Glenthorne High School
Achievement for all

Year 7 Topic Checklists

Organisms – Cells and Movement

Key Knowledge	I have completed	I have understood	I need to revise
Recognise that cells are the basic building blocks of life and recall the main organelles and functions of the organelles within animal and plant cells.			
Be able to outline the steps involved in preparing a slide and using a light microscope to produce a clear image.			
To recall what a specialised cell is and explain how some specialised cells are adapted for their specific functions.			
Explain the difference between uni-cellular and multi-cellular organisms recalling that multi-cellular organisms are composed of cells, tissues, organs and organ systems.			
Describe how substances can move into and out of cells via diffusion and explain the factors that can affect the rate of diffusion.			
Explain how a large 'surface area : volume' ratio enables uni-cellular organisms to carry out life processes linking this to an increased rate of diffusion across the cell membrane.			
Recall the structure (location of major bones) and four functions of the human skeleton.			
Evaluate the differences between an endoskeleton and exoskeleton			
Describe examples of and the types of movement allowed at each of the following types of synovial joint: hinge, ball & socket and pivot.			
Describe the structure of a synovial joint and the functions of the following within a joint: ligaments, tendons, cartilage and synovial fluid.			
Recall the location of some skeletal muscles in the human body and explain how an antagonistic pair of muscles produces movement.			
Apply knowledge of the muscular skeletal system in dissecting a chicken wing and physically identifying muscles, joints, ligaments, and tendons.			
*Identify symptoms, causes and possible treatment methods for shoulder arthritis.			
*Compare the functions of synergist and fixator muscles to agonist and antagonist muscles and describe the			

differences between isometric and isotonic (concentric & eccentric) muscle contraction.			
*Compare the three different types of skeletal muscle fiber and make general predictions of the type of movements an individual will be best at performing using this.			

Matter – Particles and Separating Mixtures

Key Knowledge	I have completed	I have understood	I need to revise
Identify that a substance is solid below its melting point, a liquid above it and a gas above its boiling point.			
Explain the properties of solids, liquids and gases described in terms of the movement of particles and spacing between the particles.			
Explain the diffusion of particles in liquids and gases			
Explain the term density and calculate density			
To make observation where substances change temperature or state and can be described where particles gain or lose energy.			
Identify that gas pressure if caused by collisions of particles with the walls of a container.			
To explain what happens to particles when they dissolve			
Explain the key terms solute, solvent, solution, soluble, insoluble and mixture			
Be able to explain what happens in chromatography			
To describe how to separate mixtures of liquids using distillation			
To describe how to separate mixtures of solids and liquids using filtration and evaporation			
To use a solubility curve of a solute to explain observations about solutions (higher only)			
EC: Describe what fractional distillation is and why this might be necessary.			

Forces – Speed and Forces

Key Knowledge	I have completed	I have understood	I need to revise
Calculating speed of an object using the correct equation			
Rearranging the speed-time-distance equation			
Converting units for time, distance and speed			
Describe how speed of an object changes with distance or time			
Explain the journey of an object from its distance-time graph			
Drawing a distance-time graph from the given data			
Calculating speed of an object from distance-time graph			
Definition and meaning of force with the correct unit			
Identify the different forces in different examples			
Draw and represent forces using force diagrams			
Describe movement of an object based on the force diagram			
Explain the difference between balanced and unbalanced forces			
Calculating resultant force on an object			
Calculate resultant force of an object moving at uniform & non-uniform speed			
Describe the term 'friction'			
List objects that increase and decrease friction			
Practical – Stretch in spring is directly proportional to force applied			
Describe terminal velocity			
Describe how an object reaches terminal velocity			
Experiment – Tet the theory of Terminal Velocity			

Chemical Reactions – Elements and Acids & Alkalis

Key Knowledge	I have completed	I have understood	I need to revise
All substances are made from elements. Elements are found only the periodic table and are made from only one type of atom.			
Elements are given a chemical symbol which always has a capital letter.			
Different elements have different properties which makes them suitable for different jobs.			

