Year 7 Science Personal Learning Checklist

Can you…?	Confidence		
	1	2	3
7C1 Particles			
States of Matter			
Categorise substances as solids, liquids and gases.			
Describe the properties of solids, liquids and gases.			
Density			
Calculate density.			
Compare the densities of solids, liquids and gases.			
The Particle Model			
Identify particle diagrams for solids, liquids and gases.			
Describe how the particles are arranged and how they behave in solids, liquids and gases.			
Explain the properties of solids, liquids and gases using the particle model.			
Expansion and Contraction			
Explain why substances expand when they are heated using the particle model.			
Explain why substances contract when they are cooled using the particle model.			
Gas Pressure			
Describe what gas pressure is and explain it using the particle model.			
Diffusion			
Describe what diffusion is and explain it using the particle model.			
Compare the rate (speed) of diffusion in solids, liquids and gases.			
Changes of State			
Name the changes of state (melting, boiling, condensing, freezing and subliming)			
Explain what happens during the changes of state in terms of particles.			
Melting and Boiling Points			
Describe what is meant by melting point and boiling point.			
Recall the melting and boiling points of pure water (0°C and 100°C).			
Work out what state (solid, liquid or gas) a substance will be in at a given temperature using its melting and boiling point.			

7B1 Cells			
Using a Microscope			
Name the parts of a microscope.			
Describe how to use a microscope.			
Cells			
Identify the organelles (parts) of an animal cell.			
Identify the organelles (parts) of a plant cell.			
Explain the function (job) of each organelle.			
Describe the features of specialised cells (sperm cell, egg cell, root hair cell, nerve cell, red blood cell, palisade cell) and explain how they help the cell to carry out its function (job).			
Organisms			

Describe what a unicellular organism is (you should be able to describe amoeba and euglena).			
Explain how unicellular organisms are different to plant and animal cells.			
Describe the link between cells, tissues, organs and organ systems in multicellular organisms.			
Diffusion and Osmosis			
Describe what diffusion is and explain it in terms of particles.			
Identify some substances that can move into or out of cells by diffusion.			
Describe an experiment to investigate the effect of temperature on diffusion.			
Describe how temperature affects diffusion.			
Describe how water moves from the soil in to a plant.			
Explain why plants wilt if they don't get enough water.			

7P1 Forces			
Forces			
Describe what a force is.			
State the unit of force (Newtons, N).			
Give examples of contact and non-contact forces.			
Identify force pairs.			
Weight and Mass			
Define mass and weight.			
Describe how to measure mass and weight.			
Use an equation to link mass and weight.			
Balanced and Unbalanced Forces			
Label a force diagram.			
Describe what balanced and unbalanced forces are.			
Explain what will happen to an object if the forces are balanced (remains stationary or travels at a constant speed) or unbalanced (start moving in the direction of the largest force, accelerate or decelerate).			
Springs			
Name the forces acting on a spring.			
Describe how weight affects the extension of a spring.			
Upthrust			
Describe what upthrust is.			
Determine whether an object will float or sink by comparing the weight to the upthrust.			
Friction			
Describe what friction is and what direction it acts in (opposite direction to the direction the object is moving in).			
Compare the force of friction between different materials and explain how to reduce friction.			
Air and Water Resistance			
Describe what air and water resistance are and what causes them.			
Explain the effect of speed on air and water resistance.			
Explain the motion of a parachutist in terms of forces.			
Identify situations where air and water resistance need to be reduced.			
Explain how air and water resistance can be reduced by streamlining.			

7C2 Separating Techniques			
Pure or Impure			
Identify ***pure*** and ***impure*** substances from particle diagrams.			
Explain the difference between pure and impure substances.			
Dissolving and Solutions			
Define the terms ***soluble***, ***insoluble***, ***solute***, ***solvent***, ***suspension***, ***solution***, ***saturated solution***, ***concentration*** and ***solubility***.			
Describe how to identify soluble and insoluble substances.			
Describe what happens when a substance dissolves in terms of particles.			
Describe how to change the concentration of a solution.			
Explain the difference between a solution with a high concentration and a solution with a low concentration in terms of particles.			
List the factors that affect solubility.			
Explain how to investigate solubility.			
Name some different solvents.			
Explain why we might need to use a different solvent instead of water.			
Melting and Boiling Points of Mixtures			
Describe the effect of salt on the melting point of water.			
Explain why salt is added to roads during cold winters.			
Use ***melting and boiling point*** data to determine what ***state*** (solid, liquid or gas) a substance will be in at a given temperature.			
Separation Techniques			
Describe how the following techniques can be used to separate a mixture:			
Magnetism; sieving; filtration; evaporation (crystallisation); distillation; decanting; chromatography			
Explain how/why each of the techniques listed above works.			
Choose a suitable technique to separate a given mixture.			
Identify whether a colour is pure or a mixture from a ***chromatogram***.			
Identify an 'unknown' colour from a chromatogram.			

