

Write your name here

Surname

Other names

Centre Number

Candidate Number

**Pearson Edexcel International
Lower Secondary Curriculum**

Science

Year 9

Achievement Test

Thursday 2 June 2016 – Afternoon

Time: 1 hour 20 minutes

Paper Reference

LSC01/01

You may need:

Ruler

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*

Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- Candidates may use a calculator.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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PEARSON

SECTION A

Answer ALL questions

For questions 1 – 10 put a cross in one box to indicate your answer.
If you change your mind, put a line through the box and then put a cross in another box .
Each question is worth one mark.

1 Which part of a plant takes up water from the soil?

- A leaf
- B petal
- C root
- D stem

(Total for Question 1 = 1 mark)

2 A mixture of sand and iron filings is best separated by

- A filtration.
- B magnetism.
- C sieving.
- D stirring.

(Total for Question 2 = 1 mark)

3 Gravity is

- A a force measured in kilograms.
- B a mass measured in kilograms.
- C a force measured in newtons.
- D a mass measured in newtons.

(Total for Question 3 = 1 mark)

4 Which of these uses light to make its own food?

- A carnivore
- B herbivore
- C predator
- D producer

(Total for Question 4 = 1 mark)

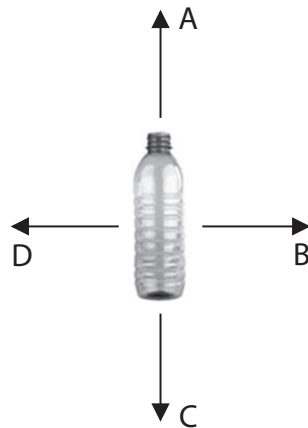


5 Some metals can be made into sheets. This is possible because metals are

- A conductors.
- B ductile.
- C malleable.
- D shiny.

(Total for Question 5 = 1 mark)

6 Which arrow shows the force of weight?



- A Arrow A
- B Arrow B
- C Arrow C
- D Arrow D

(Total for Question 6 = 1 mark)

7 Farmers use fertilisers to

- A help the soil absorb more water.
- B improve the growth of plants.
- C help the soil drain away extra water.
- D stop plants growing too tall.

(Total for Question 7 = 1 mark)

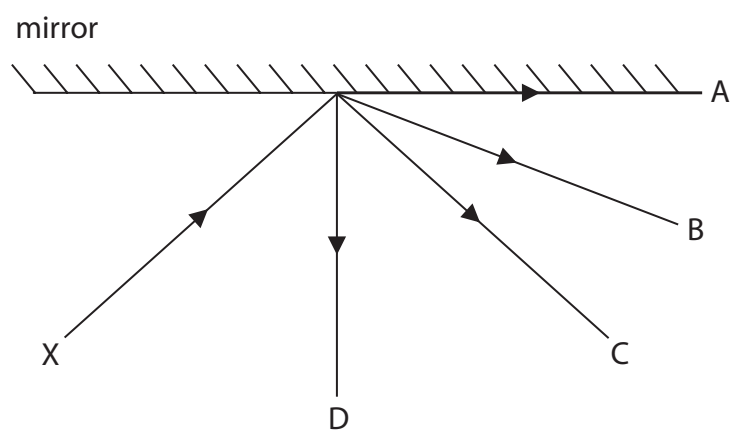


8 Which of these cannot be reversed?

- A burning
- B dissolving
- C freezing
- D melting

(Total for Question 8 = 1 mark)