Properties can be physical (they can be observed without changing the chemical nature of the element) or chemical (become evident during a chemical reaction.)			
A compound is a pure substance made up of two or more elements chemically bonded together			
Compounds and mixtures differ because mixtures can be separated physically whereas compounds can't. The elements in compounds are chemically bonded together but they are not in mixtures.			
Identify whether a substance is an element, mixture or compound based on a particle diagram.			
Compounds have different properties than the elements they are formed from.			
A molecule has 2 or more elements chemically bonded together. These atoms can be the same or different.			
We can represent compounds by writing a chemical formula. This has the symbol of each element, and the number of atoms in subscript after the element.			
From a chemical formula you can identify the number of elements, how many atoms of each element there are, the total number of atoms.			
When naming compounds, if a metal is bonded to a non-metal then the ending of the non-metal changes to -ide.			
Some compounds are named with a prefix to indicate the number of atoms of a type of element. Mono = 1, Di = 2, Tri = 3			
Some groups of elements have their own names. Carbonate = CO_3, Nitrate = NO_3, Hydroxide = OH, Sulfate = SO_4.			
A polymer is made of thousands of smaller molecules in a repeating pattern. They can be man-made/synthetic e.g. plastics or they can be natural e.g. starch.			
Different polymers have different properties, this makes them useful for different roles.			
Longer chain polymers have a higher boiling/melting point because there are more points of contact, more forces between molecules so more energy is needed to separate them.			
Synthetic polymers can be harmful for the environment as they may not be biodegradable, they can release harmful chemicals, they require a lot of energy to make.			
I can identify the hazard symbols and understand what they mean.			

I can differentiate between an acid and an alkali			
I know how to use universal indicator to identify whether a substance is an acid and alkali			
I can describe how indicators categorise solutions as acidic, alkaline, or neutral.			
I can write word equations for acids reacting with metals			
I understand what a reaction with an acid and alkali make in terms of products and pH.			
I can explain what a chemical reaction is, giving examples			
I can record detailed observations from practical work.			
I can explain what 'concentrated' and 'dilute' mean, in terms of the numbers of particles present.			
I can name some common properties of acids and alkalis.			
I can compare chemical reactions to physical changes.			

Genes - Variation and Human Reproduction

Key Knowledge	I have completed	I have understood	I need to revise
I can label all parts of the male and female reproductive system			
I can explain the function for each part of the male and female reproductive system			
I can identify and label male and female gametes and explain how they are adapted to their function (cell membrane, nucleus, cytoplasm and the sperm cells tail, neck containing mitochondria and the acrosome head)			
I can define the word 'ovulation' and state the day that ovulation takes place (on average)			
I can explain why the uterus lining thickens and breaks down in its 28-day cycle.			

I can define and describe the process of fertilization. What does the sperms acrosome head role? What happens to the two nuclei?			
I can state examples on what causes male and female infertility and explain how different type of contraception such as (condoms, the pill, the implant) can stop fertilization taking place.			
I can label a pregnant mothers uterus using the key words: placenta, umbilical cords, amniotic fluid, uterus, amniotic sac, cervix and vagina			
I can describe the changes that occur in the female reproductive system from fertilization to birth. Using key words: *Implantation, embryo, foetus, placenta, umbilical cord, amniotic fluid, gestation, cervix, uterus*			
I can describe the changes that occur in females and males during puberty.			
*Explain how hormones work and which hormones are responsible for controlling puberty in females and males. (female- FSH, LH, Oestogen, Progesterone- Males- testosterone)			
I can define the key words species, variation, continuous variation, discontinuous variation, adaption and extremophiles			
I can explain whether different characteristics are inherited, environmental or both.			
I can explain whether different characteristics are continuous or non-continuous			
I can plot the correct graph for continuous and discontinuous variation.			

(line graph-continuous) (bar graph- discontinuous)			
I can calculate mean, median and mode.			
I can explain how variation helps a particular species in a changing environment. (Survival of the fittest)			
I can explain how characteristics of a species are adapted to environmental conditions. E.g- polar bear having thick fur to survive in cold climates			

Energy - Energy Transfers and Work Done

Key Knowledge	I have completed	I have understood	I need to revise
I can define energy.			
I can list the 9 energy stores and identify situations where they are manifested.			
I can identify changes in energy store when devices do work.			
I can explain what is meant by the conservation of energy and use this to identify final energy stores that are useful or wasted ones.			
I can carry out calculations of useful and wasted energy forms using the conservation of energy.			
I can calculate the efficiency of a device from data.			
I can recognise apparent stores of energy in different situations			
I can describe changes in energy stores in a range of scenarios where work is being done.			
I can relate work done to energy transferred.			
I can recall and apply the concept of the conservation of energy, identifying input, useful			

and wasted forms when work is done by a range of scenarios.			
I can recall the equation for work done and apply it, rearranging the equation where necessary.			
I can recall the equation for power and apply it, rearranging where necessary.			
I can recall the equation for efficiency and apply it, rearranging where necessary.			

