



Anglo-Chinese School  
(Primary)

A Methodist Institution  
(Founded 1886)

SEMESTRAL ASSESSMENT TWO  
SCIENCE  
PRIMARY FOUR  
BOOKLET A

Name: \_\_\_\_\_ ( )

Class: Primary 4 \_\_\_\_\_

Total Time for Booklets A and B: 1 h 45 min

Additional Materials: Optical Answer Sheet (OAS)

**INSTRUCTIONS TO CANDIDATES**

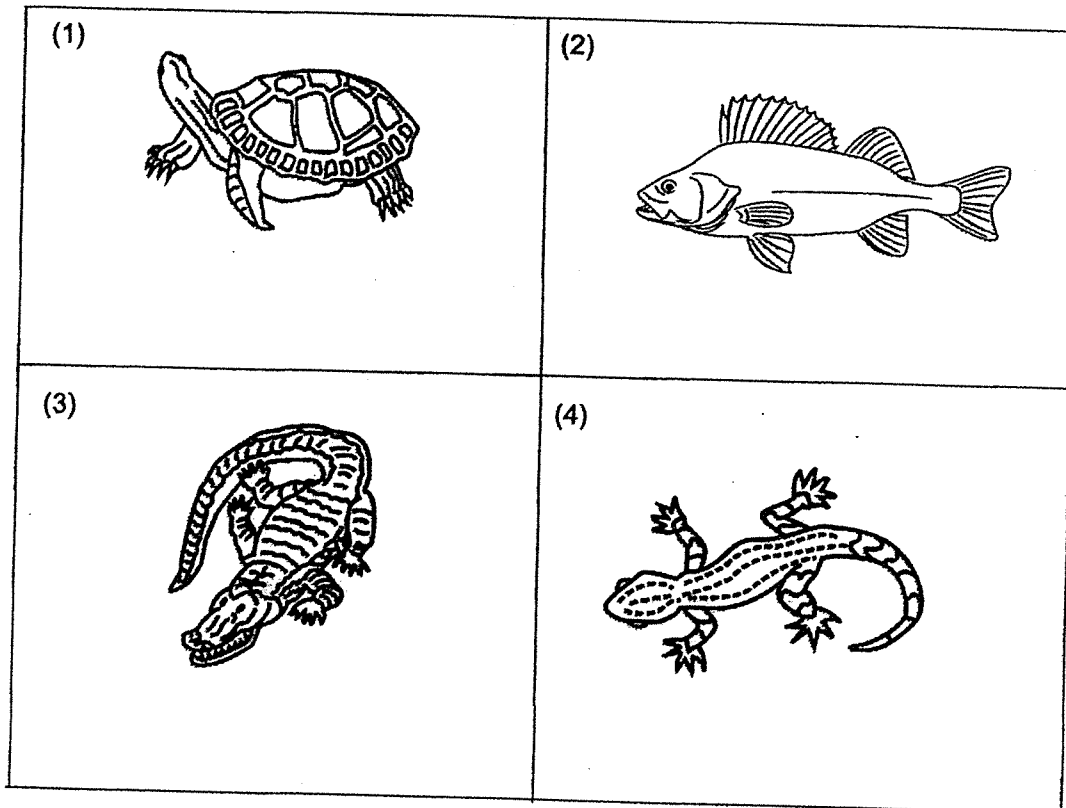
1. Write your name, index number and class in the spaces provided.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answer on the Optical Answer Sheet (OAS) provided.

This question paper consists of 21 printed pages including this cover page.

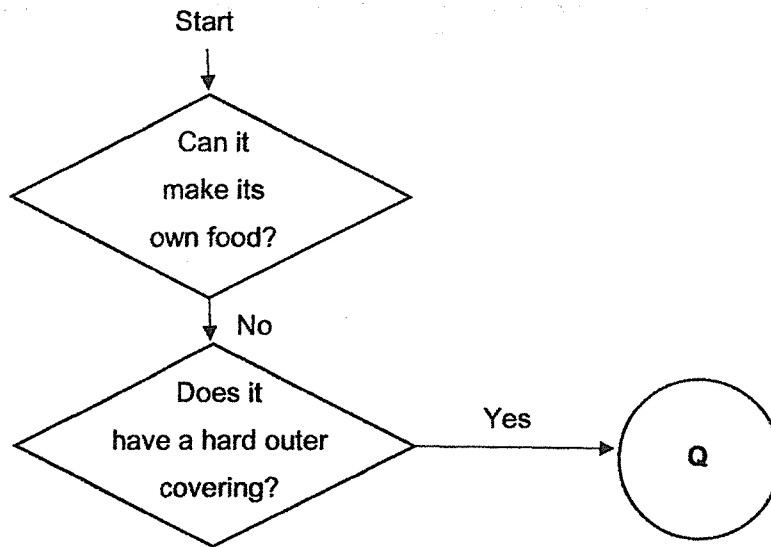
For each question from 1 to 28, four options are given. One of them is the correct answer.  
Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

(56 marks)

1 Which animal is **NOT** a reptile?



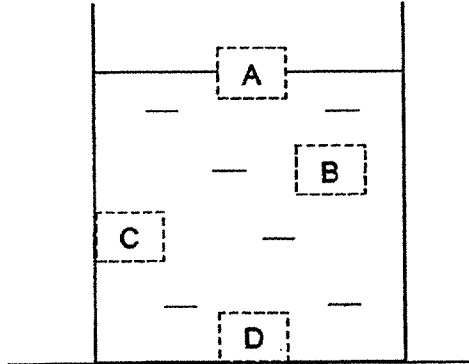
2 Study the diagram below.



What could Q be?

- (1) bird
- (2) plant
- (3) insect
- (4) mammal

- 3 Bruce put a metal solid block into a container of water. At which position, A, B, C or D, would the block mostly likely to be found?

