Lower Peover C of E Primary School

Progression in Science under the 2014 National Curriculum

Chemistry

Everyday Materials Materials and their Properties	Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
Key Questions:	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
1) Different rocks have different properties and the formation of soil & fossils can be explained.			• Can they describe in simple terms how fossils are formed when things that have lived are trapped within rock? • Can they recognise that soils are made from rocks and organic matter? • Can they describe and explain how different rocks can be useful to us? • Can they describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed? • Can they describe how fossils are formed within sedimentary rock?			
Challenges			• Can they classify igneous and sedimentary rocks? • Can they begin to relate the properties of rocks with their uses?			

2) Materials have physical properties which can be investigated and compared	• Can they distinguish between an object and the material from which it is made? • Can they identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock? • Can they describe the simple physical properties of a variety of everyday materials using their senses and specific scientific words? • Can they compare and group together a variety of everyday materials on the basis of their simple physical properties?	Can they find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching? • Can they find out about people who developed useful new materials? (Dunlop, MacKintosh, MacAdam) • Can they explain how things move on different surfaces? • Can they distinguish between an object and the material from which it is made? • Can they identify and name a range of everyday materials? (wood, plastic, metal, water, rock) • Can they describe the simple physical properties of a variety of everyday materials? • Can they compare and classify a variety of materials based on their simple physical properties?	• Can they compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • Can they set up a test to explore whether or not materials are attracted to magnets? • Can they set up a test to explore whether or not a material will float or sink?	• Can they compare and group materials together, according to whether they are solids, liquids or gases?	• Can they compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets? • Do they know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution? • Can they use the knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating? • Can they demonstrate that dissolving, mixing and changes of state are reversible changes? • Can they explain that some changes result in the formation of new materials and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda?	• Can they test and group materials based on scientific evidence? (hardness, solubility, transparency, conductivity, insulation, magnetism) • Can they recover a substance from a solution? • Can they decide how a mixture would best be separated? (filtering, sieving, evaporating) • Can they show what they know about the properties of different materials?

3) The physical properties of materials determine their uses.		• Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses? • Can they identify and compare the uses of a range of everyday materials? (wood, metal, plastic, glass, brick/rock, paper/cardboard)	• Can they suggest materials which could be used for specific jobs?		• Can they give reasons, based on evidence from comparative and fair tests, for the particular use of everyday materials, including metals, wood and plastic?	• Can they give reasons for the uses of everyday materials based on scientific evidence?
4) Materials can exist in different states and that these states can sometimes be changed			• Can they describe what it means to reverse a change? • Can they describe which changes can be reversed? • Can they describe which changes cannot be reversed?	• Can they identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature? • Can they observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)?		• Can they use their knowledge of materials to suggest ways to classify? (solids, liquids, gasses) • Can they describe changes using scientific words? (evaporation, condensation) • Can they use the terms 'reversible' and 'irreversible'? • Can they explain the process of dissolving?
Challenges	• Can they describe things that are similar and different between materials? • Can they explain what happens to certain materials when they are heated, e.g., bread, ice, chocolate?	• Can they describe the properties of different materials using words like, transparent or opaque, flexible, etc.? • Can they sort materials into groups and say why they have sorted them in that way?	• Can they explain different ways that they can sort the same group of materials? • Can they sort materials by a number of different criteria and explain their reasons? • Can they explain why certain materials are used for specific jobs?	• Can they group and classify a variety of materials according to the impact of temperature on them? • Can they explain what happens over time to materials such as puddles on the playground or washing hanging on a line?	• Can they describe methods for separating mixtures? (filtration, distillation) • Can they work out which materials are most effective for keeping us warm or for keeping something cold?	• Can they describe methods for separating mixtures? (filtration, distillation) • Can they work out which materials are most effective for keeping us warm or for keeping something cold?

	• Can they explain what happens to certain materials when they are cooled, e.g., jelly, heated chocolate?	• Can they say which materials are natural and which are man-made? • Can they explain how materials are changed by heating and cooling? • Can they tell which materials cannot be changed back after being heated, cooled, bent, stretched or twisted? • Can they explain how materials are changed by bending, twisting and stretching?		• Can they relate temperature to change of state of materials?		