generative & tube nuclei production, formation of pollen grains			
	Outline embryonic sac development including: megaspore mother cell, meiotic division, cell disintegration, mitotic division in the production of 8 cells of embryo sac, one of which is the egg cell.			
3.6	Prac: Effects of water, oxygen and temperature on Germination			
3.6	Prac: Use Starch agar to Show Digestive Activity during Germination			

Reproduction in Humans: Where is your learning at?

		Green	Orange	Red
3.6.2	Sexual Reproduction in Humans			
	Outline the general structure of the reproductive system (Male & Female).			
	State the functions of the main parts of the reproductive system.			
	Outline the role of meiosis to produce sperm & ova (egg) cells.			
	Define the term: secondary sexual characteristics.			
	Outline the role of oestrogen, progesterone & testosterone.			
	Outline the menstrual cycle: the events & outline the role of oestrogen and progesterone			
	Explain copulation.			
	Outline the nature of birth control. including natural, mechanical, chemical and surgical methods			
	State the location of fertilisation.			
	Outline infertility.			
	State 1 cause of male infertility from: low sperm count, low sperm mobility, endocrine gland failure.			
	State the availability of corrective measures.			
	State 1 cause female infertility including; .			
	fallopian tube blockage, endocrine gland failure			
	State the availability of corrective measures.			
	Explain implantation, placenta formation & function.			
	Outline the birth process.			
	Explain In-vitro fertilisation & implantation.			
	Outline milk production & breastfeeding including biological benefits.			
H3.6.5	Sexual Reproduction in Humans (Ext)			
	Detailed study of the menstrual cycle & hormonal control			
	Outline 1 menstrual disorders from: endometriosis or fibroids. Examine Cause/Prevention/Treatment			