

NAME:	SCIENCE TEACHER: (circle code)	10A
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SCIENCE

Year 10 Examination 2011

10A – 40 marks

Make sure that you have answered all the questions in paper 10B before you start this paper

Time allowed for both examinations: 2 hours

Answer all questions in the spaces provided on the paper.

You may use a calculator.

Show all your working in calculations; marks are awarded for it.

Give units for all answers (e.g. kg or m) unless they are already provided.

For Teacher Use

Question	1	2	3	4	5	6	7	8	9	10	11	Total
Marks gained												
Marks available	2	3	4	4	3	4	7	2	3	5	3	40

Question One: Look it up! [2 marks]

Part of a book index is shown below.

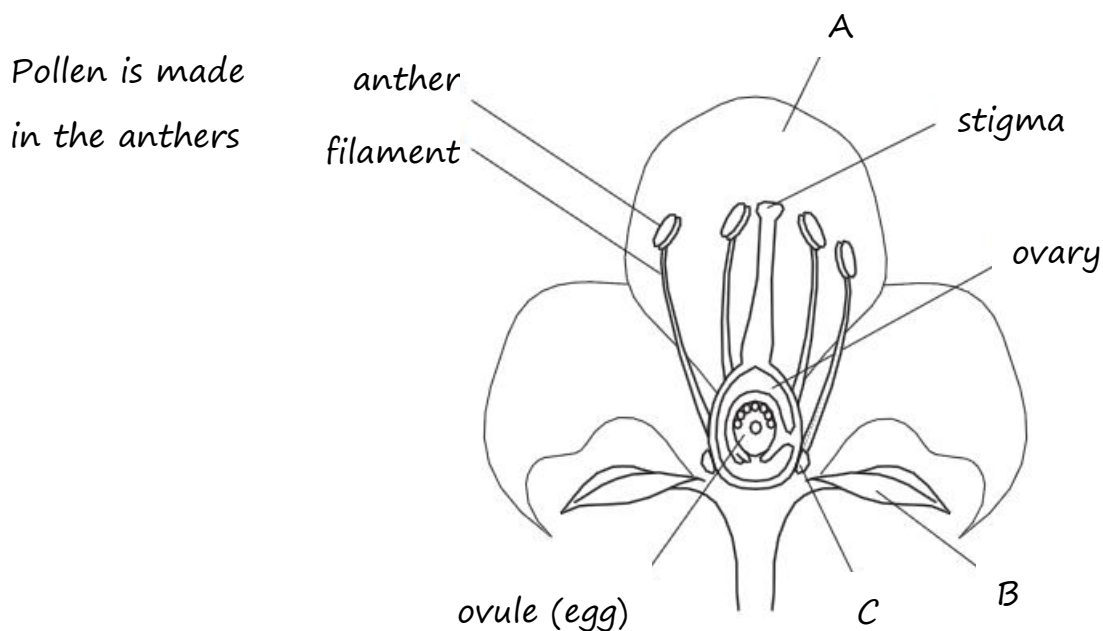
Ears	116	Faeces	13
Ear lobes	118	Fainting	197
Egg cells	90	Families	97
Embryos	-human 93	Fats	44
	-plant 85	Feeding	177
Emotions	77	Fertilisation	-chromosomes 95
Emphysema	45		-human 94
Enzymes	-digestion 34		-plant 87
	-food 142	Fitness	157
	-respiration 42	Fixed joints	63
Excretion	12	Foetus	95
Exercise	156	Food	22

- (a) Kerry wanted to find out about human fertilisation and egg cells. Which **two** pages should she look up?

- (b) Kerry looked up pages 22 **and** 34. What was she trying to find out about?

Question Two: Flowering time! [3 marks]

The diagram shows an insect-pollinated flower.



(a) Complete the following table to show the letter, name and job of parts A, B and C.