9 Which arrow shows the reflection of light ray X?

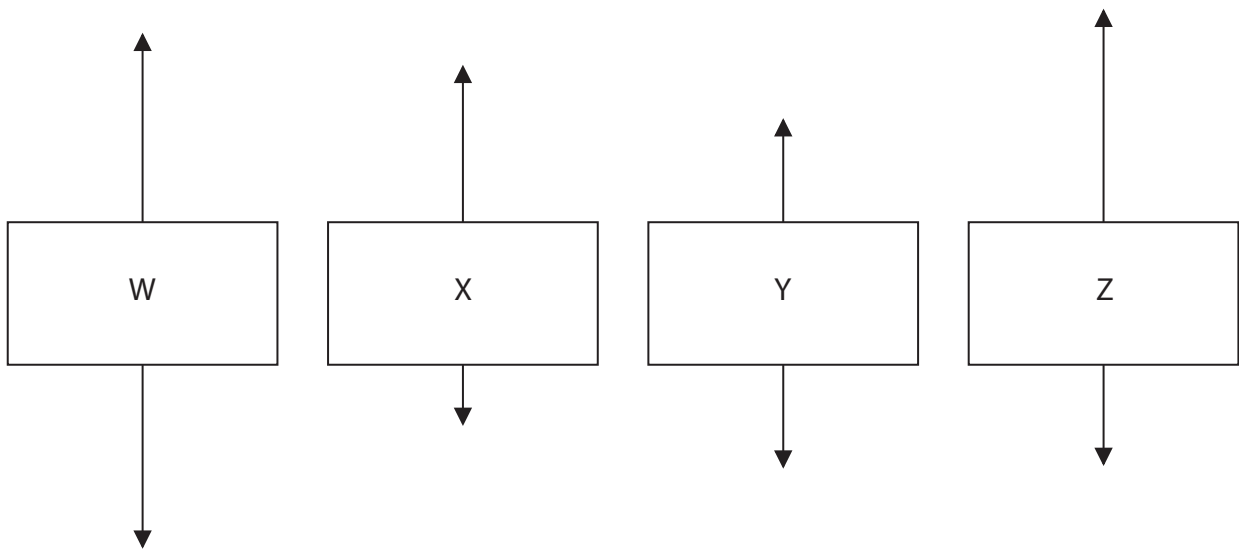


- A Arrow A
- B Arrow B
- C Arrow C
- D Arrow D

(Total for Question 9 = 1 mark)



10 Which two boxes have an upward resultant force acting on them?



- A W and Z
- B X and Y
- C W and Y
- D X and Z

(Total for Question 10 = 1 mark)

11 (a) What is an artificial satellite?

(2)

.....

.....

(b) Give **two** uses of artificial satellites.

(2)

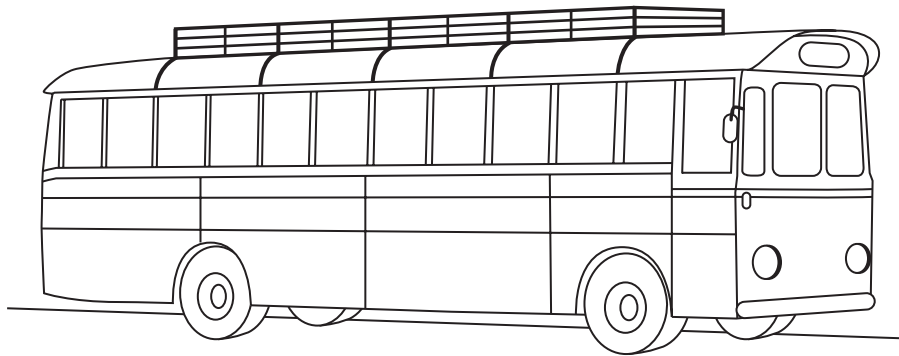
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(Total for Question 11 = 4 marks)



12 (a) The picture below shows a bus with an empty luggage rack on its roof.



Forces act on the bus when it is moving and when it is stationary.

Put **one** tick in each row of the table to show if these forces are balanced or unbalanced when the bus does what is described in the first column.

The first row has been done for you.

(2)

	The forces are:	
	balanced	unbalanced
The bus changes direction		✓
The bus slows down		
The bus is stationary		
The bus speeds up		

(b) The driver puts some large, heavy boxes on the roof rack. This increases two of the forces acting on the bus as it moves.

Name the two forces that will increase.

(2)

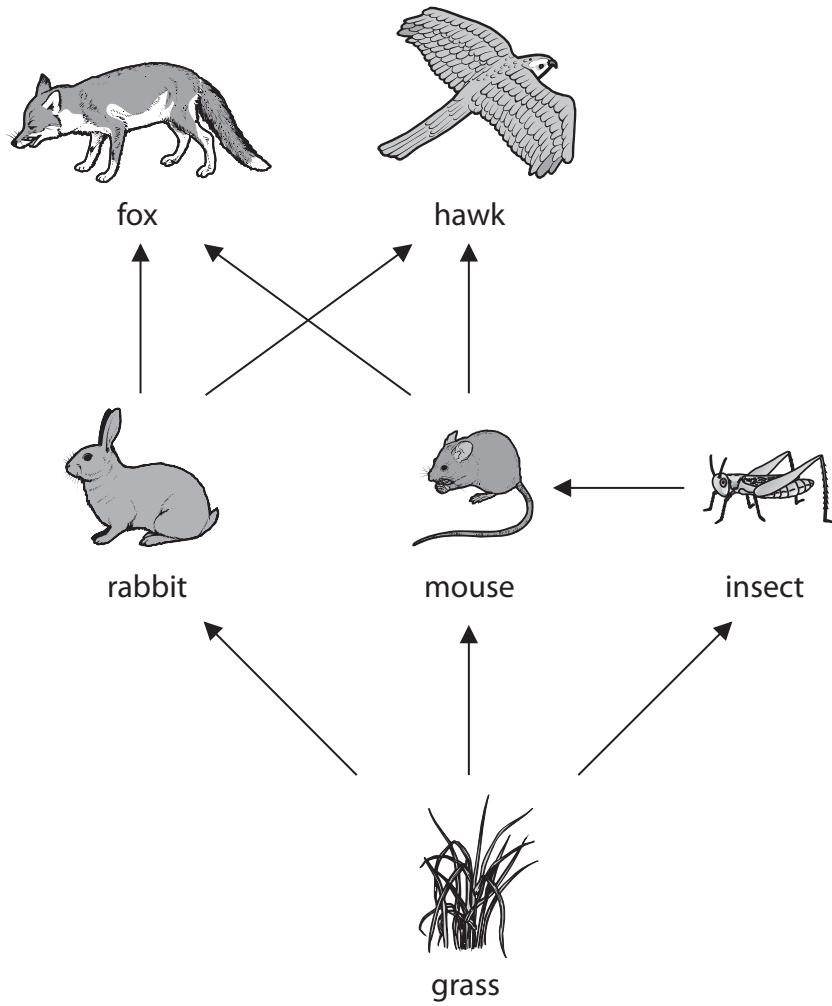
1

2

(Total for Question 12 = 4 marks)



13 This is a food web for some plants and animals in a field.



(a) Choose words from the box to complete the sentence.

