

Unit P1 - Revision Lesson 6 Energy				
Specification learning outcomes	HSW statements	Exemplar teaching activities	Main differentiation	Resource sheets
<p>6.1 Demonstrate an understanding that energy is conserved.</p> <p>6.2 Describe energy transfer chains involving the following forms of energy: thermal (heat), light, electrical, sound, kinetic (movement), chemical, nuclear and potential (elastic and gravitational).</p> <p>6.3 Demonstrate an understanding of how diagrams can be used to represent energy transfers.</p> <p>6.4 Apply the idea that efficiency is the proportion of energy transferred to useful forms in everyday situations.</p> <p>6.5 Use the efficiency equation: $\text{efficiency} = (\text{useful energy transferred by the device} / \text{total energy supplied to the device}) \times 100\%$</p> <p>6.7 Investigate how the nature of a surface affects the amount of thermal energy radiated or absorbed.</p> <p>6.6 Demonstrate an understanding that for a system to be at a constant temperature it needs to radiate the same average power that it absorbs.</p>	HSW 3, 5, 10,	<p><u>The theme of this lesson is energy. [This lesson is a short lesson because there is not as much material to cover. Teachers may want to use any time left over to practice exam-style questions.]</u></p> <p>Starter: <i>Energy transfers in a power station.</i> Discuss what forms of energy there are and which are relevant, for example for a hydroelectric or a coal-fired power station. Provide a list of the forms of energy and then ask students to put them in the order in which energy is being changed from one form to another. Students should also be reminded that there are other forms of energy which may not be relevant here such as potential energy.</p> <p>Main: <i>Energy conversion diagrams 1.</i> Worksheet P1.31c will enable students to revise energy transfer diagrams. <i>Efficiency questions.</i> Worksheet P1.32d covers efficiency calculations. <i>Thermal energy investigation.</i> Ask students to write a hypothesis which could be tested by an investigation into energy radiated or absorbed by different containers. Students should explain their predictions and should base them on scientific knowledge.</p> <p>Plenary: <i>Hot fish.</i> Name something that needs to be kept at a constant temperature, such as a tropical fish tank, and ask students to identify the energy inputs and outputs. They could draw an energy transfer diagram to summarise. An online advert for a tropical fish tank makes a good visual prompt.</p> <p>Homework: Worksheet P1.34c asks students to identify whether or not there is equilibrium between the absorption and emission of energy in different situations.</p>	<p>Stretch: Ask students to use graph paper to draw energy conversion diagrams to scale.</p> <p>Support: Ask students to label the energy conversion diagrams with amounts of energy but explain that they do not need to try to make the width of the arrows proportional to the value.</p>	Worksheet P1.31c Worksheet P1.32d Worksheet P1.34c