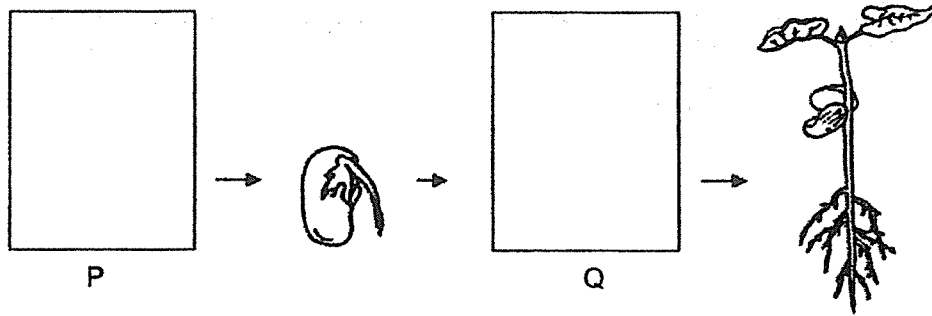


- (1) A  
(2) B  
(3) C  
(4) D
- 4 Nina made the following observations on the life cycle of an animal.
- The young looks like the adult.
  - There are three stages in the life cycle.

Which animal was Nina observing?

- (1) frog  
(2) beetle  
(3) mosquito  
(4) cockroach

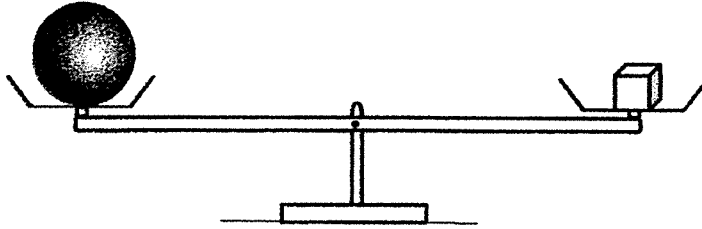
5 The diagram below shows the growth of a young plant with two missing stages P and Q.



Which of the following show the correct stages for P and Q?

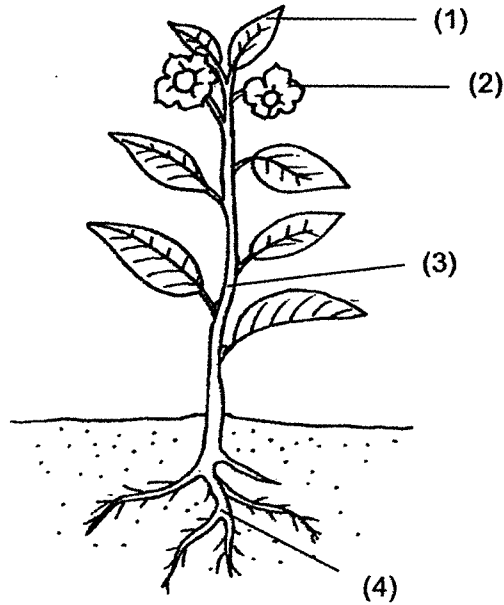
	P	Q
(1)		
(2)		
(3)		
(4)		

- 6 Study the diagram below.



Which of the following statements is true?

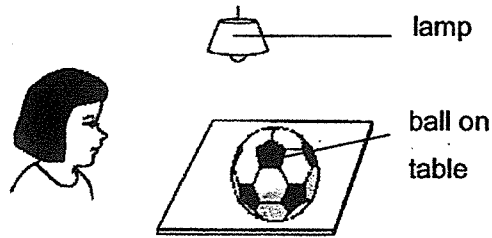
- (1) Both objects have the same size.
  - (2) Both objects have the same mass.
  - (3) Both objects have the same shape.
  - (4) Both objects have the same volume.
- 7 The diagram shows a plant.
- Which part, (1), (2), (3) or (4), helps to support the plant upright?



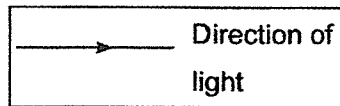
8 Which one of the following can be attracted by a magnet?

- (1) iron ball.
- (2) rubber ball
- (3) plastic ball
- (4) wooden ball

9 Look at the picture below.



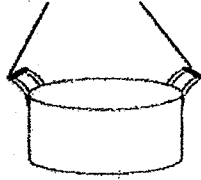
Which of the following explains why Sue can see the ball on the table?



<p>(1)</p>	<p>(2)</p>
<p>(3)</p>	<p>(4)</p>

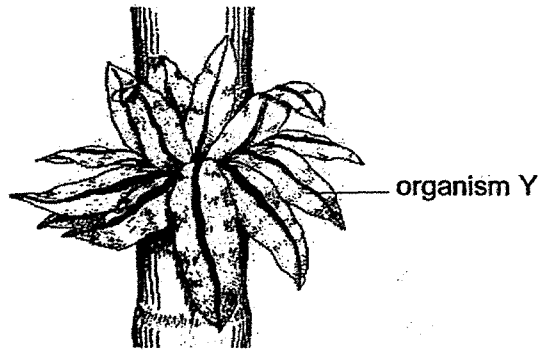
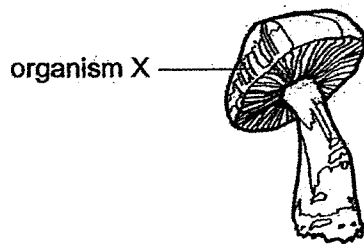
- 10 Hashim boiled some water in the pot shown below.

plastic handles



He is able to hold the pot of boiling water using the plastic handles.  
This is because plastic is a \_\_\_\_\_.

- (1) light material
  - (2) flexible material
  - (3) poor conductor of heat
  - (4) good conductor of heat
- 11 The pictures show two organisms, X and Y.

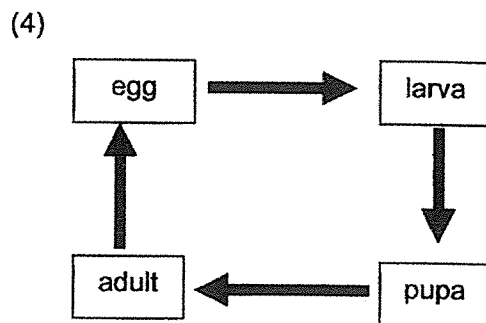
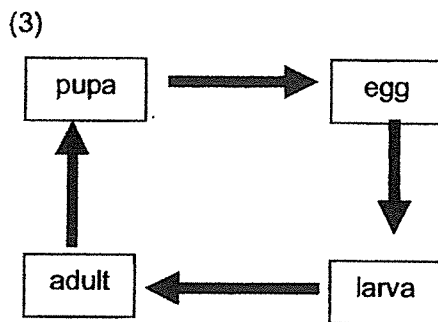
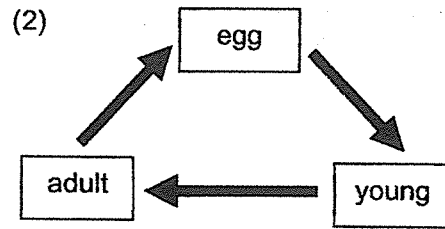
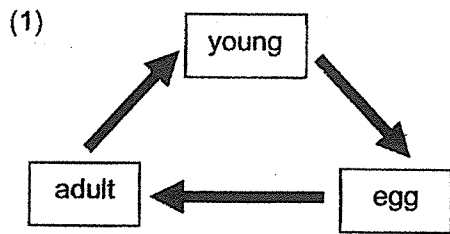


Which of the following statements about organisms X and Y is correct?  
Both organisms X and Y \_\_\_\_\_.