7P2 Energy and Sound			
Energy			
Name five ***energy stores***.			
Give examples of ***energy transfers***.			
Identify the ***input energy transfer***, ***useful energy transfer*** and ***wasted energy transfer*** in a system.			
Draw ***Sankey diagrams*** to represent energy transfers.			
State the law of ***conservation of energy***.			
Fuels			
Name some ***fuels***.			
State what a fuel is in terms of energy and give the energy transfer for burning.			
Write a word equation for ***combustion***.			
Work Done and Levers			

Identify when work is being done and state the unit for work done.			
Calculate work done, force and distance using the equation:			
Work Done = Force x Distance moved by force			
Label a lever system.			
Describe how a lever system amplifies a force.			
Sound and Hearing			
Describe how ***sounds*** are produced and how they travel.			
State whether sound travels fastest in solids, liquids or gases and explain why, using the particle model.			
Explain why sound cannot travel through a ***vacuum***.			
Compare ***loud*** and ***quiet*** sounds in terms of ***vibrations***.			
Compare ***high and low pitched*** sounds in terms of vibrations.			
Define the terms ***frequency*** and ***volume***.			
Describe sounds, in terms of frequency and volume, from sound wave diagrams.			
Explain how ***sound-proofing*** works.			
Name the parts of the ***ear*** and describe how we hear sounds.			
Explain how ears can be damaged by noise and how this can be prevented.			
Compare the hearing range of humans and animals in terms of frequency.			
Define ***ultrasound*** and ***infrasound*** and give examples of how they can be used.			

7B2 Movement and Reproduction			
Puberty			
Identify the changes that happen to boys and girls during puberty.			
Male & female reproductive system			
Identify the parts of the male and female reproductive system.			
Describe the different stages in the menstrual cycle.			
State how long the menstrual cycle is and how often a woman menstruates.			
State where sperm are produced.			
State where ova (egg cells) are produced.			
Explain how ova (egg cells) and sperm cells are adapted for their functions.			
Reproduction and pregnancy			
Describe how a sperm cell reaches the egg cell.			
Explain the difference between ovulation and fertilisation.			
State where fertilisation takes place.			
Describe what happens after an ovum (egg cell) after it has been fertilised.			
Describe the stages in the development of a foetus.			
Explain how a foetus gets the nutrients and oxygen that it needs.			
Explain how a foetus gets rid of carbon dioxide and other waste products.			
Describe how a baby is born.			
Explain what happens to the muscles in the uterus wall during child birth.			
Name some substances that can affect the development of a foetus and explain the effects they can have.			
Describe how identical and non-identical twins are produced.			

Explain the difference between identical and non-identical twins.			
Describe what conjoined twins are.			
Plant reproductive systems			
Identify the male and female parts of a flower			
Name the male and female parts of a flower and explain their roles			
Suggest how plants avoid self-pollination and why that's important			
Describe the different ways that pollen can pollinate a flower			
Explain how the different parts of flowers are adapted to different ways of pollination			
Explain the importance of pollinators such as bees to ecosystems			
Name a way that seeds can be dispersed			
Describe the different ways that seeds can be dispersed			
Explain why plants need to use seed dispersal mechanisms			
Lungs & Breathing			
Identify the parts of the respiratory system.			
Describe how we breathe in and out.			
Explain why air enters and leaves out lungs in terms of changes in pressure and volume.			
Describe what gas exchange is and where it happens.			
Explain how the lungs are adapted for gas exchange, including the role of the alveoli.			
Describe how smoking affects the respiratory system.			
The Skeleton			
Describe four functions of the skeleton.			
Describe the structure of a long bone e.g. the femur.			
State the four different types of joint we have in the skeleton, describe where they are found and what movement they allow.			
Explain the roles of tendons, ligaments, muscles, cartilage and synovial fluid.			
Describe some medical problems that can occur in the skeletal system and suggest how they might be treated.			
Muscles			
Name the three different types of muscle found in the human body, describe where they are found and what their functions are.			
Explain how antagonistic muscle pairs work together to bring about movement.			