

Maths topics	Section layout	Accompanying worksheets	Lesson considerations
<ul style="list-style-type: none"> <li>● Percentages.</li> <li>● Representing percentages on pie-charts.</li> <li>● Using percentages to calculate values.</li> <li>● Paying for electricity use.</li> <li>● Saving energy means saving money.</li> <li>● Defining sustainability in terms of use of the world's resources.</li> <li>● Energy saving appliances.</li> <li>● Ways of wasting energy.</li> <li>● Energy saving modifications that can be made to old buildings.</li> </ul>	<p>The Green family take the user on a tour of how they are modifying their house and their lifestyle to minimise their environmental impact. On the first page we meet the family. Then the user is asked to consider different definitions of sustainability. Both suggested definitions are correct, but the question is designed to get students thinking about the reasons for sustainability. Deeper pages look at the changes the Green family have made to their home, at lifestyle changes the family are making. Brief explanations show how energy and money are saved. The end of this section looks at the power rating of energy saving appliances and the concept of payback time for different energy saving modifications and appliances.</p>	<p><b>Saving energy is saving money – Foundation</b> This worksheet looks at percentage savings on annual heating bills from different adaptations. It also looks at how small actions by individuals can sum to make a big difference.</p> <p><b>Saving energy is saving money – Intermediate</b> This worksheet looks at percentage savings on annual heating bills from different adaptations and works out payback time for different modifications and appliances. The cost and energy saving of widespread behaviour changes are calculated. Questions mention the concept of CO<sub>2</sub> causing damage to the environment.</p> <p><b>Saving energy is saving money – Higher</b> This worksheet looks at percentage savings on annual heating bills from different adaptations and works out payback time for different modifications and appliances. The cost and energy saving of widespread behaviour changes are calculated. Questions mention the concept of CO<sub>2</sub> causing damage to the environment. The higher worksheet has less scaffolding in questions than the intermediate sheet.</p> <p><b>Pay-back time board game – all levels</b> This board game aims to show students that making energy-saving modifications costs money initially, but over time this money is paid back and money is saved. Teachers should familiarise themselves with the rules before explaining them clearly to students. Students should play the game in groups of 4 for around 25 minutes. Students should be given a tabulated record sheet (provided) to record their purchases and rewards. As the exercise is quite mathematical, less able students will need to be supported to complete the game e.g. by having mixed-ability groups. Other learning points from the game are that large energy savings can be made by considering travel options and making lifestyle changes such as growing vegetables at home.</p> <p><b>Saving energy in your home – Foundation/ Intermediate/Higher – all levels</b> This worksheet asks students to evaluate the energy efficiency of their own homes to see where they could save money and energy. It asks them to draw a pie-chart to show heat loss from different parts of a house and to calculate energy loss using percentages.</p>	<p><b>The section can be used in conjunction with many other sections of the site and can be set for classwork or homework. Students should study the page and then complete the worksheet. This work should be set after students have learned the Principle of Conservation of Energy. It also assumes students know what an energy chain is.</b></p>

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		<p><b>Running cost of appliances – Foundation</b>                      This worksheet looks at how much energy is used by different appliances and compares washing dishes by hand with washing them in different dishwashers including energy efficient dishwashers. It requires basic multiplication and addition.</p> <p><b>Running cost of appliances – Intermediate</b>                      This worksheet asks students to calculate the running costs of different appliances. To complete the worksheet, students will need to find out or be told a value to use for the cost of a unit of electricity. It requires multiplication, addition and logical thinking.</p> <p><b>Running cost of appliances – Higher</b>                      This worksheet asks students to calculate the running costs of different appliances. To complete the worksheet, students will need to find out, or be told, a value to use for the cost of a unit of electricity. It requires multiplication, addition and logical thinking and has less scaffolding than the intermediate worksheet.</p> <p><b>It's what you do that counts – Foundation/ Intermediate/ Higher – all levels</b>                      This worksheet looks at how much energy is wasted:                      - in the UK,                      - how much CO<sub>2</sub> this wasted energy relates to,                      - how much energy could be saved if everyone made small lifestyle changes to become more energy efficient</p> <p>This section should be studied once students are familiar with the concept of percentages and can draw pie-charts proficiently. The family home tour can be done with students in a teacher-led session on an interactive whiteboard, or students can make their own tours in a computer-based session. The board game is a good interactive way of reinforcing learning and getting students to work on mathematics in a group situation. The worksheets can be set after looking at the site.</p>	