Write your name here

Surname	Other names

Edexcel International Lower Secondary Curriculum

Centre Number | | | | | |

Candidate Number | | | | |

Science

Year 9
Achievement Test

Tuesday 4 June 2013 – Afternoon
Time: 1 hour 20 minutes

Paper Reference
LSC01/01

You do not need any other materials.

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 ▶

P43713A

6/6/6/1/1/

P 4 3 7 1 3 A 0 1 2 8

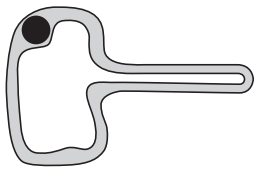
PEARSON

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 of these represents an egg cell?

			
☒ **A**	☒ **B**	☒ **C**	☒ **D**

(Total for Question 1 = 1 mark)

2 Metals can be beaten into sheets.

This shows that metals are

☒ **A** conductors.

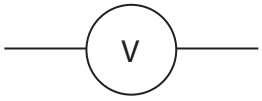
☒ **B** insulators.

☒ **C** magnetic.

☒ **D** malleable.

(Total for Question 2 = 1 mark)

3 What does this symbol represent?



☒ **A** variable resistor

☒ **B** voltmeter

☒ **C** battery

☒ **D** ammeter

(Total for Question 3 = 1 mark)

4 Which statement describes the function of the ovaries?

☒ **A** They pump blood around the body.

☒ **B** They produce sperm.

☒ **C** They filter out waste from the blood.

☒ **D** They produce egg cells.

(Total for Question 4 = 1 mark)

5 Why is copper used to make wire in circuits?

☒ **A** It is a good thermal conductor.

☒ **B** It is cheap.

☒ **C** It is a good electrical conductor.

☒ **D** It does not rust.

(Total for Question 5 = 1 mark)

6 What are the units for energy?

☒ **A** amps

☒ **B** joules

☒ **C** newtons

☒ **D** volts

(Total for Question 6 = 1 mark)

7 A strawberry plant produces 'runners'. These allow the plant to spread out over a wide area.

Producing runners is an example of

☒ **A** asexual reproduction.

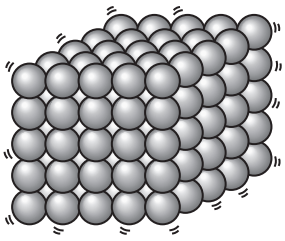
☒ **B** photosynthesis.

☒ **C** producing seeds.

☒ **D** sexual reproduction.

(Total for Question 7 = 1 mark)

8 The picture below shows the particle model for a substance.



Which substance does this particle model best represent?

☒ **A** carbon dioxide gas

☒ **B** liquid water

☒ **C** solid iron

☒ **D** sulfur dioxide gas

(Total for Question 8 = 1 mark)

9 Which of these is an artificial satellite?

☒ **A** A natural object orbiting the Earth.

☒ **B** An object made by humans orbiting the Earth.

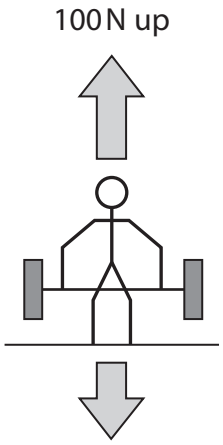
☒ **C** A planet orbiting the Sun.

☒ **D** A moon.

(Total for Question 9 = 1 mark)

10 This diagram shows a weightlifter lifting some weights on a bar. The arrows show the forces acting on the bar.

What is the resultant force on the bar?



☒ **A** 25 N up

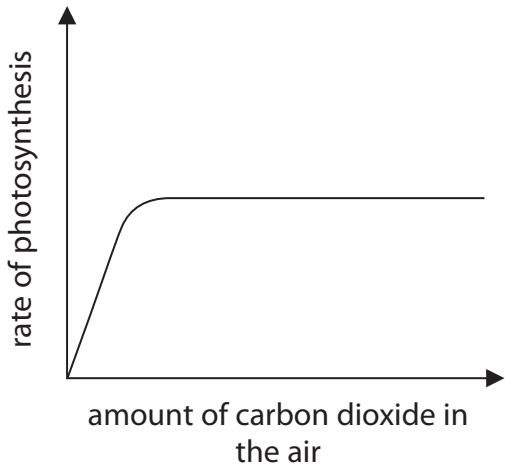
☒ **B** 25 N down

☒ **C** 35 N up

☒ **D** 35 N down

(Total for Question 10 = 1 mark)

11 The graph below shows how the rate of photosynthesis is affected by the amount of carbon dioxide in the air.



(a) Complete the word equation for photosynthesis.