(1)

fox hawk insect rabbit

The mouse is a predator of the and it is also the prey of
the and the

(b) Name **one** carnivore shown in this food web.

(1)

.....

(Total for Question 13 = 2 marks)



For questions 14 – 23 put a cross in one box to indicate your answer.
If you change your mind, put a line through the box and then put a cross in another box .
Each question is worth one mark.

14 The chemical formula for water is

- A HO
- B HO₂
- C H₂O
- D H₂O₂

(Total for Question 14 = 1 mark)

15 Which part of a cell contains genetic material?

- A cell wall
- B vacuole
- C cell membrane
- D nucleus

(Total for Question 15 = 1 mark)

16 Slate is used as a material for tiling house roofs.

This is because slate

- A can be cut to make flat sheets.
- B is a hard, igneous rock.
- C is made from sand.
- D can be moulded into shape.

(Total for Question 16 = 1 mark)



17 The force of gravity on the Moon is less than the force of gravity on the Earth.

This is because

- A there is no air on the Moon.
- B the Moon orbits the Earth.
- C the Earth spins on its axis.
- D the Moon has a smaller mass than the Earth.

(Total for Question 17 = 1 mark)

18 The diagrams below show some genetic material.

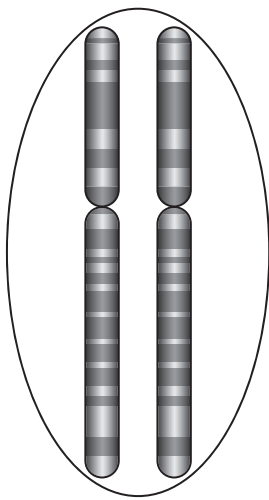


Diagram 1

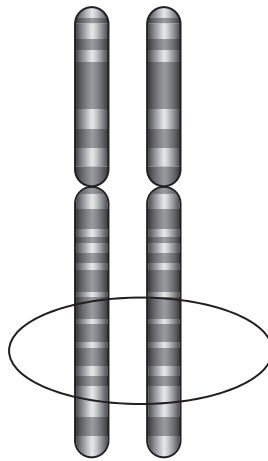


Diagram 2



Diagram 3

Which row of the table shows the correct labelling for Diagrams 1, 2 and 3?

	Diagram 1	Diagram 2	Diagram 3
<input type="checkbox"/> A	chromosomes	DNA	genes
<input type="checkbox"/> B	DNA	genes	chromosomes
<input type="checkbox"/> C	genes	chromosomes	DNA
<input type="checkbox"/> D	chromosomes	genes	DNA

(Total for Question 18 = 1 mark)



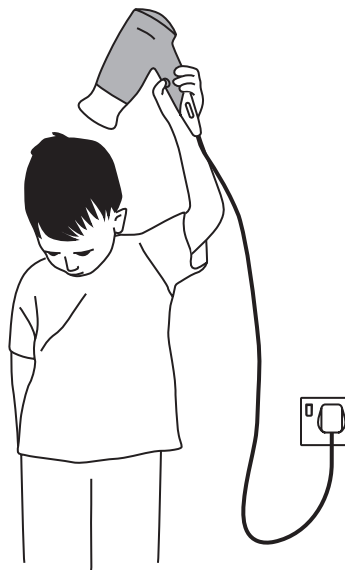
19 Galvanising prevents the corrosion of iron.

Iron is galvanised by coating it with

- A chromium.
- B grease.
- C paint.
- D zinc.

(Total for Question 19 = 1 mark)

20 Simon is drying his hair with a hairdryer.



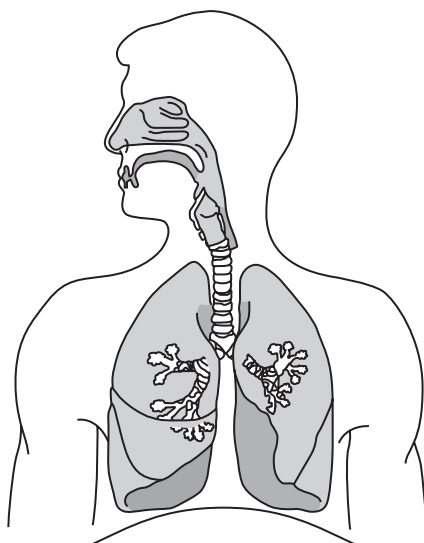
Which is the correct energy transfer when the hairdryer is used?

