

Question	Mark	Common Mistake/Misconception	Task
1	/4	<p>Part a: <i>Bulbs transfer <b>electrical energy</b> to light energy.</i> A lot of you put down that heat energy is transferred to light energy.</p> <p>Part c: <i>A battery is a device that stores chemical energy and converts this into electrical energy. Chemical reactions in the battery involve the flow of electrons.</i></p> <p>A lot of you stated that it was either a temperature change or a physical change. A physical change is something like a change of state or dissolving.</p>	<p><b>Fill in the gaps below using the words below the paragraph. Some may be used once, more than once or not at all.</b></p> <p>A battery or cell converts _____ energy into _____ energy. A buzzer converts _____ energy into _____ energy. A motor converts _____ energy into _____ energy. A torch converts _____ energy into _____ energy. All the of the components named above waste some energy as _____ energy.</p> <p>A generator works by converting _____ energy into _____ energy.</p> <p>Sound    Kinetic    Light    Heat    Wasted    Electrical Current    Voltage    Resistance</p> <p><b>EXTENSION:</b> Research how batteries work and how you can make a battery from a potato.</p>
2	/5	<p>Part bii: It doesn't matter where you put a cell in the circuit, it will still have the same effect. However, the direction of the battery makes a difference.</p> <p>Part cii: A lot of you said use a voltmeter, this has already been used as stated by the question. You need to think about other ways of finding things out. Such as checking packaging/internet/manufacturer information.</p>	<p><b>Create a circuit with one bulb and one battery. Use the voltmeter to measure the potential difference across the bulb:</b></p> <ol style="list-style-type: none"> <li>1. Add a battery in a random place – note what happens to the potential difference across the bulb.</li> <li>2. Press on one of your batteries and switch it's direction – note what happens to the potential difference across the bulb.</li> </ol>

3	/9	<p>Part 3b: A lot of you gave valid reasons for Family A wasting energy. However the question asked you to link your answer to the graph, if you haven't linked your answer to the graph you have only achieved 1 mark here. Make sure you read your answer and check that it answers the question.</p> <p>Part 3c: The question gives the power in Watts, not kilowatts, so you need to convert the number into kilowatts first. A lot of you also didn't use the correct equation and definitely didn't use a calculator.</p> <p>Part 3dii: A lot of you said that using fossil fuels is bad for the environment, however you didn't build on this point. You need to give a reason why it is bad for the environment. This is worth 2 marks, its not enough to just say 'bad for the environment'.</p> <p>Part 3diii: This question asked for a disadvantage of BOTH wind and solar. This means that they have a shared disadvantage.</p>	<p><b>Use the following equation to work out the answer to the situations below:</b></p> $\text{energy}(kWh) = \text{power}(kW) \times \text{time}(hr)$ <ol style="list-style-type: none"> <li>How much does it cost to use a 2.5 kW electric fire for 4 hours if electricity costs 7.5 pence per unit?</li> <li>A 120 W electric blanket is left on for 8 hours       <ol style="list-style-type: none"> <li>How many kilowatt hours of electrical energy is transferred?</li> <li>If the unit cost of electricity is 8 pence what is the cost (to the nearest penny) of using the electric blanket each evening?</li> </ol> </li> <li>A 2.6 kW kettle is used 8 times a day for five minutes each time. (a) What is the total time that the kettle is switched on each week? (b) How many units of electricity (i.e. kilowatt-hours) are converted in a week? (c) If the cost of a unit is 8 pence what is the cost of running the kettle for a week?</li> </ol> <p><b>Research fossil fuels, look for their advantages and disadvantages. When fossil fuels are burned, what do they release? What are the effects of the substances released?</b></p>
4	/3	<p>Part 4a: A lot of you just put 'the gerbils'. In a circuit the electrons have to be flowing for there to be a current. If the electrons are sat still there is no current. Therefore, you need to say the gerbils are moving.</p>	<p>Use either of the bullet points below to design your own model of a circuit, make sure to include a cell, wires and components that transfer energy:</p> <ul style="list-style-type: none"> <li>the water circuit in which the flow of water is likened to the electric current;</li> <li>a grid of wide and narrow streets, complete with car parks and one way systems, on which cars pass at speeds determined by the density of traffic;</li> </ul>

5	/2	<p>Part a: A lot of you gave incorrect definitions of 'potential difference' and a few of you gave vaguely correct definitions stating about a 'force'. This can be confusing as potential difference can have a couple of different meanings. I am going to give you the GCSE definition, this is what I would like you to learn.</p> <p>Part b: we measure current using an ammeter, and we measure potential difference using a voltmeter. A lot of you gave incorrect spellings for ammeter, make sure you learn the spelling for this as in future you won't get the mark for an incorrect spelling.</p>	<p><b>Learn the following definitions, you can do this by making flashcards, making a note in your book, use the cover-say-check-write method (like learning spellings):</b></p> <ul style="list-style-type: none"> <li>• Electric current is the rate of flow of electric charge.</li> <li>• Potential difference is a measure of how much energy is transferred between two points in a circuit.</li> </ul>
6	/4	<p>Part a: A lot of you said 'simple' circuit. We have never spoken about 'simple' circuits (yes it says it in the question, but its just stating that it is simple not complex.....). You need to identify whether this is series or parallel.</p> <p>Part b: On this question you got 1 mark for the correct symbol and 1 mark for the correct position of the voltmeter. Remember you don't measure potential difference in series, you 'hug' the component.</p> <p>Part c: The current will transfer energy from the power supply to the components in the circuit. Since energy has to be conserved, all of the source energy is shared between the components. Since potential difference is used to measure changes in energy, the potential difference supplied is equal to the total of the potential differences across all other components.</p>	<p>Below are some circuit diagrams. Your task is to work out the missing voltages.</p> <p><b>Series Circuits</b></p>

On the circuit below what are the readings for V1, V2, V3:

