

Please write clearly, in block capitals.

Centre number

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Candidate number

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Surname

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Forename(s)

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Candidate signature

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# ELC SCIENCE 5960

## Externally-Set Assignment

Component 5 - Physics: Energy, forces and the structure of matter

**Marks**

Date of Exam

Time allowed: 45 minutes

### Materials

For this paper you must have:

- a ruler

### Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the bottom of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want to be marked.

### Information

- There are 20 marks available on this paper.
- The marks for questions are shown in brackets.

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Answer **all** questions in the spaces provided.

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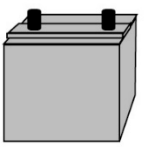
1. The left-hand column shows some electrical devices.

The right-hand column shows some types of energy.

Draw **one** line from each electrical device to the type of energy that it is designed to produce.

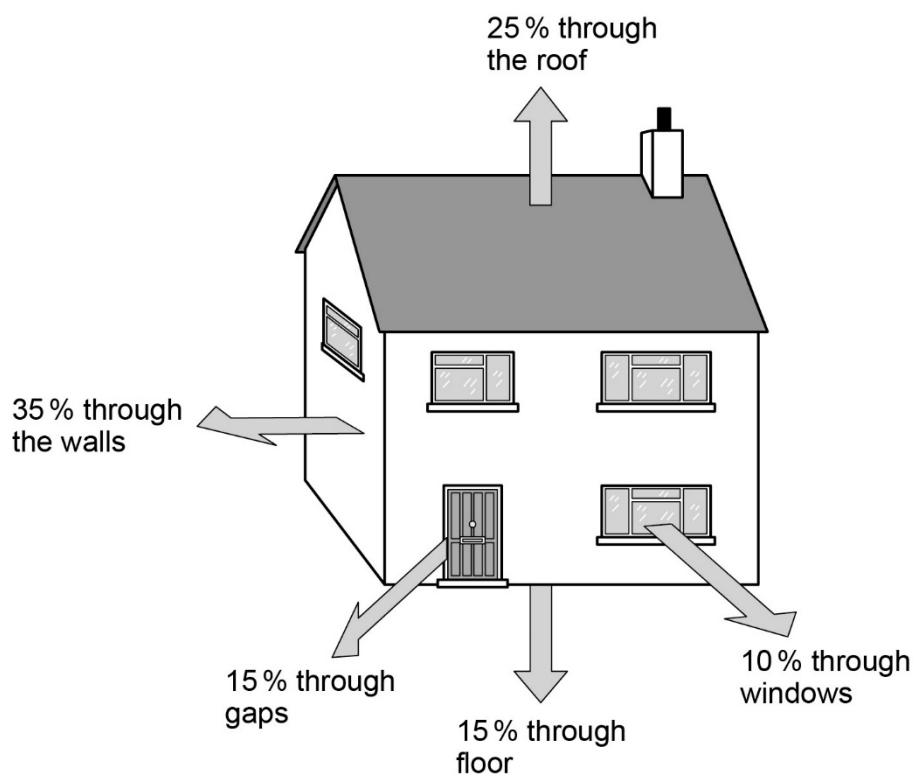
We have done one to help you.

[3 marks]  
Outcome 1

Electrical device	Type of energy
Toaster 	kinetic (movement)
Fan 	thermal
MP3 player 	electrical
Storage battery 	sound

A line is drawn from the 'Storage battery' box to the 'electrical' box.

2. The diagram shows some of the ways in which energy is lost from a house.



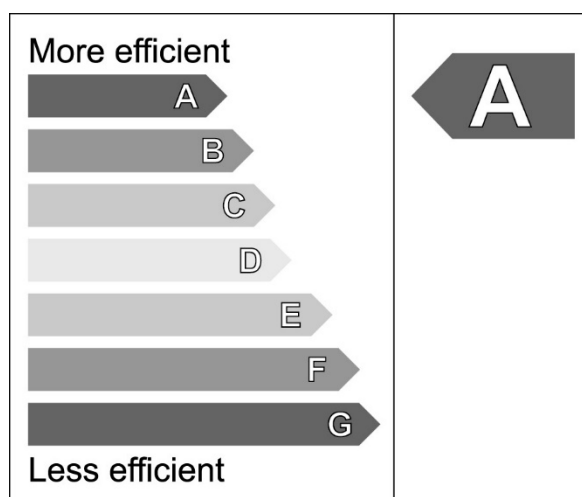
Write down **one** way you could reduce the rate of energy loss.

[1 mark]  
Outcome 2

.....

**Turn over for the next question**

3. The diagram shows a label from a washing machine.



This washing machine has an efficiency rating of **A**.

How would a washing machine with an efficiency rating of **G** compare with this one?