- A electrical → chemical + heat
- B heat → sound + kinetic + electrical
- C electrical → kinetic + heat + sound
- D chemical → kinetic + sound

(Total for Question 20 = 1 mark)



21 Which human system is shown in this diagram?



- A circulatory
- B digestive
- C reproductive
- D respiratory

(Total for Question 21 = 1 mark)

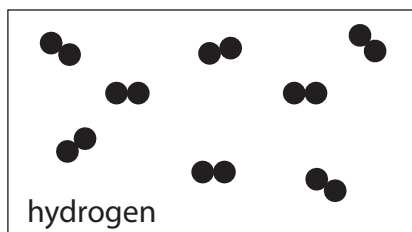
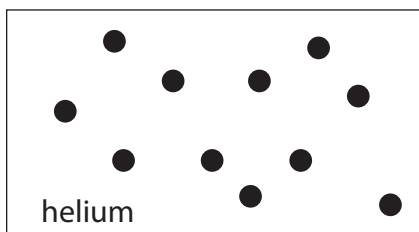
22 Which of these metals is the most reactive with water?

- A aluminium
- B iron
- C potassium
- D zinc

(Total for Question 22 = 1 mark)



23 These diagrams represent the gases helium and hydrogen.



not to scale

Which of these statements correctly describes the diagrams?

- A Helium gas exists as atoms and hydrogen gas exists as molecules.
- B Helium gas and hydrogen gas both exist as molecules.
- C Helium gas and hydrogen gas both exist as atoms.
- D Helium gas exists as molecules and hydrogen gas exists as atoms.

(Total for Question 23 = 1 mark)

24 The reactions of four metals, **A**, **B**, **C**, **D**, with water are recorded in the table.

Metal	Reaction with water
A	reacts slowly with cold water reacts quickly with steam
B	no reaction with cold water no reaction with steam
C	reacts very quickly with cold water
D	no reaction with cold water reacts slowly with steam

(a) List the four metals, **A**, **B**, **C**, **D**, in order from **most reactive** to **least reactive**.

(2)

.....
(most reactive) **(least reactive)**

(b) Copper is used to make water pipes.

Which metal in the table is likely to be copper?

(1)

.....

(Total for Question 24 = 3 marks)



25 A coconut palm tree, like the one shown below, can grow up to 30 m tall.



(a) Give **two environmental** factors that could affect how tall a coconut palm tree grows. (2)

- 1
- 2

(b) Some plants are genetically modified.

(i) Explain the meaning of the term 'genetically modified'. (1)

-
-

(ii) Give **one** reason for producing genetically modified plants. (1)

-
-

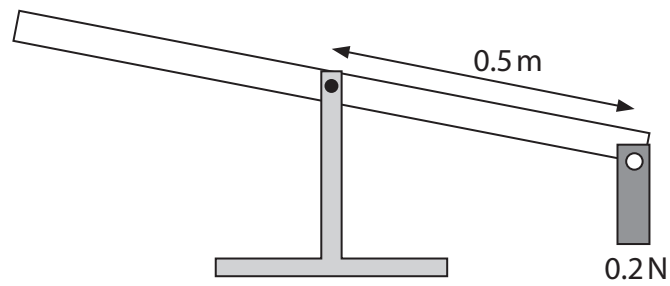
(iii) Give **one** concern that people may have about genetically modified plants. (1)

-
-

(Total for Question 25 = 5 marks)



26 This type of balance is used to study moments.



A block weighing 0.4 N is used to balance the bar.

Calculate how far from the pivot the block needs to be placed to balance the bar.

Show your working.

.....m

(Total for Question 26 = 2 marks)



For questions 27 – 36 put a cross in one box to indicate your answer.
If you change your mind, put a line through the box and then put a cross in another box .
Each question is worth one mark.

27 Different forms of the same gene are

- A alleles.
- B chromosomes.
- C gametes.
- D genotypes.

(Total for Question 27 = 1 mark)

28 What type of reaction is shown by this word equation?

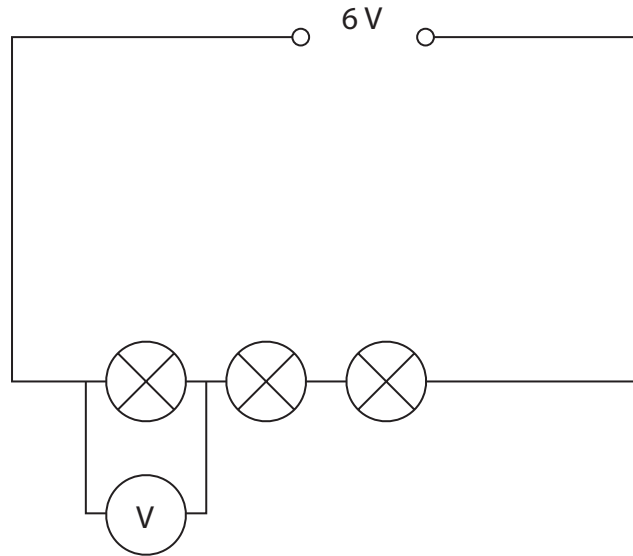


- A combustion
- B condensation
- C displacement
- D neutralisation

(Total for Question 28 = 1 mark)



29 In this circuit all the bulbs are identical.



What is the reading on the voltmeter?