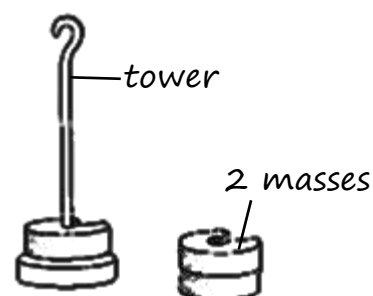
Letter	Name	Job
	Sepal	Protects the flower bud before opening
A		
	Nectary	Produces and stores a sugary solution to attract insects

(b) How can insect (like a bee) pollinate a flower.
Use these words on the diagram to help you.

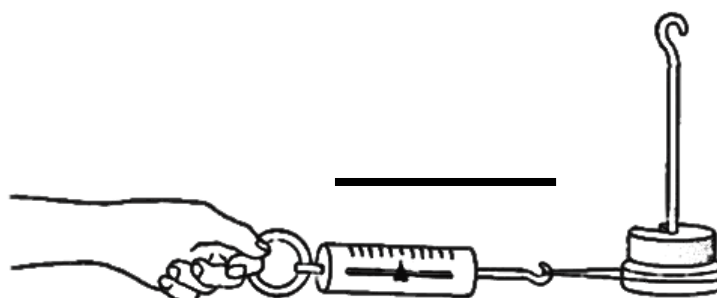


Question Three: It all stacks up! [4 marks]

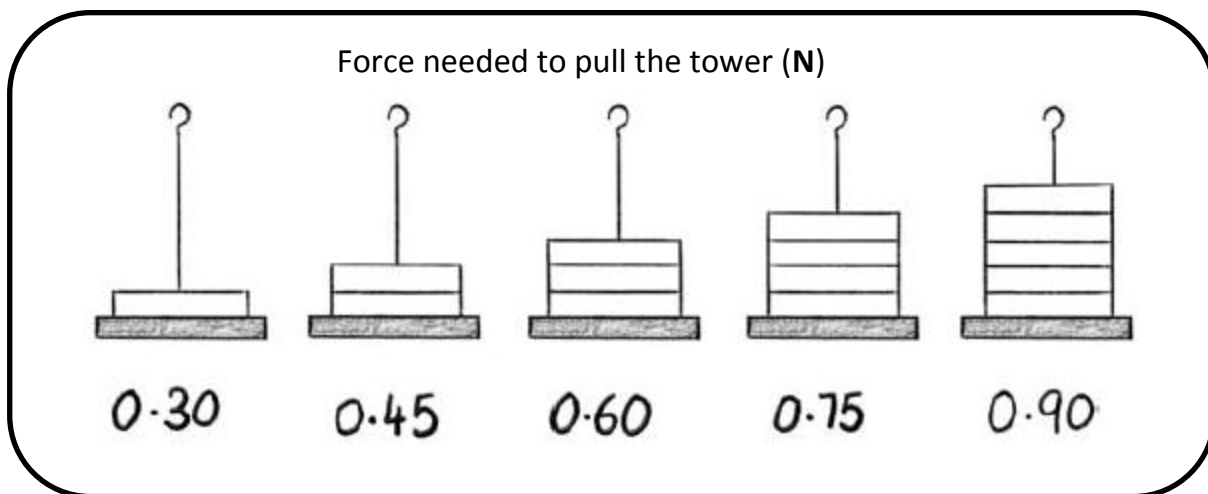
(a) Aaron has some stacking masses.
He puts one mass on the stacking tower. He uses a newtonmeter (forcemeter) to pull the tower.



Aaron pulls the newtonmeter. Draw an arrow head (← or →) on the end of the line on the picture to show the direction of this force.



Aaron measured the force needed to pull the tower. He wrote down his results. Look at Aaron's results.



(b) What do Aaron's results tell him about the **number of masses** and the **size of the force** needed to pull them.

(c) Aaron put his results into this table, but he made a mistake.