Ecosystems – Interdependence and Plant Reproduction

Key Knowledge	I have completed	I have understood	I need to revise
Draw a food chains and food webs and ensure the arrows show the flow of energy.			
Draw a pyramids of number to represent the feeding relationships between organisms including labels of each organism.			
Describe the impact of a change in population size of one organism on the other organisms in a food chain, food web or pyramid of number			
Define the terms decomposers, producers and consumers.			
Describe how population size can be affected by predators and prey numbers, disease and competition between individuals for limited resources such as water and nutrients.			
Describe how toxic materials, such as pollution, and environmental changes can have a significant impact on species' populations or a food web.			
Describe how bioaccumulation can occur.			
Pollinators are predominantly insects and essential for food crops for humans.			

Recall the main structures of flowers including, stigma, stamen, petal, anther, filament, carpel			
Describe how plants reproduce sexually to produce seeds, including key words: ovum, pollen, stigma and ovary			
Describe how plants disperse seeds using examples of seeds adaptations for wind, water or animals dispersal.			
Describe how plants have been selectively bred by humans to produce many food plants and resources.			

Electromagnets – Electricity

Electricity Key Knowledge	I have completed	I have understood	I need to revise
Describe and explain how an object can become electrostatically charged (electron transfer via rubbing surfaces).			
Describe a current as consisting of a flow of charge (either free electrons or ions) and the size is the rate of flow of charge.			
Explain how a potential difference (caused by an electrostatic force) applied across a conductor leads to a current flowing through it.			
Be able to interpret circuit diagrams and build circuits.			
Be able to measure the current at a point in a circuit using an ammeter.			
Be able to measure the potential difference between 2 points in a circuit using a voltmeter.			
Establish the current rules for series and parallel circuits.			
Establish the potential difference rules for series and parallel circuits.			
Explain how resistance of a component restricts the amount of current flowing between 2 points for a particular potential difference.			

Use models to explain the terms current/potential difference/resistance.			
Use the resistance equation to calculate unknowns.			
Relate resistance to length – involving a practical.			
Be able to compare the uses of series and parallel circuits			
Explain how people working with electricity can remain safe.			

Waves – Light & Sound

Waves Key Knowledge	I have completed	I have understood	I need to revise
Describe the main properties of a wave: Wavelength, frequency, amplitude, peak, trough.			
Describe what happens when light is reflected, absorbed, transmitted.			
Describe the difference between an opaque, translucent, transparent material.			
Describe the law of reflection.			
Explain how different colours are seen.			
Sound produced by vibration of objects.			
Explain what is meant by the following terms in relation to sound waves: frequency, wavelength, medium, amplitude.			
Describe how a sound wave travels, and determine the medium through which it travels the fastest.			
Relate pitch of a sound wave to frequency/wavelength. Interpret oscilloscope			

traces for sounds in terms of pitch, frequency and amplitude.			
Describe the auditory range of humans and animals.			
Describe an investigation to measure the speed of sound in air.			

Earth – Earth Structure and Universe

Earth Structure Key Knowledge	I have completed	I have understood	I need to revise
Describe the structure of the Earth and understand seismic waves.			
I can compare the different layers of the Earth in terms of their properties.			
Describe the formation of igneous, sedimentary and metamorphic rocks with examples to each type.			
I can explain why a sedimentary rock has a particular property based on how it was formed.			
I can predict planetary conditions from descriptions of rocks on other planets.			
I can predict observations when a substance representing lava is cooled at different temperatures.			
Understand how the rocks get recycled in the rock cycle.			
Understand how the different types of rocks interlink.			
I can suggest similarities and differences between the rock cycle and everyday physical and chemical properties.			
Understand the different types of weathering.			
I can use data on properties to decide which materials might be ceramics.			

I can suggest a simple method for comparing the strength of ceramic materials given a choice of apparatus.			
I can describe the structure of the Universe in detail, in order of size and distance away from the Earth.			
I can explain the choice of light years as a unit of measuring distances in astronomy.			
I can explain why we see objects in the Solar System, and why they appear to move as they do.			
I can explain why seasonal changes happen.			
I can describe the phases of the Moon.			
I can calculate the weight and know which factors affect the gravity			