- A 1.5 V
- B 2 V
- C 3 V
- D 6 V

(Total for Question 29 = 1 mark)

30 This table shows some information about four 50-year-old women, **A**, **B**, **C** and **D**.

From this information, which one of them would be considered to be at the **lowest** risk of coronary heart disease?

Woman	Smoker	Exercises regularly	Eats a low fat diet	Has high blood pressure
<input type="checkbox"/> A	no	yes	no	yes
<input type="checkbox"/> B	yes	no	no	yes
<input type="checkbox"/> C	no	yes	yes	no
<input type="checkbox"/> D	yes	no	yes	no

(Total for Question 30 = 1 mark)

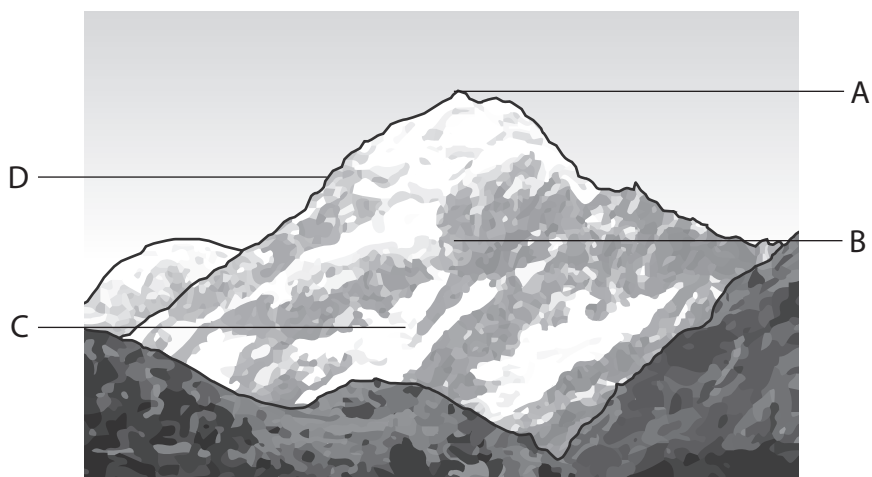


31 What is the chemical formula for calcium carbonate?

- A CaCO_3
- B Na_2CO_3
- C CuCO_3
- D MgCO_3

(Total for Question 31 = 1 mark)

32 At which point on the mountain is the strength of the gravitational force at its lowest?



- A
- B
- C
- D

(Total for Question 32 = 1 mark)

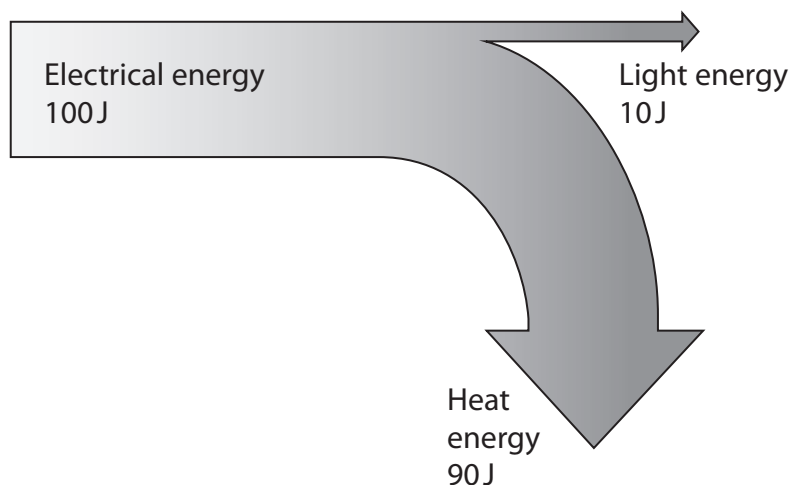


33 Which row in the table shows asexual reproduction?

	Number of parents	Offspring
<input type="checkbox"/> A	1	genetically identical
<input type="checkbox"/> B	2	genetically identical
<input type="checkbox"/> C	1	genetically different
<input type="checkbox"/> D	2	genetically different

(Total for Question 33 = 1 mark)

34 This is a Sankey diagram showing the energy transfers in a light bulb.



What is the efficiency of this light bulb?

- A 100%
- B 90%
- C 80%
- D 10%

(Total for Question 34 = 1 mark)



35 The picture below shows a man weighing 750 N, wearing a pair of snow shoes.



The total surface area of the snow shoes is 0.25 m^2 .