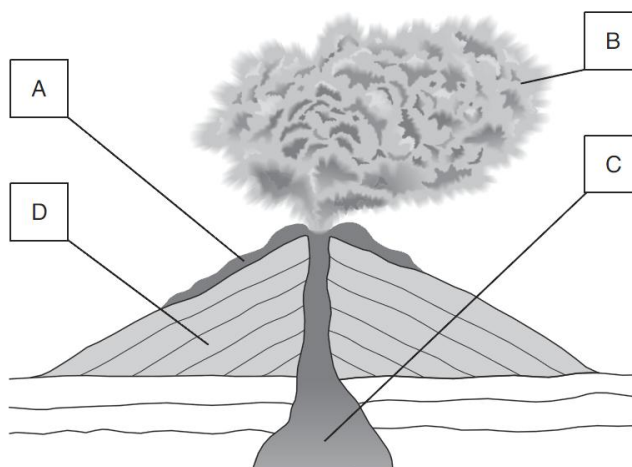
Number of masses	Newtonmeter reading (N)
1	0.90
2	0.75
3	0.60
4	0.45
5	0.30

What is his mistake?

(d) Aaron noticed his mistake. Then he said: "I wonder if I made any mistakes when I did my test?" What should he do to check if he made any mistakes in his test?

Question Four: The volcano blows! [4 marks]

The diagram shows a volcano erupting.



(a) Look at the diagram. Give the letter which labels:

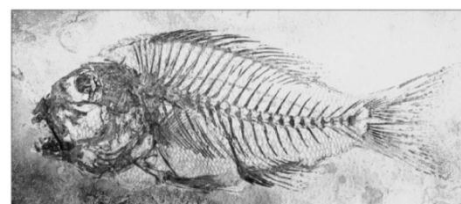
- (i) magma _____
- (ii) lava _____
- (iii) old solid rock _____

(b) When magma cools, it forms a hard crystalline rock. What is the name of rock type? Tick the correct box.

- igneous
- metamorphic
- sedimentary



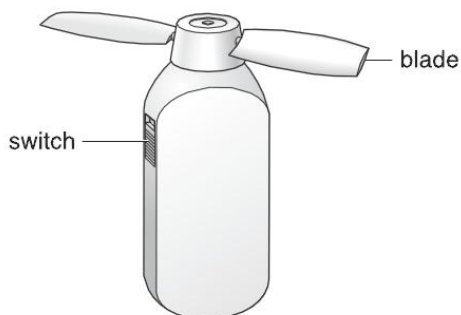
(c) Ash from a volcano dropped into a lake. All the fish in the lake were killed and buried under the ash in the mud at the bottom of the lake.



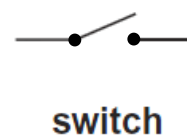
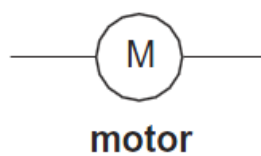
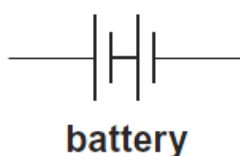
What is the name for animal **and** plant remains that are found in a rock millions of years later?

Question Five: Electricity. [3 marks]

Susan has a small fan to keep herself cool. When she switches it on, a motor turns the blades to blow air.



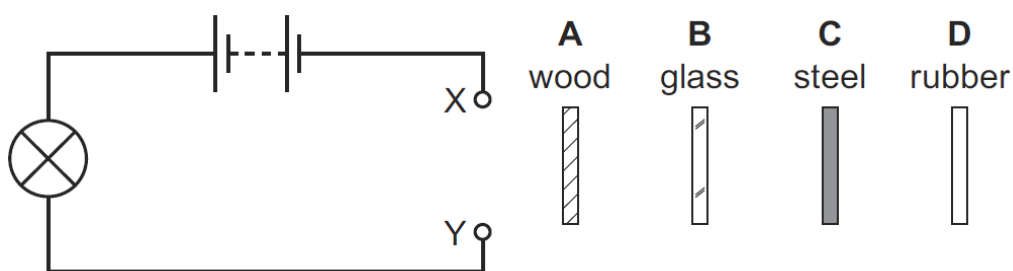
(a) The diagrams below show the symbols for a battery, a motor and a switch.



