Attainment Band	**Energy Transfers** **Knowledge and Understanding**
Yellow/Yellow +	• Explain that when energy is transferred from fuels and food, the total amount of energy before and after remains the same; it is just stored differently • Calculate quantities of energy transferred using power ratings and time measurements • Calculate the cost of energy from information about power and time • Evaluate the consequences of using different alternative methods • Use Sankey diagrams to explain a range of energy changes and demonstrate that all energy is accounted for • Explain that energy transfer occurs when physical and chemical changes happen • Analyse different situations explaining how gravitational potential energy is transferred and how energy is conserved • Use models to account for differences between different elastic materials • Explain the advantages and disadvantages of using dynamos • Explain how moments apply to simple machines and explain how forces are multiplied by these devices • Analyse different situations in terms of heat and temperature • Explain that conduction and convection require a medium to transfer energy, but that radiation can transfer energy through empty space • Explain how a thermal conductor & insulator allow/prevents heat loss by conduction convection and radiation
Blue	• Explain that foods store different quantities of energy that can be measured • Use the watt as the unit of energy transfer in calculations • Explain units of energy and how they are converted from one to another • Explain units of energy and how they are converted from one to another • Explain advantages and disadvantages of different methods • Interpret and draw energy transfer diagrams • Recall ways in which energy is transferred from one store to another • Describe how changing height and gravity affect gravitational potential energy • Investigate how different materials transfer energy by elastic potential energy • Describe the energy transfers in a dynamo • Use the moments equation (moment = $F \times d$) and explain how to apply this to simple machines. • Make predictions about the direction of heat flow • Explain that energy is transferred from a warm object to a cooler object until both are at the same temperature

Green	• Recall the types of fuel used in the home • Recall that the rate of energy transferred is calculated as the quantity transferred divided by the time taken for it to be transferred • Recall the type of information given on a fuel bill • Describe ways of generating electricity • Define the unit of energy and describe some simple energy transfers • Recall ways in which energy is stored • Describe examples of energy transfer that include gravitational potential energy • Recognise that work is done when energy is transferred by elastic potential energy • Describe different applications for dynamos • Provide a simple description of the effect of increasing the length of a lever • Use a thermometer to measure temperature • Recall that warming causes a rise in temperature and that cooling causes a drop in temperature
White	• Some of the above elements have been achieved