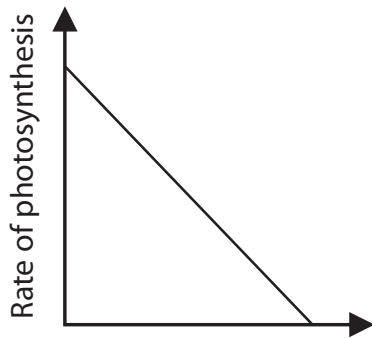
Which calculation shows the pressure exerted on the snow by the man when he is wearing the snow shoes?

- A $750 + 0.25$
- B $750 \div 0.25$
- C 750×0.25
- D $0.25 \div 750$

(Total for Question 35 = 1 mark)

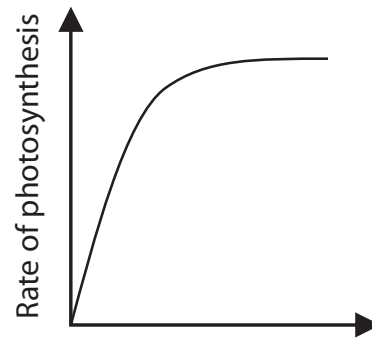


36 Which graph shows the correct relationship between light intensity and the rate of photosynthesis?



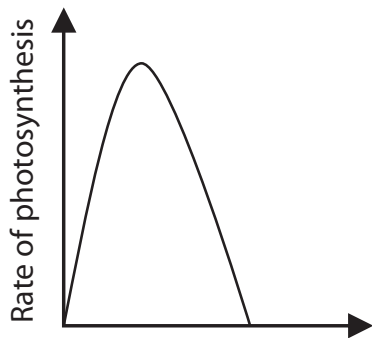
Light intensity

A



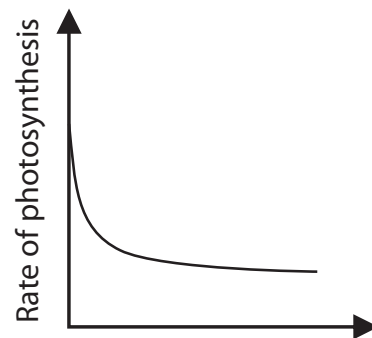
Light intensity

B



Light intensity

C



Light intensity

D

(Total for Question 36 = 1 mark)



37 Burning fossil fuels causes pollution by releasing gases, such as sulfur dioxide, into the air.

(a) State **one** environmental problem caused by sulfur dioxide polluting the air. (1)

(b) Lichens are plants that grow on rocks and trees. Different types of lichen can survive with different levels of sulfur dioxide in the air.

Type of lichen	Amount of air pollution in which they can survive
bushy	none
leafy	small amounts
crusty	larger amounts

(i) Scientists find both bushy and crusty lichen in one area.
What is the level of air pollution in this area? (1)

(ii) Add the missing word to complete the statement below. (1)

Lichens can be used to monitor pollution.

This is because they act as organisms.

(Total for Question 37 = 3 marks)



38 This is a general word equation for the reaction of some metals with dilute acids.



(a) What name is given to the salt produced when magnesium reacts with dilute sulfuric acid?

(2)

.....

(b) Complete and balance the symbol equation for the reaction of magnesium with dilute hydrochloric acid.

(2)



(Total for Question 38 = 4 marks)

39 Racehorses have been selectively bred over a number of years.



(Source: Jeff Kubina)

Describe the main stages that have been used to selectively breed racehorses.

.....

.....

.....

.....

.....

(Total for Question 39 = 3 marks)

TOTAL FOR SECTION A = 60 MARKS



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Turn over for Section B



SECTION B

Answer ALL questions.

40 Two students, **A** and **B**, in different classes are investigating the cooling of a hot drink.

(a) Each student is given 100 cm^3 of the same hot drink in a beaker.

(i) Why is it important for each student to start with the same volume of hot drink? (1)

(ii) Give **one other** factor that must be kept the same in each investigation. (1)

(b) Each student records the temperature of the drink in their beaker every 10 minutes for one hour. Their results are shown in the table below.

Time (minutes)	Temperature of each hot drink ($^{\circ}\text{C}$)	
	Student A	Student B
0	84	84
10	59	67
20	39	58
30	27	37
40	23	31
50	22	30
60	22	30