**[1 mark]**  
**Outcome 2**

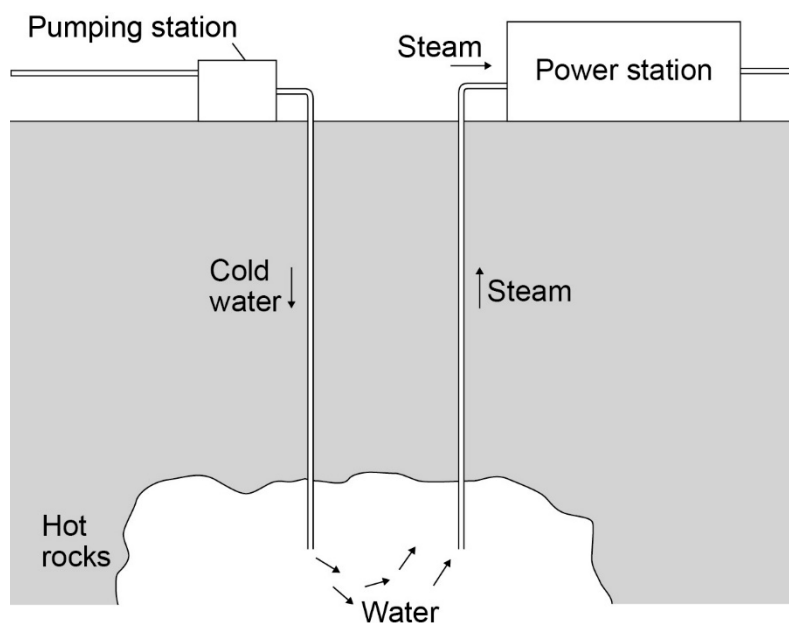
Tick (✓) **one** box.

Washing machine **G** would cost less to run.

Washing machine **G** would not get the clothes as clean.

Washing machine **G** would waste more energy.

4. The diagram shows a type of power station.



What type of energy resource is this?

Draw a ring around the correct answer.

[1 mark]  
Outcome 3

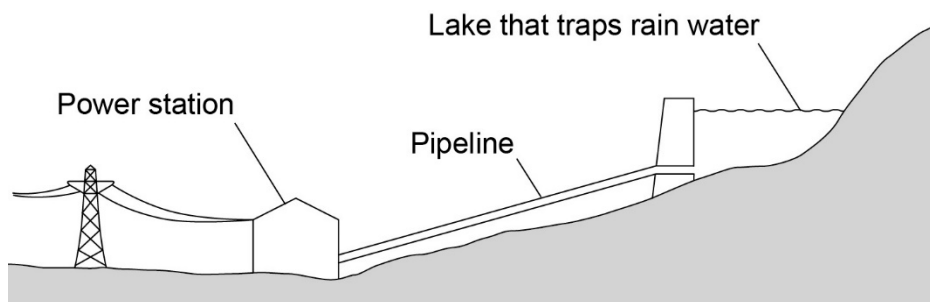
**geothermal**

**hydro-electric**

**tidal**

**Turn over for the next question**

5. The diagram shows another way of generating electricity.



Read the passage below about this way of generating electricity.

Use the correct words from the box to complete the sentences.

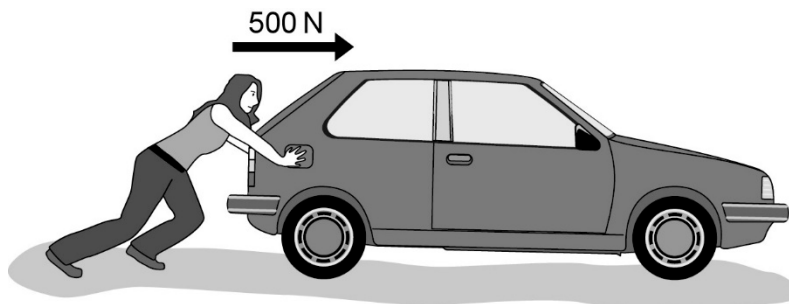
**[3 marks]**  
**Outcome 3**

<b>generator</b>	<b>non-renewable</b>	<b>transformer</b>
<b>motor</b>	<b>renewable</b>	<b>turbine</b>

Water from the lake runs down the pipeline into the power station.

The energy from this drives a ..... which then turns the ..... . This is an example of a ..... energy supply.

6. A car has broken down and the driver is pushing it.



(a) Use the correct word from the box to complete the sentence.

<b>force</b>	<b>mass</b>	<b>power</b>
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[1 mark]  
Outcome 4

The driver is using a ..... of 500 newtons.

(b) Use the correct word from the box to complete the sentence.

<b>energy</b>	<b>power</b>	<b>work</b>
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[1 mark]  
Outcome 5

When the driver pushes against the force of friction, ..... is done.

**Turn over for the next question**

7. A driver passes this sign on the motorway.



Two hours later the motorist reaches London.

What was the average speed of the motorist on this journey?

**[1 mark]**  
**Outcome 6**

Average speed was ..... miles per hour.

8. The Highway Code shows the stopping distance of vehicles at different speeds.



What name is given to the distance shown as 14 metres?