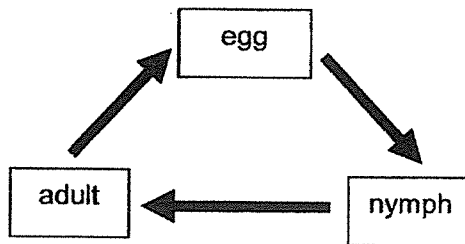
- (1) are fungi
- (2) have leaves
- (3) reproduce from spores
- (4) cannot make their own food



12 Which of the following represents the life cycle of a chicken?



13 Study the life cycle of Animal Z below.



Based on the above life cycle, which of the statement is correct?

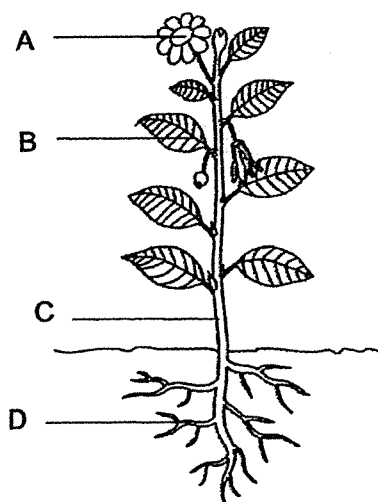
- (1) The nymph lives on land.
- (2) Animal Z lays its eggs in water.
- (3) The nymph looks like the adult.
- (4) Animal Z has a 3-stage life cycle.

- 14 The table shows what Nicole had observed about the growth of an insect.

Date	Observation
15 May	Eggs were laid.
16 May	Eggs hatched into larva.
20 May	Some larva became pupa.
22 May	Some pupa became adult insects.

Based on the information from the table above, which of the following statements is true?

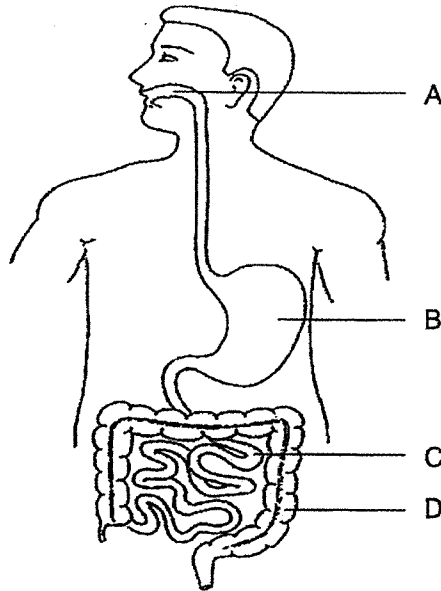
- (1) The adult insect is able to fly.
  - (2) The eggs took three days to hatch.
  - (3) The adult insect has six legs and a pair of wings.
  - (4) The insect spends most of the time growing up as a larva.
- 15 The diagram shows an adult plant.



Which part of the plant, A, B, C or D will develop into a fruit as the plant grows?

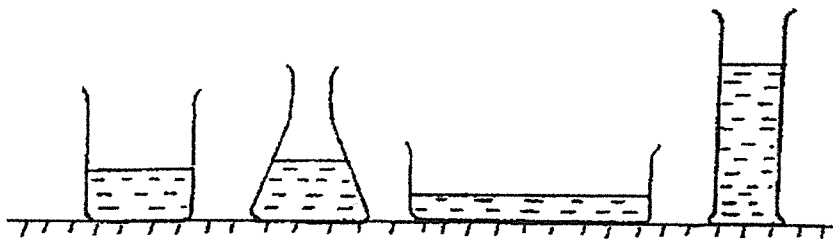
- (1) A
- (2) B
- (3) C
- (4) D

- 16 The diagram shows the human digestive system.



Which part, A, B, C or D in the digestive system represents the start of the digestion process?

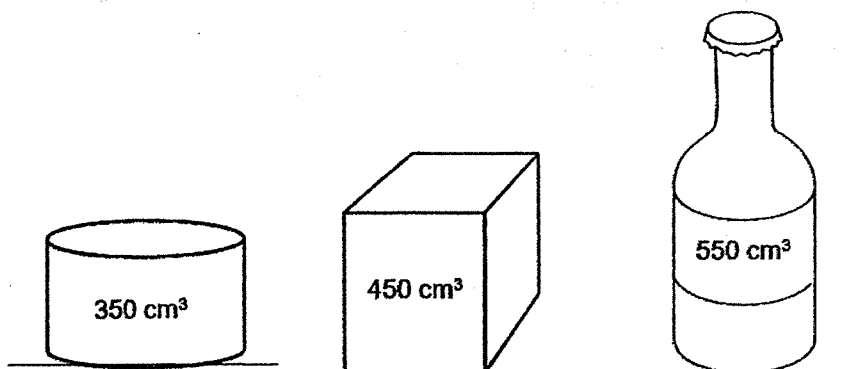
- (1) A
  - (2) B
  - (3) C
  - (4) D
- 17 Rani poured equal amounts of a liquid into four different containers as shown.



What does her experiment show about the property of a liquid?

- (1) It has mass.
- (2) It does not have a definite shape.
- (3) It does not have a definite volume.
- (4) It can exist in three different states.