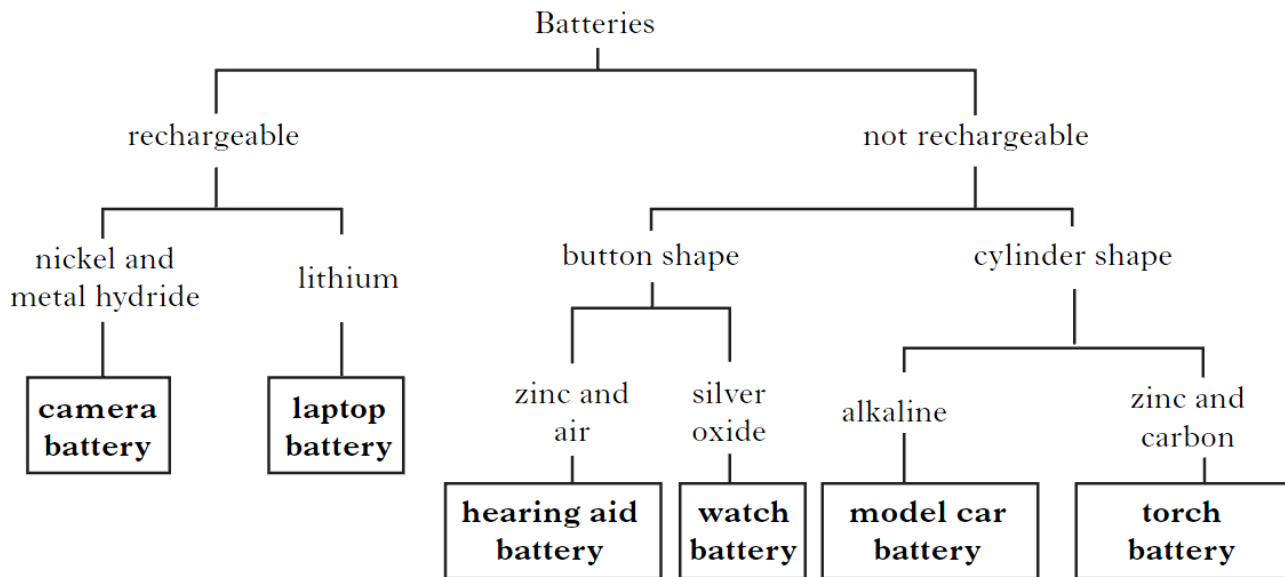
In the space below, draw a series circuit diagram for the fan using these symbols.
Use a ruler!

A circuit is set up with a gap between X and Y. The four materials are connected, one after another, across the gap.

(b) Which strip completes the circuit so that the lamp lights? **Circle your answer.**



(c) The key below gives information about some batteries.



Use the information in the key to answer the questions.

(i) What battery is rechargeable and contains lithium?

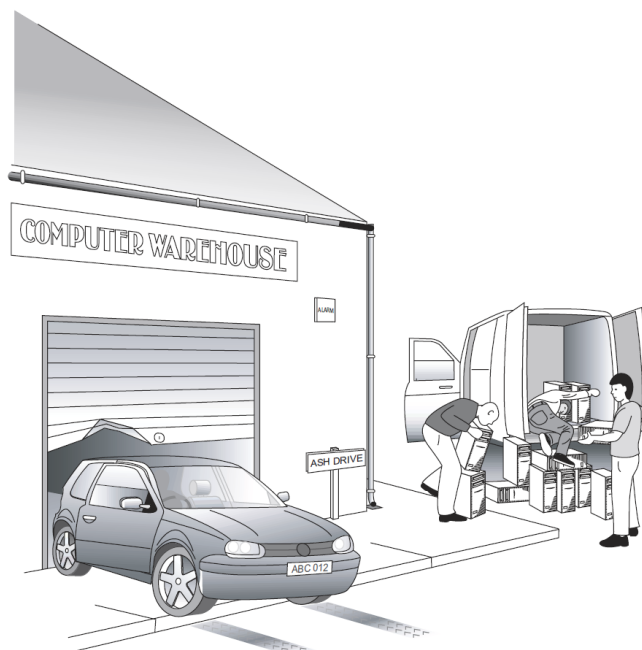
(ii) List all the information that the key gives about a watch battery.

