

Cells – The building blocks of life Checklist

	Taught	Understood	Revised
Develop models to explain the differences between animal and plant cells			
Record evidence using a microscope			
Communicate ideas about cells effectively using scientific terminology			
Classify specialised cells as animal or plant cells			
Describe different specialised animal and plant cells			
Explain the structure and function of specialised cells using models			
Recognise different types of unicellular organisms			
Describe differences in unicellular organisms			
Compare and contrast the features of unicellular organisms			
Describe the process of diffusion and its relation to the cell			
Plan a fair test investigation to explore the factors affecting diffusion			
Explain how the different factors speed up or slow down diffusion			
Define the terms tissues, organs and organ systems			
Explain the organisational structure in multicellular organisms			
Compare the strengths and weaknesses of multicellular organisms and single-celled organisms			
Describe the structure and functions of parts in flowering plants			
Describe the process of pollination and fertilisation			
Describe the needs for plants to disperse their seeds			
Describe the structure and function of different parts of the male reproductive system			
Describe the structure and function of different parts of the female reproductive system			
Explain the process of fertilisation			
Recognise changes in the male and female body during puberty			
Describe the process of menstruation			
Explain how some problems with menstruation occur			
Recognise the process of growth			
Use data to show how the embryo grows during gestation			
Compare and contrast the pregnant uterus with normal uterus.			
Describe the effects of different factors on the developing foetus			
Evaluate the strength of data.			
Understand and give examples of independent, dependent and control variables			

Eating, Drinking and Breathing checklist

	Taught	Understood	Revised
List the 7 Scientific Food Groups			
Describe how we use each of the different nutrients			
Describe the problems associated with eating too much			
Describe the problems of malnutrition and deficiency diseases			
Name the organs of the digestive system			
Describe what happens in each part of the system			
Describe how large molecules are digested into smaller particles for absorption in the small intestine			
Describe how enzymes (amylase) breaks down (digests) starch into glucose			
Describe how large molecules are digested into smaller particles for absorption in the small intestine			
Explain the role of bacteria in the digestive system			
Describe how we breathe in and out			
Label the parts of the breathing system			

Describe how the alveoli are suited to their role			
State which gases diffuse between the lungs and the blood			
List lifestyle factors affecting the breathing system			
Explain how cigarettes can damage our health			

Checklist for Elements and compounds

	Taught	Understood	Revised
Navigate the Periodic Table and identify some of the elements			
Identify features of the Periodic Table and describe how it is organised			
Explain why the Periodic Table is useful			
Interpret chemical symbols			
Explain what is meant by 'element' and 'atom'			
Work out the composition of different substances based on their names			
Recognise the elements and their differences from physical data			
Compare the properties of metals and non-metals			
Use data and the properties of elements to choose suitable materials			
Explain what is meant by a compound			
Recognise how compounds are formed and named			
Interpret the ratio of atoms and formula of compounds			
Use a simple model to show the differences between atoms and molecules			
Use models to represent compounds			
Make observations during chemical reactions			
Write word equations to demonstrate chemical changes			
Explain chemical changes using a model			

Energy and Sound Checklist

	Taught	Understood	Revised
Recognise what energy is and its unit			
Describe a range of energy transfers using simple diagrams			
Recognise energy transfers due to falling objects			
Describe factors affecting energy transfers related to falling objects			
Explain how energy is conserved when objects fall.			
Recognise situations where work is done			
Describe the relationship work done = force \times distance			
Apply the equation for work done to different situations			
Recognise what we mean by temperature			
Describe how temperature differences lead to energy transfer			
Explain the difference between heat and temperature			
Identify examples of fuels and their uses			
Describe combustion of fuels and recognise that different fuels transfer different amounts of energy			
Describe the advantages and disadvantages of using different fuels.			
Describe how to measure the energy of fuels			
Describe how the pitch of a sound wave can be changed			
Apply the terms frequency, wavelength and amplitude to different waveforms			
Describe what an echo is			
Recognise how the speed of sound changes in different substances			
Describe the structure and function of different parts of the ear			
Explain how the ear is able to hear and detect sounds			