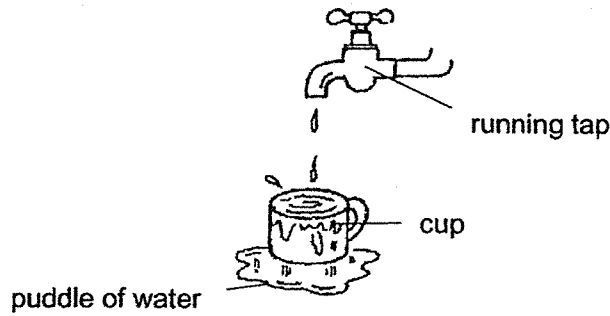
- 18 The three containers shown have different volumes.  $400\text{ cm}^3$  of substance A is found to be able to occupy all the space in each of the three containers.



From the information given, what can be concluded about the volume and shape of substance A?

	Volume	Shape
(1)	definite	definite
(2)	definite	not definite
(3)	not definite	definite
(4)	not definite	not definite

- 19 A cup was placed under a running tap as shown in the diagram. After ten minutes, a puddle of water was found around the cup.



Which of the following statement(s) is/are true about water from the above observation?

- A It occupies space.
  - B It has a definite shape.
  - C It has a definite volume.
- (1) A only  
 (2) A and B only  
 (3) A and C only  
 (4) B and C only

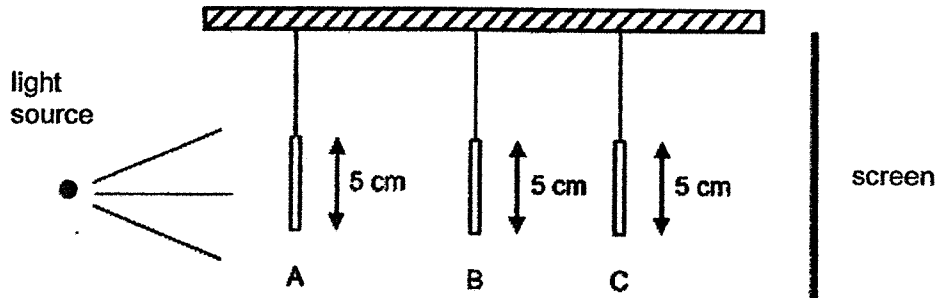
- 20 Raja classified some items based on their properties into the table.

Group	Items
A	air, wind
B	sand, sugar
C	milk, coffee
D	music, sunlight

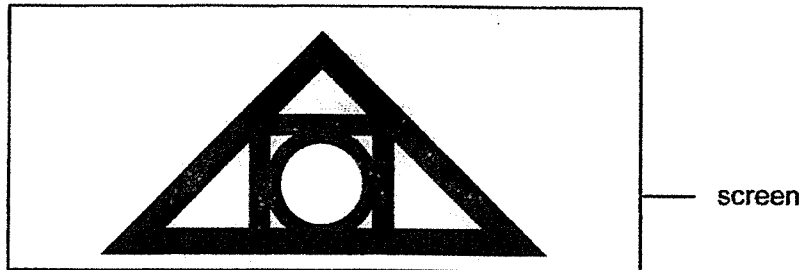
In which group should he place "shadow" in?

- (1) A  
 (2) B  
 (3) C  
 (4) D

- 21 Ali placed three shapes A, B and C at different distances in front of a light source as shown below. The shapes are hollow in the center.



The diagram below shows the shadow that was seen on the screen.



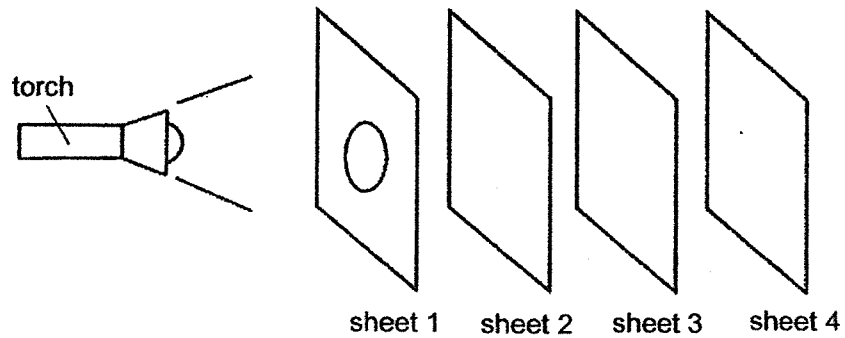
Which of the following correctly represents shapes A, B and C?

	A	B	C
(1)	circle	square	triangle
(2)	triangle	square	circle
(3)	square	triangle	circle
(4)	square	circle	triangle

- 22 Cheryl set up an experiment in a dark room using a torch and four sheets made of different materials. One of the sheets had a hole cut out from it. The properties of the four sheets of materials are shown in the table below.

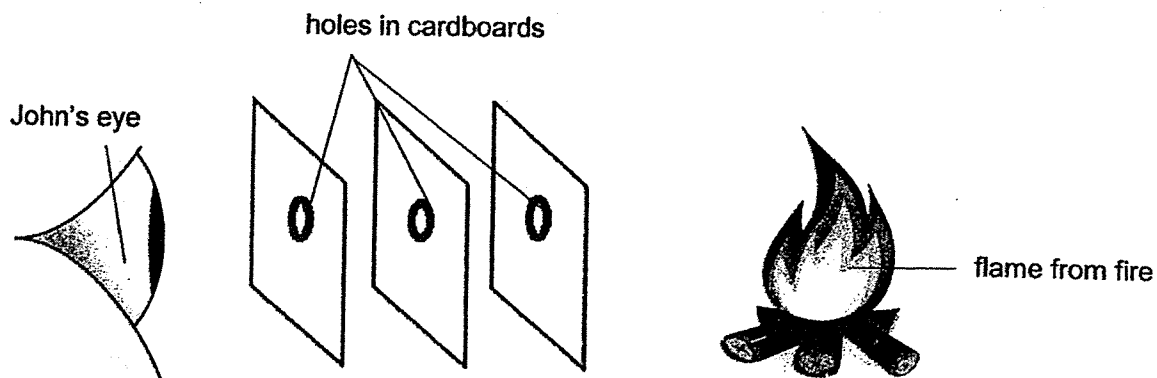
Property of materials	Materials
Does not allow light to pass through	W, X
Allows light to pass through	Y, Z

How should Cheryl arrange the sheets if she wanted a bright circular patch of light to appear on sheet 3?



	sheet 1	sheet 2	sheet 3	sheet 4
(1)	W	X	Z	Y
(2)	W	Y	Z	X
(3)	X	Z	Y	W
(4)	X	Y	W	Z

23 John set up an experiment as shown.



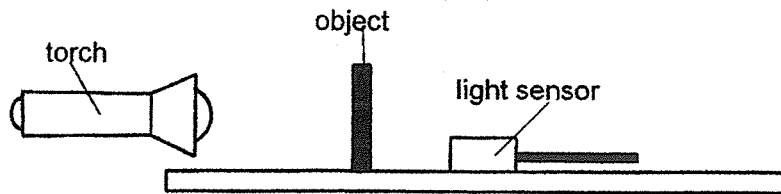
When the cardboards were placed in a straight line, John could see the flame. However, when he shifted one of the cardboards slightly towards the left, he could not see the flame anymore.