•
•
•



Question Six: Crime Scene! [4 marks]

A stolen car was used in a ‘ram-raid’ at a computer warehouse. The thieves loaded a van with computers and drove away from the scene.



Scene of Crime Officers were called to investigate. The crime scene was sealed off.

(a) What do the police normally use to seal off a crime scene?

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(b) Although the robbery only took a few minutes, a passer-by was able to get a good look at one of the robbers and was able to give a description to the police.

(i) Give two **facial features** he could include in his description.

1	
2	

(ii) Give two other details he could tell the police about the robber.

1	
2	

(c) Give one type of “trace evidence” the thieves may have left behind **in** the stolen car.

Question Seven: Acids and bases. [7 marks]

The table below shows the colour of universal indicator in acidic, neutral and alkaline solutions.

	← acidic			neutral	alkaline →		
colour of indicator	red	orange	yellow	green	blue	dark blue	purple

Callum tested different liquids with the indicator solution. His results are shown below.

liquid	colour of indicator solution
milk	green
lemonade	yellow
water	green
fruit juice	orange
washing up liquid	blue
oven cleaner	purple

(a) Use Callum's results to answer the following questions.

(i) Give the name of **one** acidic liquid.

(ii) Give the name of **one** neutral liquid.

(b) Callum dissolved some baking soda in distilled water. This produced an alkaline solution, but it was not as alkaline as oven cleaner.

(i) Callum added the indicator to the baking soda solution. What colour would the indicator turn?

(ii) Callum added some lemon juice to this solution of baking soda and indicator. What **two** things would he see?

1	
2	

(c) Callum mixed an acid with an alkali and tested the mixture. The indicator solution turned green. What is the **name for the reaction** between an acid and an alkali? **Circle your answer.**

neutral neutron neutralisation neutralise neutering

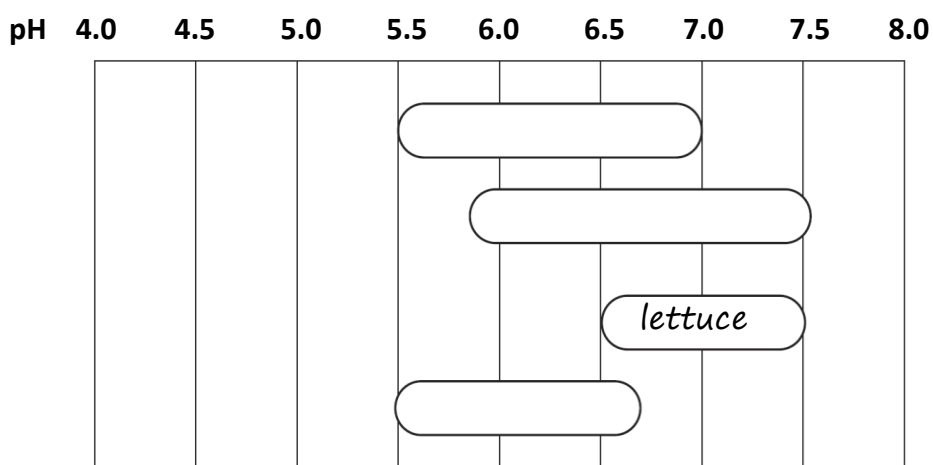
(d) The chart below shows the pH range of soil in which different vegetables can grow successfully.



vegetable	pH range
potatoes	5.5 – 6.7
broad beans	5.5 – 7.0
lettuce	6.5 – 7.5
carrots	5.8 – 7.55



(i) Add the missing names of the vegetables to the diagram below. Lettuce has been done for you.



(ii) The soil in a garden has a pH of 7.0. Name the vegetable which would definitely **not** grow very well in this garden.