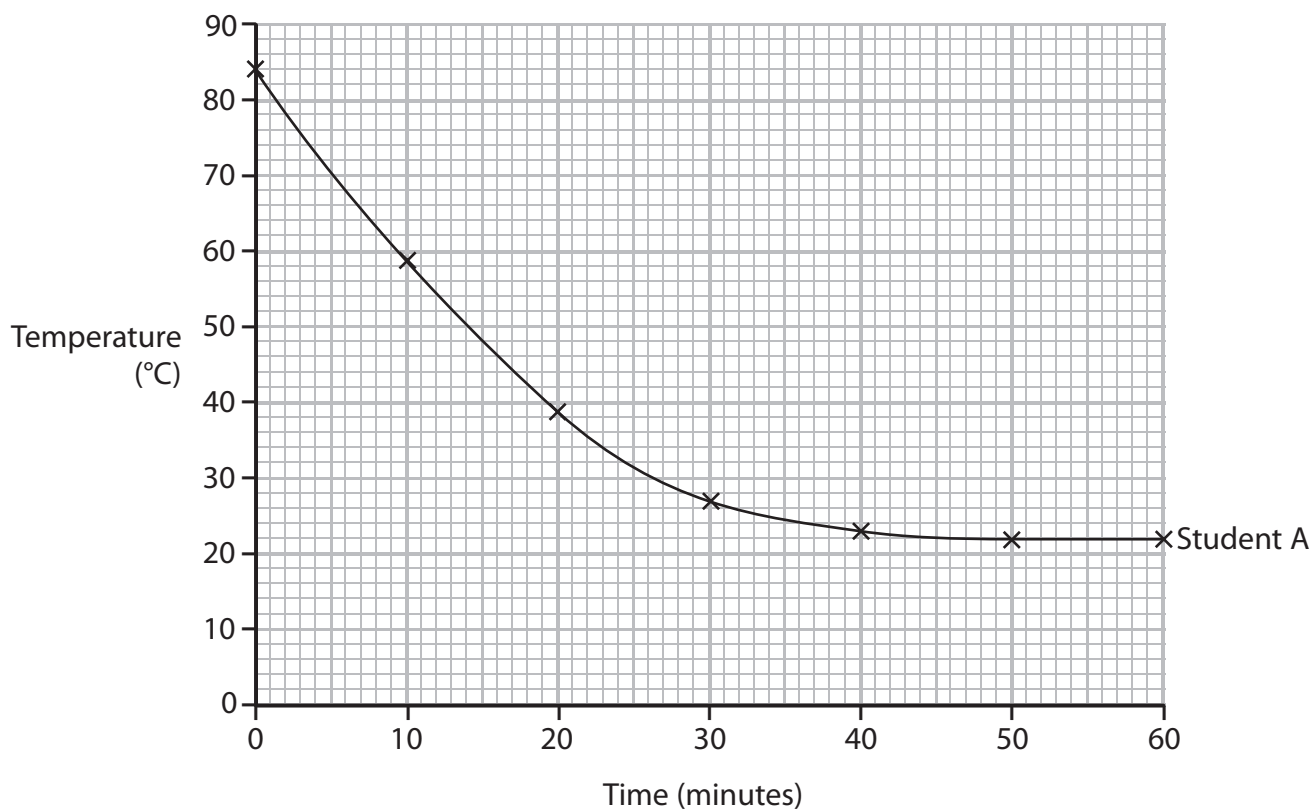


Student A's results have been plotted on the graph paper below.

(i) Plot Student B's results on the same graph.

Do **not** join the points.

(2)



(ii) One of Student B's results is incorrect.

Identify which temperature is incorrect and explain your reason for choosing this result.

(2)

Temperature:.....°C

Explanation:.....
.....
.....
.....

(iii) Join Student B's results on the graph, using a smooth curve and ignoring the incorrect result.

(1)



(c) The final temperature of Student A's drink is different to the final temperature of Student B's drink.

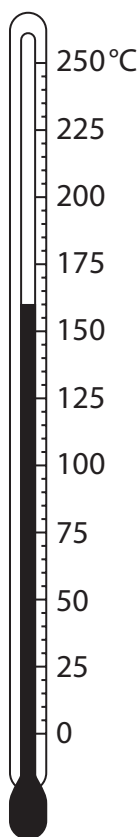
Suggest a reason for the difference in these final temperatures.

(1)

.....

.....

(d) The diagram below shows a thermometer.



(i) What is the reading on the thermometer?

(1)

.....°C

(ii) Why is this thermometer **not** suitable for Students A and B to use in their experiment?

(1)

.....

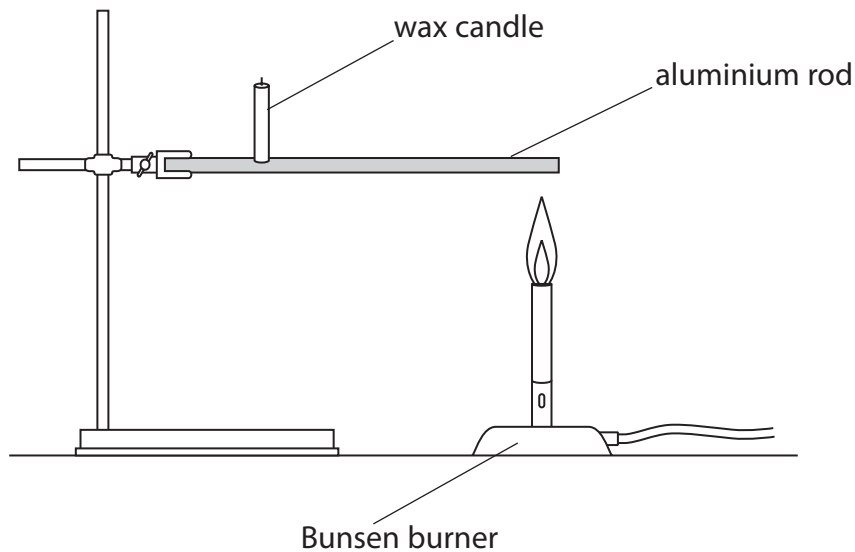
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(Total for Question 40 = 10 marks)



41 Tom is investigating the heat conductivity of four different metals.

He places a wax candle on an aluminium rod.