(1)

Carbon dioxide + ... → ..... + oxygen

(b) Use the graph to describe how the amount of carbon dioxide in the air affects the rate of photosynthesis.

(2)

.....

.....

.....

.....

(c) How could a farmer who grows tomatoes in a greenhouse use this information?

(1)

.....

.....

(Total for Question 11 = 4 marks)

12 Jane reacts dilute sulfuric acid with an excess of copper oxide to form copper sulfate.

(a) What type of reaction is this?

(1)

.....

(b) Explain why Jane used an excess of copper oxide.

(1)

.....

(c) Write the word equation for this reaction.

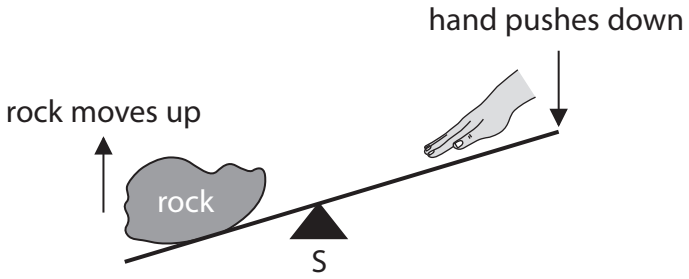
(2)

.....

.....

(Total for Question 12 = 4 marks)

13 Ying wants to lift a heavy rock by using a lever. She uses the following setup.



(a) What does the letter S represent?

(1)

.....

(b) How can Ying change her setup so that she lifts the rock by applying a smaller force?

(1)

.....

(c) Calculate the moment when a force of 50 N is applied at a distance of 0.7 m from point S.

(2)

.....

.....

.....Nm

(Total for Question 13 = 4 marks)

14 In 2007, Taiwan introduced high speed trains which reach speeds up to 300 km/h.

This is a picture of the trains.

(a) Explain why the trains are this shape.

(1)

.....

.....

(b) A train travels a distance of 896 km in a time of 3.5 hours.

Calculate the average speed of the train.

(2)

.....km/h

(Total for Question 14 = 3 marks)

For questions 15 – 24 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.

15 This is a picture of the human skull.

What is the main function of the skull?

☒ **A** to protect the teeth.

☒ **B** to provide movement for the jaw.

☒ **C** to protect the brain.

☒ **D** to form the human skeleton.

(Total for Question 15 = 1 mark)

16 Which of these is an example of a mixture?

☒ **A** carbon dioxide

☒ **B** glucose

☒ **C** iron

☒ **D** air

(Total for Question 16 = 1 mark)

17 The force that keeps a planet in orbit around the Sun is called

☒ **A** air resistance.

☒ **B** friction.

☒ **C** gravity.

☒ **D** magnetism.

(Total for Question 17 = 1 mark)

18 The main function of the digestive system is to

- ☒ **A** break down food and absorb the products.
- ☒ **B** filter the blood.
- ☒ **C** oxygenate the blood.
- ☒ **D** transport substances throughout the body.

(Total for Question 18 = 1 mark)

19 Igneous rocks are made

- ☒ **A** by changing existing rocks by heat and pressure.
- ☒ **B** from cooling magma or lava.
- ☒ **C** from the deposition of materials in water.
- ☒ **D** by weathering an existing rock.

(Total for Question 19 = 1 mark)

20 On Earth, what is the force of gravity acting on a mass of 1 kg?

- ☒ **A** 1 N
- ☒ **B** 10 N
- ☒ **C** 100 N
- ☒ **D** 1000 N

(Total for Question 20 = 1 mark)

21 Which statement describes a function of the respiratory system?

- ☒ **A** protecting the lungs
- ☒ **B** breaking down substances to release energy in cells
- ☒ **C** producing offspring
- ☒ **D** taking in oxygen

(Total for Question 21 = 1 mark)

22 Calcium carbonate reacts with hydrochloric acid.

Which word equation shows the reaction between calcium carbonate and hydrochloric acid?