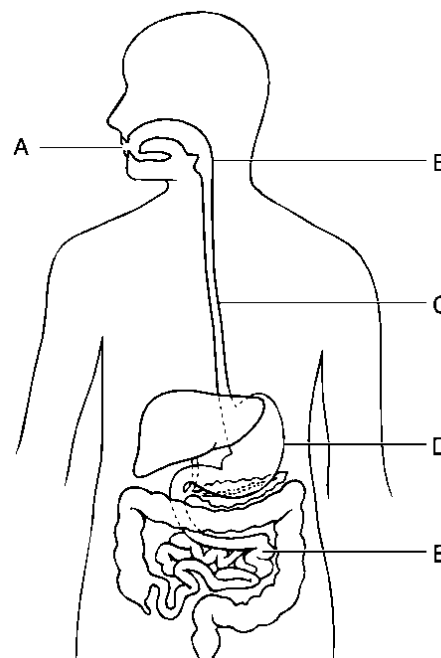
Question Eight: Digest that! [2 marks]

The diagram shows the digestive system.

(a) Give the letter which labels the stomach.

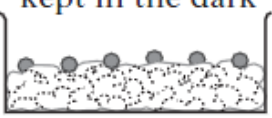
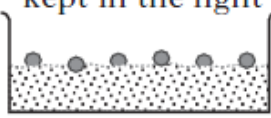
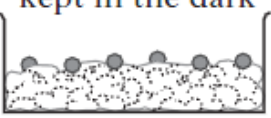
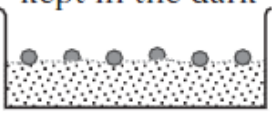
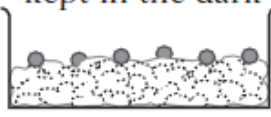
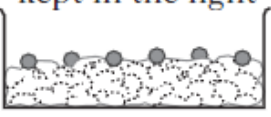
(b) Give the letter which labels the small intestine.

(c) What liquid carries glucose from the intestine to other parts of the body?



Question Nine: Let them sprout! [3 marks]

Candice investigated the conditions that affect the germination (sprouting) of seeds. She set up the following experiments.

<p>A</p> <p>kept in the dark</p>  <p>cotton wool 10 ml of water</p>	<p>B</p> <p>kept in the light</p>  <p>fine sand 10 ml of water</p>	<p>C</p> <p>kept in the dark</p>  <p>cotton wool 15 ml of water</p>
<p>D</p> <p>kept in the dark</p>  <p>fine sand 10 ml of water</p>	<p>E</p> <p>kept in the dark</p>  <p>cotton wool 20 ml of water</p>	<p>F</p> <p>kept in the light</p>  <p>cotton wool 25 ml of water</p>

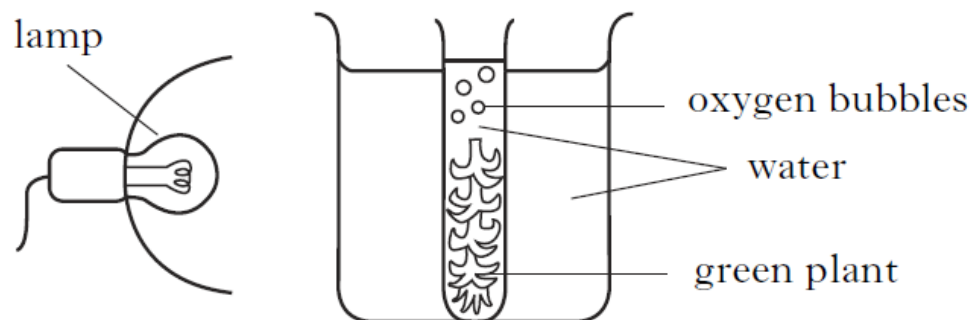
(a) Which two experiments should Candice compare to find out if **light** affects the germination of seeds?

Experiments _____ and _____

(b) What would Candice be trying to find out if she compared experiments A, C and E?

Question Ten: Photosynthesis. [5 marks]

Connor set up an experiment to compare photosynthesis in different plants. Connor counted the number of bubbles of oxygen gas produced in 3 minutes.



His results are shown in the table.