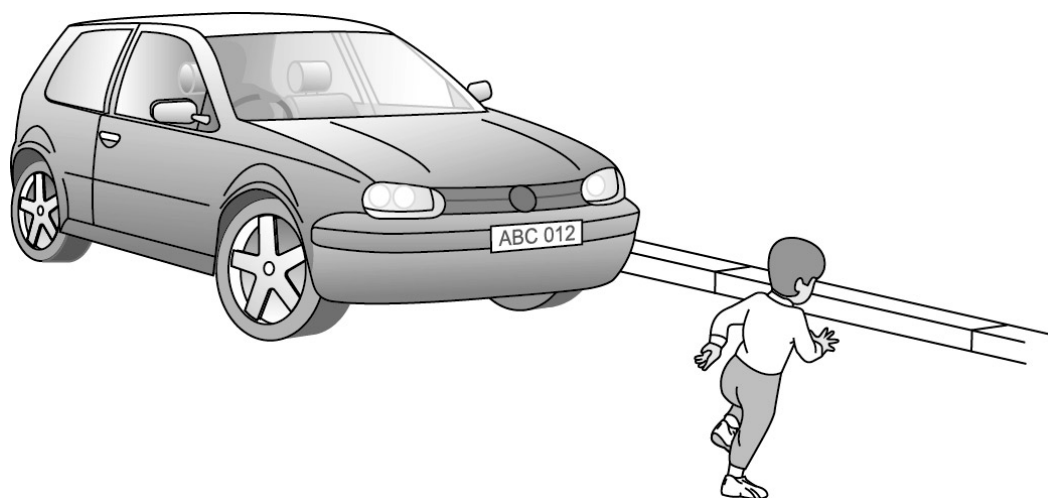
**[1 mark]**  
**Outcome 7**

.....



9. The diagram shows a child running across the road in front of a moving car.

In this situation the driver needs to stop the car in the shortest possible distance.



What would make the stopping distance **greater**?

**[3 marks]**  
**Outcome 9**

Tick (✓) **three** boxes.

- The brakes are old and worn.
- The driver has been drinking alcohol.
- Four new tyres have been fitted.
- The weather is hot, dry and sunny.
- There is ice on the road.

**Turn over for the next question**

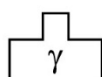
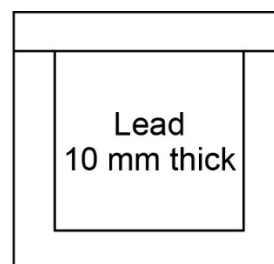
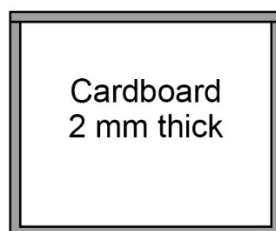
10. The diagram shows three different boxes and three radioactive sources.

Each source is stored in a different box.

Draw **one** line from each source to the correct box to store it in, so that the radiation leakage is a minimum.

You must use each source and each box only **once**.

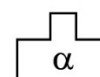
[2 marks]  
Outcome 10



Gamma source



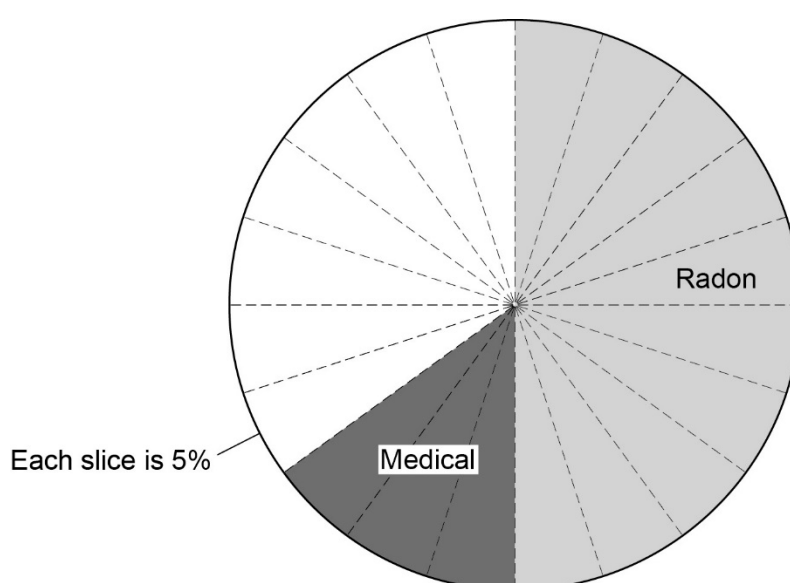
Beta source



Alpha source

11. The table and the pie chart show how much background radiation we get from different sources.

Sources of radiation	Percentage (%)
Radon gas	50
Medical	15
Food and drink	15
Ground and buildings	15
Other	5



Complete the pie chart using information from the table.

Do this by shading in 'slices' to show:

- **Food and drink**
- **Ground and buildings**
- **Other**

Remember to label these **three** slices on the pie chart.

**[2 marks]**  
**Outcome 10**

**END OF QUESTIONS**