Recognise what is meant by ultrasound			
Describe some applications for ultrasound			

Forces and Effects

	Taught	Understood	Revised
List some types of force and label diagrams to show the direction of forces. [O1]			
State the main types of force and draw force diagrams to show the size and direction of forces. [O2]			
Describe the main types of force and accurately draw force diagrams to explain the relative size and direction of applied forces and their effects. [O3]			
Recognise that a newtonmeter can be used to measure a force, and know that mass and weight are not the same. [O1]			
Use newtonmeters, have a basic understanding of mass and explain simply how gravitational force affects weight. [O2]			
Use newtonmeters with skill to measure a range of everyday forces, and correctly use scientific concepts to explain effectively the difference between mass and weight. [O3]			
State that forces are needed to change the motion of an object, and draw force arrows in diagrams. [O1]			
Correctly use force diagrams to explain the effects of forces and changes in motion; identify force pairs. [O2]			
Explain the effects of a range of forces and accurately illustrate these using diagrams, and explain effectively different examples of action and reaction. [O3]			
State that applying a force can compress or stretch an object, and state that the bigger the force the larger the deformation. [O1]			
Use the understanding of forces changing an object's shape to consider the quality of evidence when investigating change in shape. [O2]			
Explain how forces can cause an object to deform, link the deformation to the size of the force, and recognise that for a range of forces the amount of deformation is linear and that this can be used to design machines for measuring forces. [O3]			
Carry out an investigation into springs and gather data to show simply the relationship between load and extension. [O1]			
Use their own data to state Hooke's Law and explain the elastic limit of a material. [O2]			
Obtain a precise set of data by investigation, produce accurately drawn graphs to illustrate Hooke's Law, and explain the behaviour of a material at the elastic limit. [O3]			
List examples of situations that need friction. [O1]			
Explain why friction is beneficial in a range of situations. [O2]			
Include the essential features in a plan to investigate the force of friction. [O3]			
List examples of situations that need friction. [O1]			

Explain why friction is beneficial in a range of situations. [O2]			
Include the essential features in a plan to investigate the force of friction. [O3]			
Describe the effects of balanced and unbalanced forces, and know that an unbalanced force is needed for a change to take place. [O1]			
Identify and record suitable evidence in exploring the forces on a model glider; identify examples of balanced and unbalanced forces and explain the effect on motion. [O2]			
Explain examples of balanced and unbalanced forces and correctly predict the relative motion produced by unbalanced forces; explain the concept of a reaction force using simple examples. [O3]			
Predict relative motion produced by different forces on an object. [O1]			
Apply an understanding of forces to explain simply the changes caused by forces of different magnitudes and directions. [O2]			
Apply an understanding of forces to explain, using accurately drawn force diagrams, the changes caused by forces of different magnitudes and directions. [O3]			
Describe a method in simple terms to find the speed of an object. [O1]			
Explain the concept of speed and demonstrate how the speed equation is derived using their understanding of speed. [O2]			
Provide an effective explanation of the concept of speed and independently derive the equation for speed; link their understanding of the speed equation to explain the operation of speed cameras. [O3]			

Mixing, dissolving and separating

	Taught	Understood	Revised
Recognise and reduce risks when working in a laboratory			
Name and select appropriate equipment			
Recognise the difference between materials substances and elements			
Identify elements by their names and symbols			
State and describe the changes of state of matter			
State the boiling and freezing point of water			
Explain what is meant by a chemically pure substance			
Explain the terms solvent, solution, solute and soluble			
Identify factors that affect dissolving			
Explain the difference between a dilute solution and a concentrated solution			
Recognise the differences between substances and use these to separate them.			
Separate a soluble substance from water			
Form crystals from solutions			
Explain solubility			
Use distillation to separate substances			
Explain why distillation can purify substances			
Use chromatography to separate dyes			
Use chromatography to identify unknown substances			
Draw conclusions from evidence			