Which property of light can he conclude from the experiment done above?

- (1) Light travels in a straight line.
- (2) Light is absorbed by the flame.
- (3) Light is reflected from the flame.
- (4) Light can pass through cardboards.



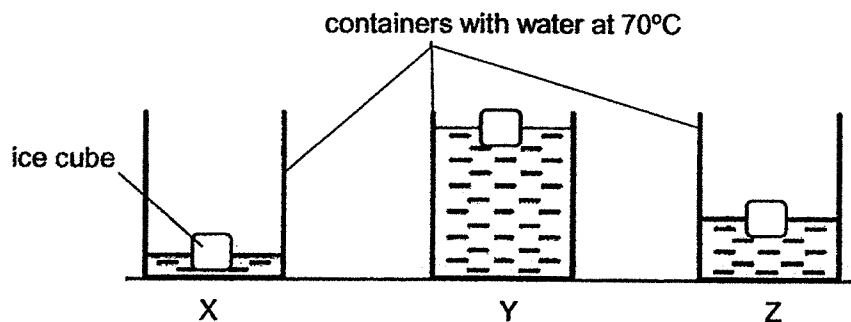
- 24 Rudy wanted to investigate how different materials affect the amount of light passing through them using the set-up shown.



Which of the following variables should be kept constant to ensure a fair test?

- A The material of the object
  - B The thickness of the object
  - C The amount of light from the torch
  - D The distance between the torch and the object
- (1) A only
- (2) B only
- (3) A, C and D only
- (4) B, C and D only

- 25 Jimmy set up the experiment as shown. He placed similar ice cubes into beakers X, Y and Z containing different amounts of water at 70°C.

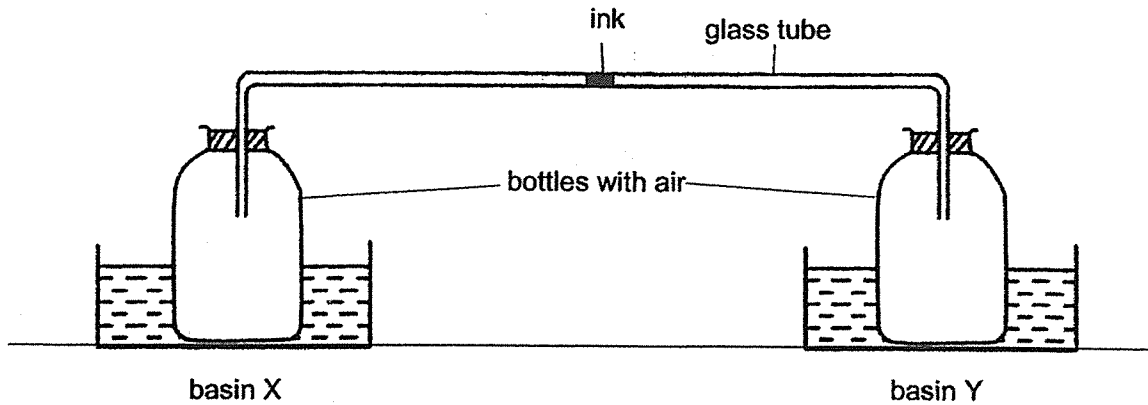


Jimmy recorded the time taken for each ice cube to melt completely.

Which of the following shows the correct order in which the ice cubes in beakers X, Y and Z are likely to melt completely?

	fastest	→	slowest
(1)	Y	X	Z
(2)	Y	Z	X
(3)	Z	X	Y
(4)	Z	Y	X

- 26 Aaron connected two identical bottles using a glass tube which contained a drop of ink. He placed one bottle in basin X and the other bottle in basin Y at the same time as shown in the diagram.

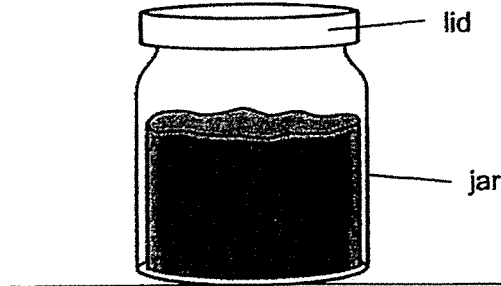


Basins X and Y contained equal amounts of water at different temperatures.

Which of the following is correct?

	Temperature of water (°C)		Direction of movement of ink
	basin X	basin Y	
(1)	20	80	→
(2)	80	20	→
(3)	80	40	←
(4)	40	20	←

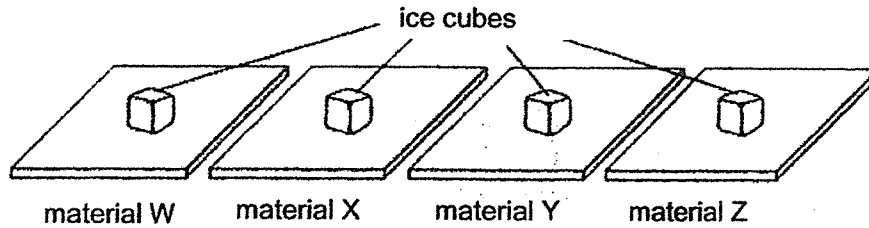
- 27 Richard could not open a jar of jam because the lid was too tight.



Which of the following shows the correct action and explanation for Richard to open the jar of jam?