(a) Tom heats the end of the aluminium rod. The wax candle falls off the bar when the heat reaches it.

He records the time it takes for the wax candle to fall off.

Name **one** piece of measuring equipment that Tom needs.

(1)

(b) Identify **one** possible hazard in this investigation.

(1)

(c) He repeats the investigation using copper, iron and stainless steel rods, so that he can compare the conductivity of the four metals.

State **two** things that Tom must do to make his investigation a fair test.

(2)

1

2



(d) In Tom's investigation, identify the

(i) independent variable

(1)

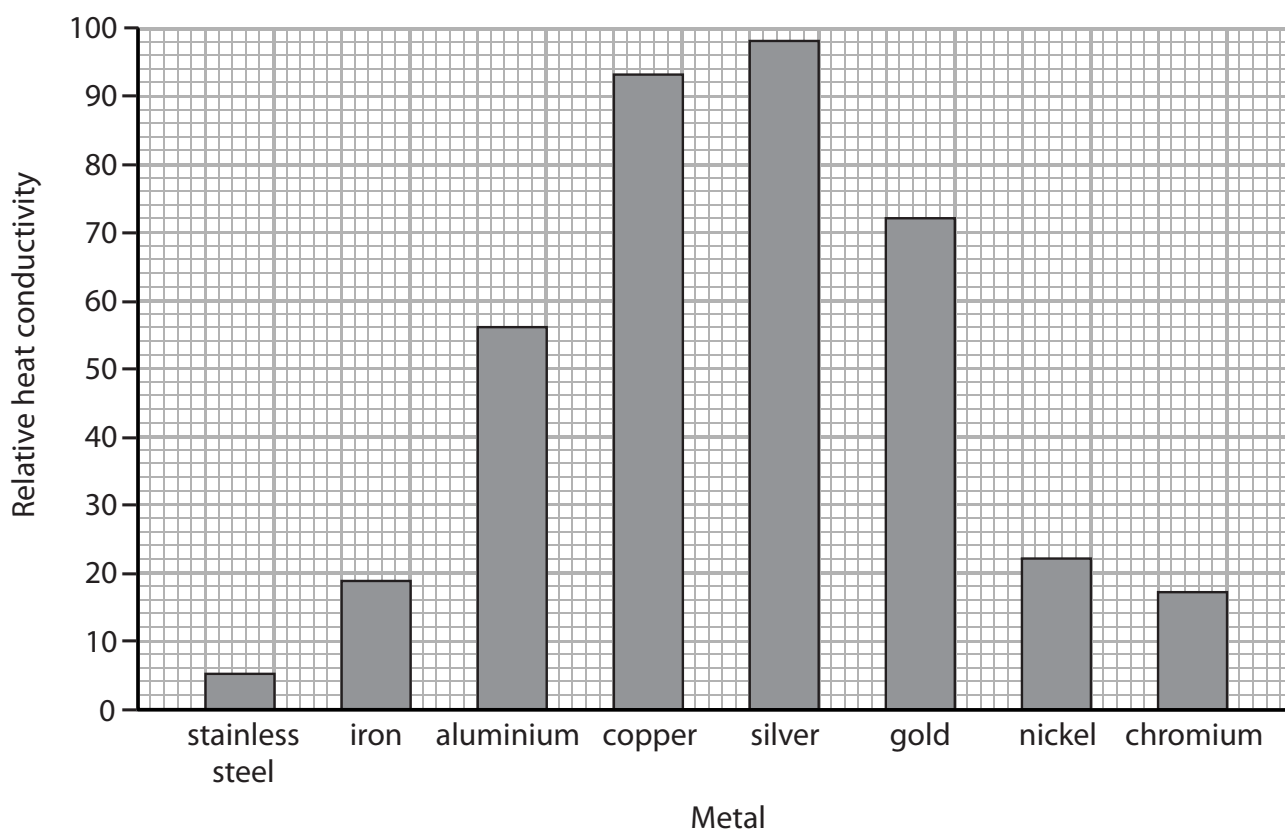
(ii) dependent variable

(1)

(e) What should Tom do to ensure that his results are reliable?

(1)

(f) Tom finds this bar chart, which compares the heat conductivity of some metals.



Use this bar chart to answer the following questions.

(i) Which metal shown in the bar chart has a relative heat conductivity value of approximately 56?

(1)



(ii) Which of the four metal rods that Tom tested (aluminium, copper, iron and stainless steel) would the candle stay on the longest?

(2)

Explain your answer.

Metal:

Explanation:

.....

.....

.....

(Total for Question 41 = 10 marks)

TOTAL FOR SECTION B = 20 MARKS
TOTAL FOR PAPER = 80 MARKS



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