☒ **A** calcium carbonate + hydrochloric acid → calcium sulfate + carbon dioxide + water

☒ **B** calcium carbonate + hydrochloric acid → calcium chloride + carbon dioxide

☒ **C** calcium carbonate + hydrochloric acid → calcium chloride + carbon dioxide + water

☒ **D** calcium carbonate + hydrochloric acid → calcium chloride + hydrogen + water

(Total for Question 22 = 1 mark)

23 A car driver pushes on the pedal of a hydraulic brake system.

What is transmitted through the brake fluid to the brakes to stop the car?

☒ **A** air resistance

☒ **B** gravity

☒ **C** moments

☒ **D** pressure

(Total for Question 23 = 1 mark)

24 What is the name of the green pigment found in plant cells?

☒ **A** biomass

☒ **B** chlorophyll

☒ **C** chloroplast

☒ **D** photosynthesis

(Total for Question 24 = 1 mark)

25 A farmer grows wheat in a field. This diagram shows a food chain in a field.

wheat ⇨ greenfly ⇨ beetle ⇨ skylark ⇨ kestrel

(a) Describe how the beetle helps the farmer to have a bigger wheat harvest.

(2)

(b) The farmer uses pesticides to kill the greenfly.

Explain how this may affect the kestrel population.

(2)

(Total for Question 25 = 4 marks)

26 This question is about smoking.

(a) What organ system is directly affected by smoking?

(1)

(b) People who smoke for many years can get an illness called emphysema which damages the lungs.

Suggest a symptom of emphysema.

(1)

(Total for Question 26 = 2 marks)

27 (a) MgO is the formula of a compound.

Which **two** elements are in this compound?

(1)

1 .....

2 .....

(b) MgO is a base.

What two substances are made when a base is reacted with an acid?

Circle **two** from the list below

(1)

salt **oxygen** **metal** **carbon dioxide** **hydrogen** **water**

(c) MgO reacts with dilute hydrochloric acid. Balance the equation for this reaction.

(1)

$$MgO + HCl \longrightarrow MgCl_2 + H_2O$$

(d) Sulfur dioxide in the atmosphere dissolves in water to form acid rain.

(i) Give **two** harmful effects of acid rain.

(2)

1 .....

2 .....

(ii) One of the compounds in acid rain is sulfurous acid which has a chemical formula H_2SO_3

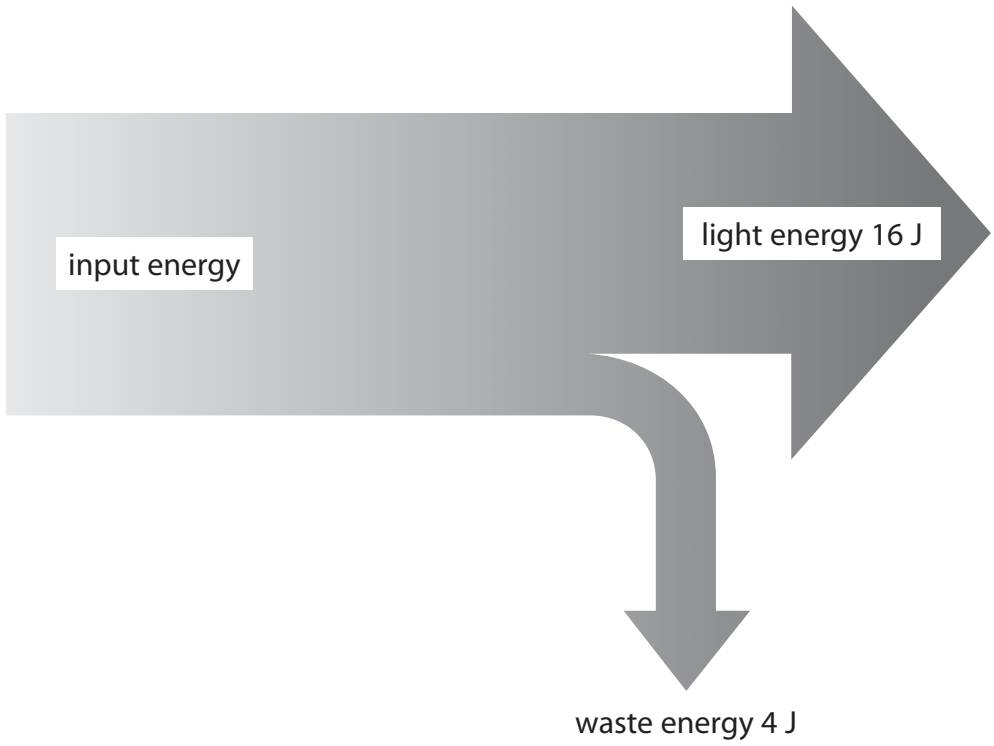
How many atoms are there in one molecule of sulfurous acid?