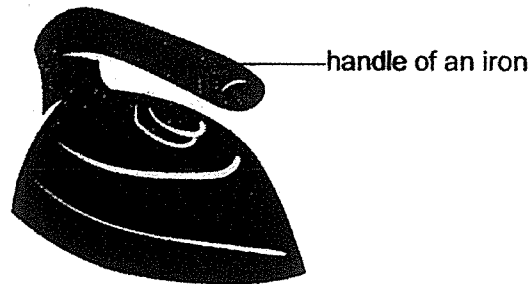
	Action	Explanation
(1)	Heat the lid over a flame.	The heat will cause the lid to contract and loosen.
(2)	Turn the jar upside down and immerse the lid in hot water.	The heat will cause the lid to expand and loosen.
(3)	Heat the bottom of the jar.	The heat will cause the jar to contract and loosen.
(4)	Immerse both the jar and lid in cold water.	The heat will cause both the jar and the lid to expand and loosen.

- 28 John placed similar ice cubes on each of the four tiles made of materials W, X, Y and Z, as shown in the diagram below. All four tiles were of the same size. He recorded the time taken for each ice cube to melt completely.



It was observed that the ice cube on material X was the first to melt completely, followed by those on materials Y, W and then Z.

Based on the result above, which of the four materials is the most suitable to make the handle of an iron?



- (1) W
- (2) X
- (3) Y
- (4) Z

(Go on to Booklet B)



**Anglo-Chinese School  
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A Methodist Institution  
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**SEMESTRAL ASSESSMENT TWO  
SCIENCE  
PRIMARY FOUR  
BOOKLET B**

Name: \_\_\_\_\_ ( )

Class: Primary 4 \_\_\_\_\_

Total Time for Booklets A and B: 1 h 45 min

**INSTRUCTIONS TO CANDIDATES**

1. Write your name, index number and class in the spaces provided.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

BOOKLET	MAX MARKS	MARKS OBTAINED
A	56	
B	44	
<b>Total</b>	<b>100</b>	

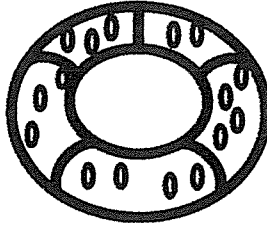
This question paper consists of 15 printed pages including this cover page.

For questions 29 to 42, write your answers in this booklet.

The number of marks available is shown in brackets [ ] at the end of each question or part question.  
(44 marks)

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- 29 The diagram shows a swimming float. It has water droplets on it.



Fill in the blanks using the correct words in the box.

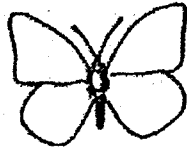
repel	absorb	magnetic	waterproof
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- (a) The swimming float does not \_\_\_\_\_ water. [1]
- (b) The swimming float is made of a \_\_\_\_\_ material. [1]

(Go on to the next page)

Score	2
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30 A, B, C and D are the various stages in the life cycle of a butterfly.



A



B



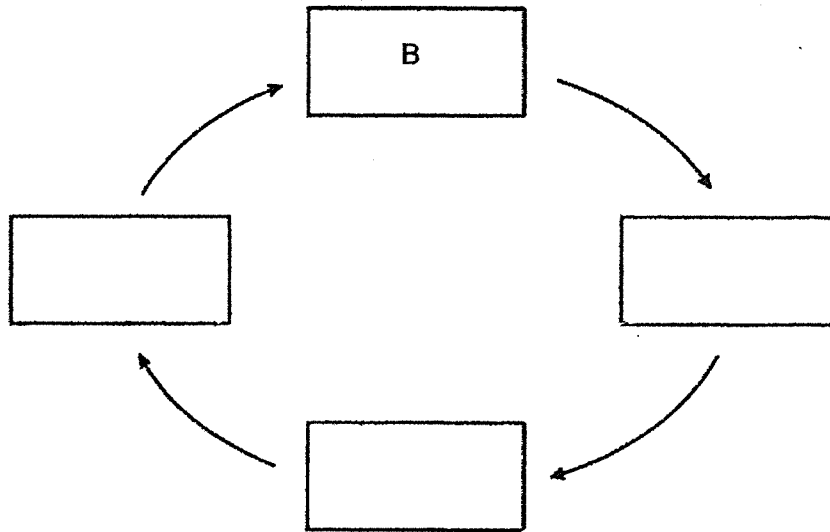
C



D

Arrange A, B, C and D in the correct order of the life cycle starting from B.

[2]



(Go on to the next page)

Score	2
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31 Draw lines to match the three organ systems to their functions.

[3]

organ systems

digestive system ●

skeletal system ●

circulatory system ●

functions

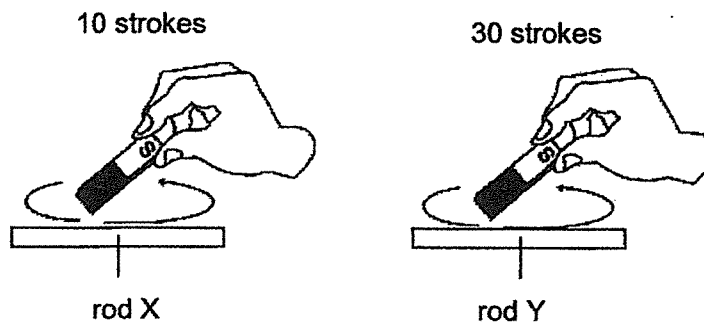
● supports our body and gives it shape

● breaks down food into simpler substances

● takes air into and out of the body

● transports digested food, water and oxygen to all parts of the body

32 Jane stroked two similar iron rods X and Y with the same magnet as shown in the figure below.



Both rods became magnets and were used to attract similar pins.

Circle the correct answer below.

[1]

Rod X attracted ( less pins than / the same number of pins as / more pins than ) rod Y.


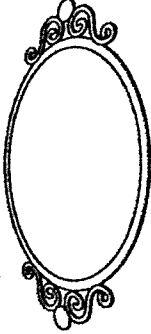
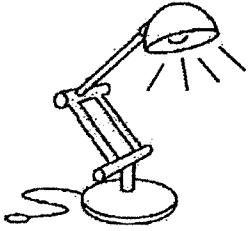

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Score	4
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33 Look at the pictures below.

Tick (✓) the sources of light.