Name of plant	Number of bubbles of oxygen gas produced in 3 minutes
Elodea	19
Cabomba	32
Hornwort	12
Parrots Feather	24
Duckweed	8

(a) Suggest one thing that Connor needed to keep the same to make this investigation fair.

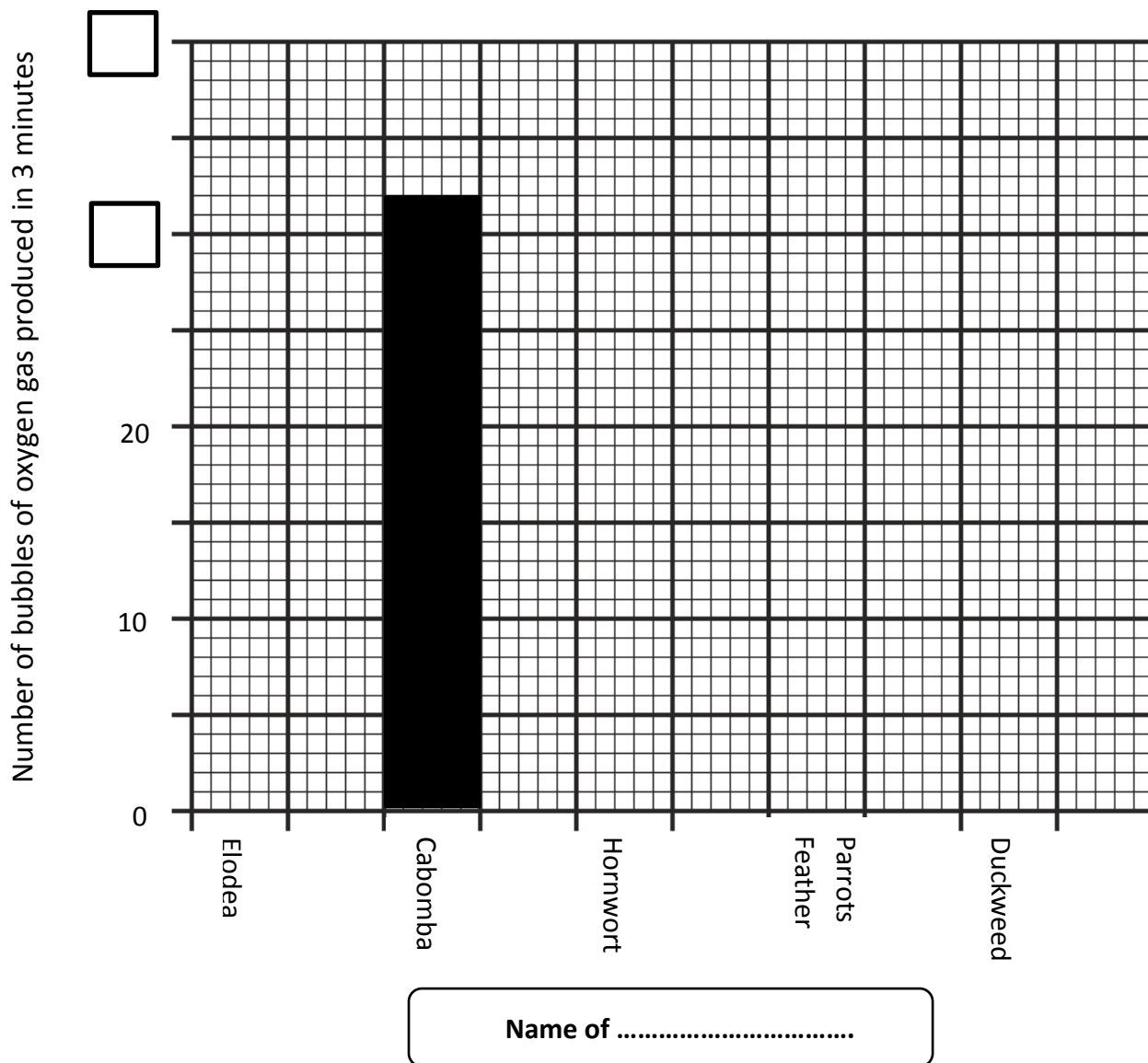
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(b) Draw a bar graph to show his results.