(1)

.....

(Total for Question 27 = 6 marks)

28 Below is a Sankey diagram representing the energy transfers in an energy saving light bulb.



(a) Name the input energy.

(1)

.....

(b) Suggest the type of waste energy.

(1)

.....

(c) Calculate the amount of input energy.

(1)

..... J

(Total for Question 28 = 3 marks)

For questions 29 – 38 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.

29 What term is used to describe a substance that people can become dependent on?

☒ **A** addictive

☒ **B** drug

☒ **C** harmful

☒ **D** medicine

(Total for Question 29 = 1 mark)

30 Iron nails are galvanised by coating them in zinc. When galvanised iron nails are scratched they do not rust because

☒ **A** zinc is more reactive than iron.

☒ **B** the zinc stops the iron coming into contact with air.

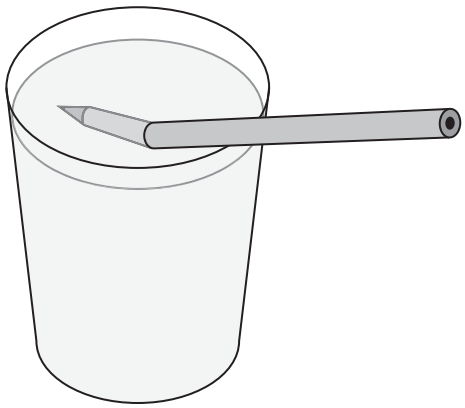
☒ **C** zinc is less reactive than iron.

☒ **D** the zinc stops the iron coming into contact with water.

(Total for Question 30 = 1 mark)

31 Joanna notices that her pencil looks bent when it is in a glass of water.

What is this effect caused by?



☒ **A** diffraction

☒ **B** focusing

☒ **C** reflection

☒ **D** refraction

(Total for Question 31 = 1 mark)

32 A farmer uses all his fields to grow one type of crop. What effect may this have?

- ☒ **A** It increases the range of animals and plants living in his fields.
- ☒ **B** It increases the chances of his crop surviving a disease that attacks it.
- ☒ **C** It decreases the chances of his crop surviving a disease that attacks it.
- ☒ **D** It decreases the need for houses and national parks.

(Total for Question 32 = 1 mark)

33 Which of these is an example of a chemical reaction?

- ☒ **A** melting candle wax
- ☒ **B** adding sodium chloride to water
- ☒ **C** adding magnesium to acid
- ☒ **D** freezing water to make an ice cube

(Total for Question 33 = 1 mark)

34 A satellite in a polar orbit

- ☒ **A** remains stationary above the North Pole.
- ☒ **B** moves around the equator.
- ☒ **C** remains stationary above the equator.
- ☒ **D** eventually passes over all parts of the Earth.

(Total for Question 34 = 1 mark)

35 James took two seeds from the same tomato and planted them. One of the plants grew taller than the other.

The most likely reason for this is that the two plants

- ☒ **A** had different numbers of genes.
- ☒ **B** were clones.
- ☒ **C** were grown in different conditions.
- ☒ **D** were selectively bred.

(Total for Question 35 = 1 mark)

36 Which is the best word equation for 'rusting'?

☒ **A** iron + carbon dioxide → iron carbonate

☒ **B** iron → iron oxide

☒ **C** iron + oxygen → iron carbonate

☒ **D** iron + oxygen → iron oxide

(Total for Question 36 = 1 mark)

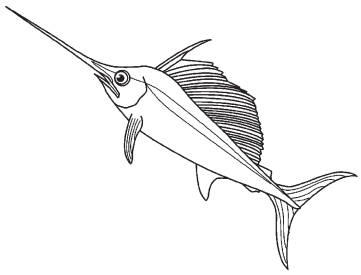
37 Salt solution is made by dissolving sodium chloride in water.

Which row shows the correct formulae for both sodium chloride and water?

☒ **A**	SCl	H_2O
☒ **B**	NaCl	H_2O
☒ **C**	NaCl	HO_2
☒ **D**	NACL	H2O

(Total for Question 37 = 1 mark)

38 A swordfish can swim very fast. What is the force that slows a swordfish down when it is swimming?



☒ **A** air resistance

☒ **B** gravity

☒ **C** thrust

☒ **D** water resistance

(Total for Question 38 = 1 mark)

TOTAL FOR SECTION A = 60 MARKS

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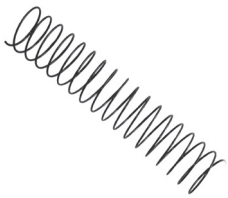
SECTION B

Answer ALL questions.