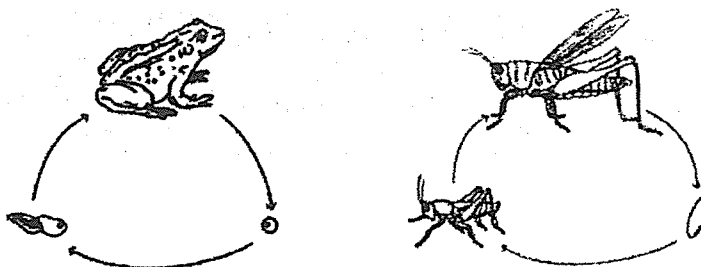
[2]

<input type="checkbox"/> candle 	<input type="checkbox"/> mirror 
<input type="checkbox"/> lamp 	<input type="checkbox"/> eyes 

(Go on to the next page)

Score	2
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34 The diagrams below show the life cycles of a frog and a grasshopper.



(a) Based on the diagrams above only, state two similarities between the stages of the life cycle of a frog and a grasshopper. [2]

Similarity one: \_\_\_\_\_

Similarity two: \_\_\_\_\_

(b) Based on the diagram above only, state one difference between the stages of the life cycle of a frog and a grasshopper. [1]

\_\_\_\_\_  
\_\_\_\_\_

The table below shows the number of frog eggs found in a pond over a period of four weeks. The number of eggs were counted at the end of each week.

Week	Number of eggs counted at the end of each week
1	125
2	97
3	63
4	117

(c) Explain what happened to the eggs in the first three weeks. [1]

\_\_\_\_\_  
\_\_\_\_\_

(d) Why do animals such as the frogs lay many eggs at a time? [1]

\_\_\_\_\_  
\_\_\_\_\_

(Go on to the next page)

Score	5
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- 35 A group of scientists studied mosquitoes kept at different surrounding temperatures and recorded how long some stages of their life cycle took. The table below shows the results obtained.

Duration of each stage at different surrounding temperatures (days)				
	23°C	26°C	29°C	32°C
Egg	2	2	2	2
Larva	9	8	7	6

- (a) What is the relationship between the surrounding temperature and the length of the larva stage of the mosquito? [1]

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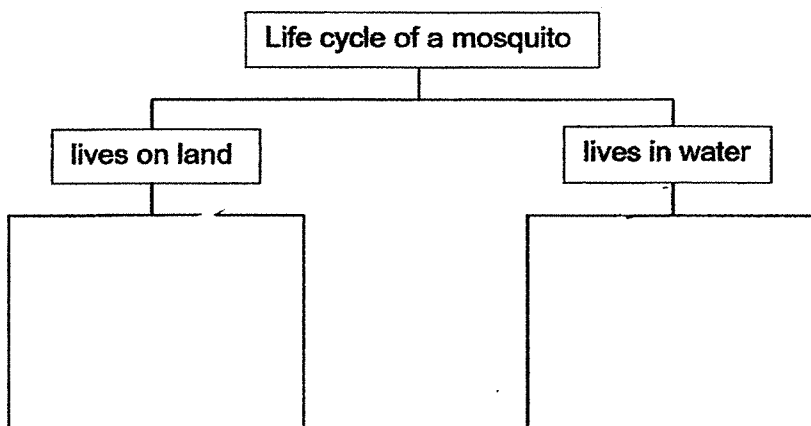
- (b) From the table above, did the increase in temperature affects the length of the egg stage? Use the information from the table above to support your answer. [1]

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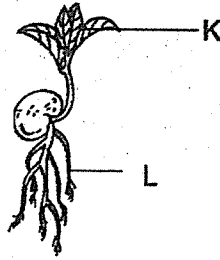
- (c) The mosquito spends its life cycle both on land and in water. Complete the classification table below to indicate where we can find all the different stages of the life cycle of a mosquito. [2]



(Go on to the next page)

Score	4
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36 The diagram below shows a seedling.

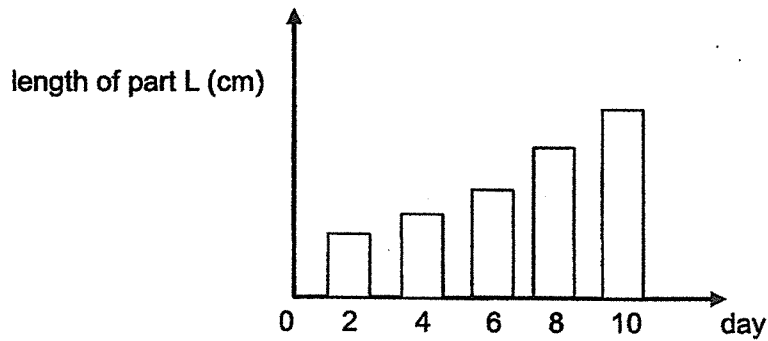


(a) Identify the parts, K and L, of the seedling. [2]

Part K: \_\_\_\_\_

Part L: \_\_\_\_\_

James observed that part L was attached to the seedling as it grows. He recorded its length over a few days and plotted the bar graph as shown below.



(b) Based on the bar graph above, describe what happens to the length of part L from day two to day ten. [1]

\_\_\_\_\_

(c) Give a reason for the relationship that you have stated in (b). [1]

\_\_\_\_\_

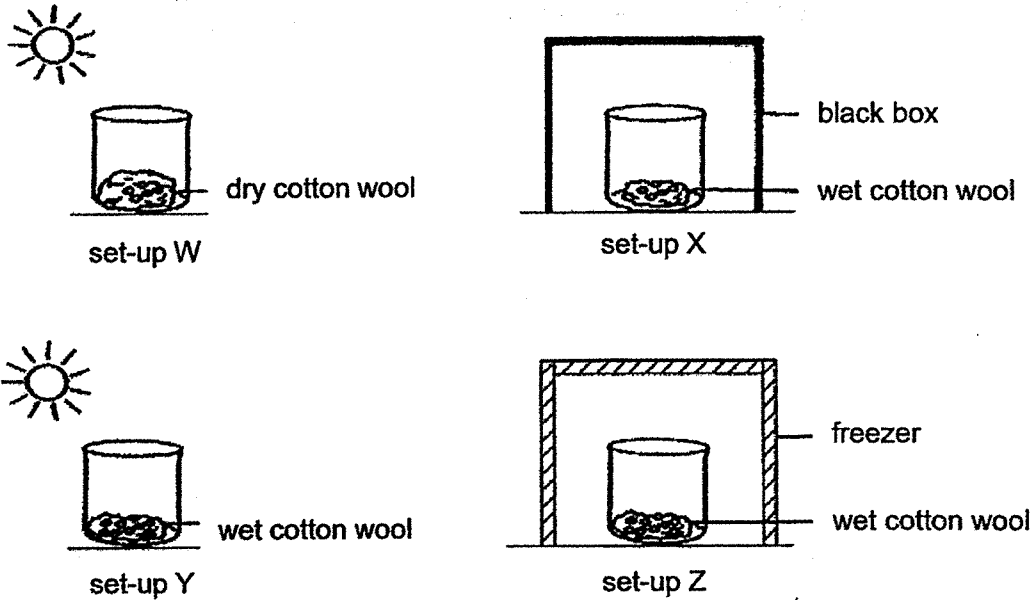
\_\_\_\_\_

Q36 continues on the following page

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Score	4
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- (d) James then conducted another experiment to investigate the conditions needed for seeds to grow into seedlings. He prepared the four set-ups as shown in the diagrams below with the same number of seeds in each of them.