- Use the graph paper on the next page
- Complete the numbers on the y-axis
- Complete the label for the x-axis
- Draw the bars for Elodea, Hornwort, Parrots Feather and Duckweed.

Cabomba has been done for you.

Experiment to compare photosynthesis in different plants



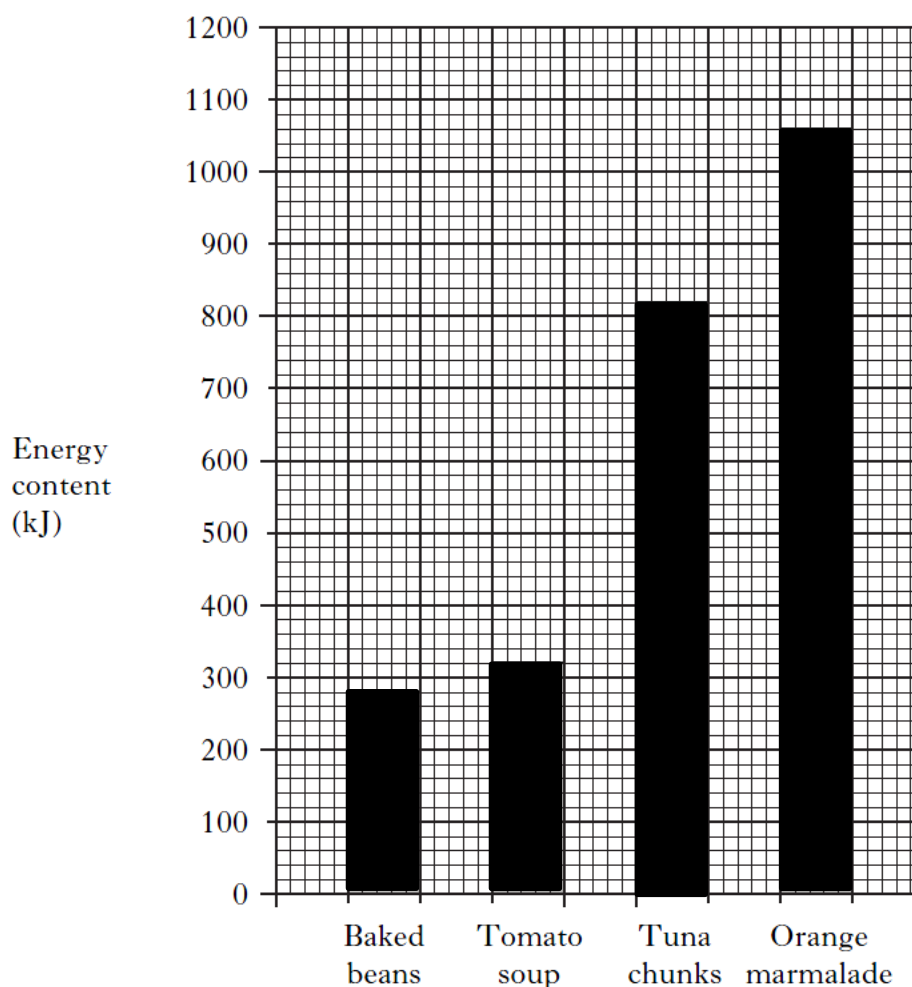
Turn over for the last question

Question Eleven: Food glorious food! [3 marks]

The table shows information about 100 g samples of four foods.

Food	Sugar content (g)	Fat content (g)
Baked beans	3.5	0.2
Tomato soup	7.9	2.7
Tuna chunks	0.0	10.8
Orange marmalade	60.7	0.2

The graph shows the energy content of each food.



- (a) Name a food with a fat content of 0.2 g.

- (b) Which food has an energy content of 820 kJ?

- (c) What is the energy content, in kJ, of the food with a sugar content of 7.9 g?

End of Paper A