39 Sarah is investigating the extension of a steel spring. She has the following equipment.

stand and clamp

ruler



steel spring

100 g masses

(a) Sarah predicted what she thought would happen. Complete Sarah's prediction.

(1)

"When I add more mass to the spring, I predict that

.....

.....

.....

(b) Sarah records these results. Complete the last column.

(2)

Mass (g)	Length of steel spring (mm)	Extension of steel spring (mm)
0	30	0
200	34	4
400	38	8
600	42	
800	46	
1000	50	

(c) Sarah decides to check the reliability of her data. She finds these results in her textbook and uses them to check her data.

Mass (g)	Length of aluminium spring (mm)
0	30
200	35
400	40
600	45
800	50
1000	55

Suggest why using these results from her textbook is not valid.

(1)

.....

.....

(Total for Question 39 = 4 marks)

40 Nuria investigates the reactivity series of metals.

She adds a strip of metal to a solution of a salt of another metal.

She expects that a more reactive metal will displace a less reactive metal from its salt solution and that she will see the less reactive metal coat the strip.

If she sees this she records it as a 'yes', if there is no reaction she records 'no'.

Here are Nuria's results:

Metal	Metal salt solutions			
	Magnesium sulfate	**Zinc sulfate**	**Iron sulfate**	**Copper sulfate**
Magnesium	No	Yes	Yes	Yes
Zinc	No	No	Yes	Yes
Iron	No	No	No	Yes
Copper	No	No	No	No

(a) (i) Which metal was coated least often?

(1)

.....

(ii) From the results, which metal is the most reactive?

(1)

.....

(b) Which piece of equipment should she use to protect her eyes?

(1)

.....

(c) (i) Nuria tests strips of silver. Her results say 'no' with every salt solution.

What conclusion can she make about the reactivity of silver?

(1)

.....

(ii) Explain your answer to part (c)(i).

(1)

.....

.....

(Total for Question 40 = 5 marks)

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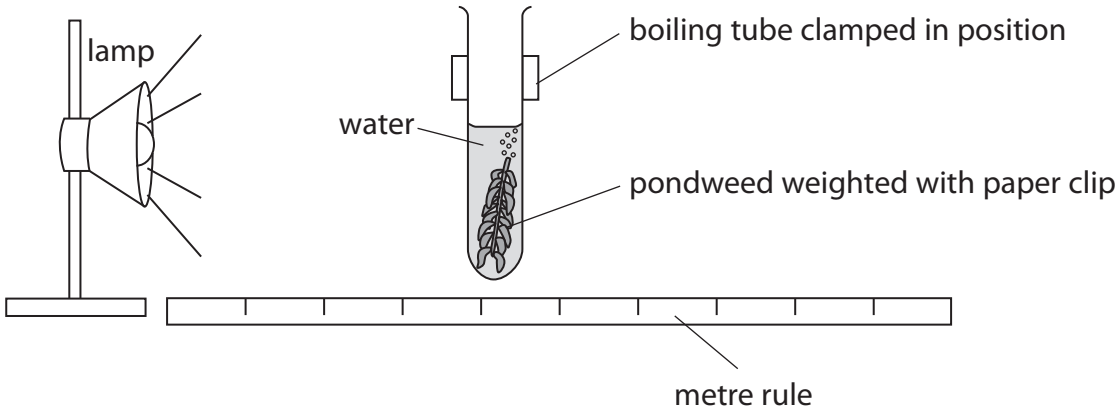
41 Lisa investigates how light intensity affects photosynthesis in a piece of pondweed. She sets up the following equipment.



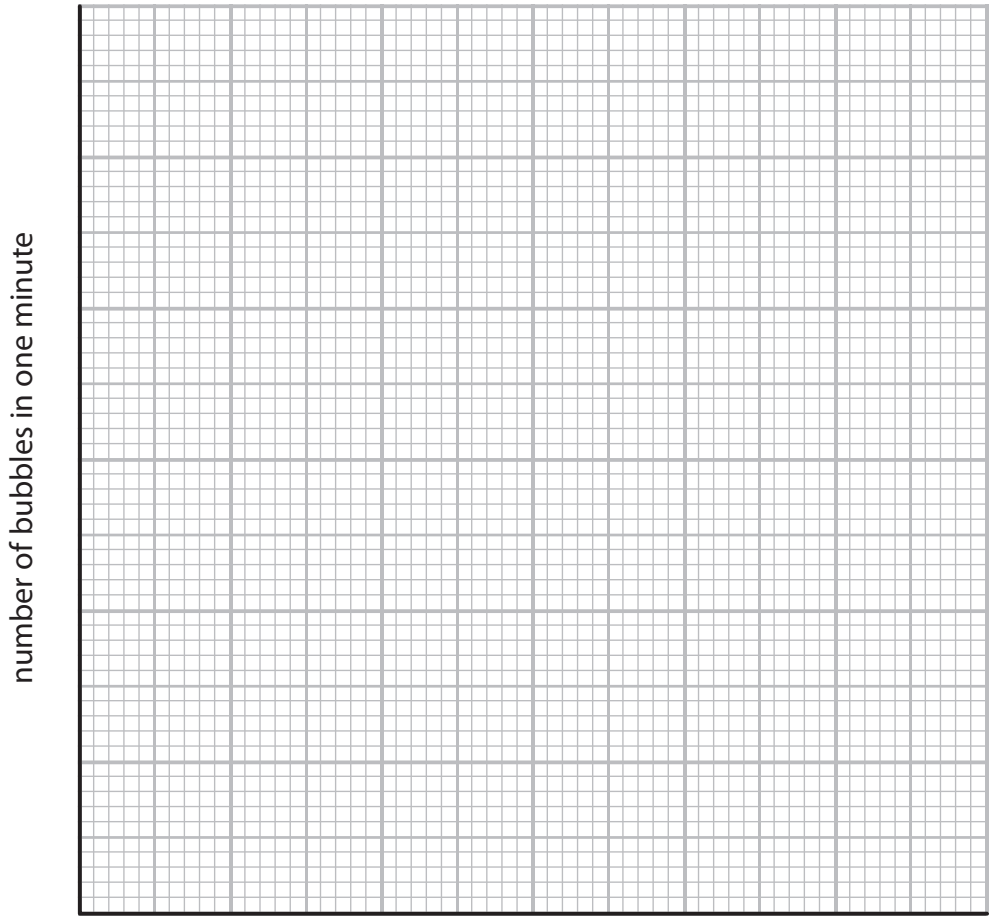
Lisa counts how many bubbles are given off from the pondweed in one minute. Then she changes the distance from the lamp and repeats her measurement.

These are her results.

Distance from lamp (cm)	Number of bubbles in one minute
10	101
20	100
30	99
40	95
50	85
60	105
70	62
80	50
90	34

(a) Use the grid to draw a line graph of these results.

(4)



(b) One result does not fit the pattern. Circle this result on the graph.

(1)

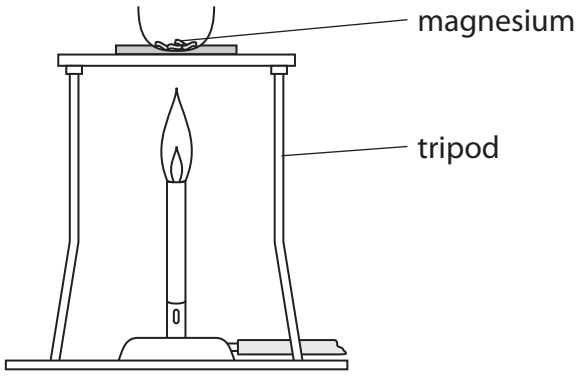
(Total for Question 41 = 5 marks)

42 Paul investigates what happens when magnesium is burnt in oxygen.

He uses the apparatus shown.

He measures five different masses of magnesium.

He also measures the mass of magnesium oxide produced after each reaction is complete.



Mass of magnesium (g)	Mass of magnesium oxide (g)
0.6	1.0
1.2	2.0
2.4	1.6
3.6	6.0
4.8	8.0

(a) (i) What is the independent variable in this investigation?

(1)

.....

(ii) What is the dependent variable in this investigation?

(1)

.....

(b) (i) Look at the table and describe the pattern shown by the results.

(1)

.....

.....

(ii) Which result does not fit with this pattern?

(1)

.....

.....

(c) What could Paul do to improve the reliability of his results?

(2)

.....

.....

.....

(Total for Question 42 = 6 marks)

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

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