After a few days, James noticed that only the seeds in set-ups X and Y grew into seedlings. Based on the information given, complete the table below by ticking (✓) the condition(s) needed for seeds to grow into seedlings. [1]

Condition needed for seeds to grow	(✓)
light	
water	
warmth	

(Go on to the next page)

Score	1
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- 37 (a) State the two properties of matter. [2]

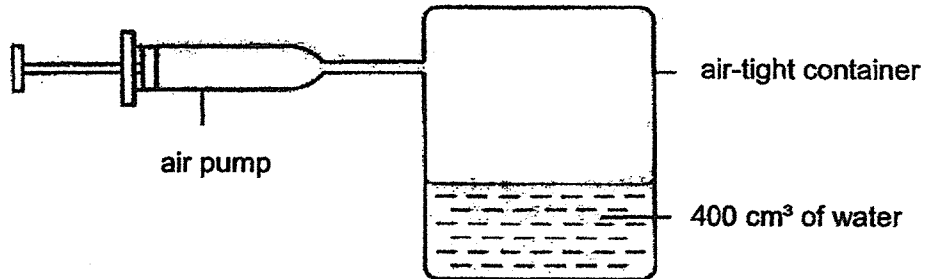
Property one:

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Property two:

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- (b) The diagram below shows an air pump which is attached to a  $1000 \text{ cm}^3$  air-tight container containing  $400 \text{ cm}^3$  of water. Each push of the air pump can force  $100 \text{ cm}^3$  of air into the container.



- (i) State the volume of air inside the air-tight container after five pushes of the air pump. [1]

\_\_\_\_\_  $\text{cm}^3$

- (ii) Give a reason for your answer in (b)(i). [1]

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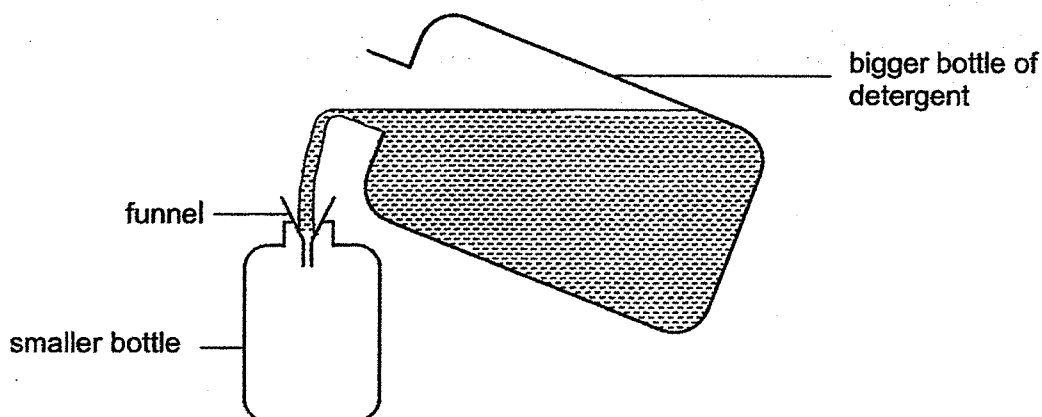


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Score	4
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- 38 Aina wanted to transfer some detergent from a bigger bottle into a smaller bottle as shown.



At first, she noticed that some detergent entered the smaller bottle. However, after a while, the detergent did not flow into the smaller bottle but overflowed off the funnel instead even though the smaller bottle was still not full.

- (a) Explain why some detergent could enter the smaller bottle at first. [1]

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- (b) Explain why the detergent could not flow into the smaller bottle even though the smaller bottle was still not full. [2]

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- (c) Suggest two methods Aina can do to enable the detergent to flow into the smaller bottle. [2]

Method one: \_\_\_\_\_

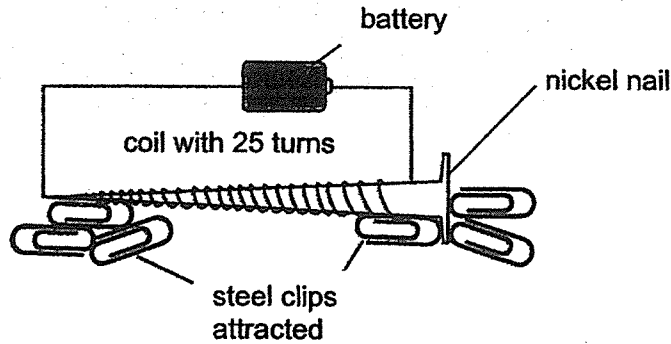
Method two: \_\_\_\_\_

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Score	5
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- 39 Ann coiled a wire around a nickel nail and connected the ends to a battery. It was observed that the nickel nail was able to attract some steel clips as shown in the diagram below.



- (a) State the property of the nickel nail that enables it to attract the steel clips. [1]

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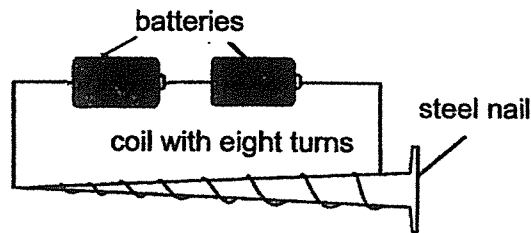
- (b) Ann also observed that no steel clips were attracted to the middle part of the nickel nail. Explain this observation. [1]

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Next, Ann wanted to find out how the type of nail used affects the number of steel clips attracted. She set up a second experiment as shown in the diagram below.



- (c) Give two reasons why her experiment was not a fair test. [2]

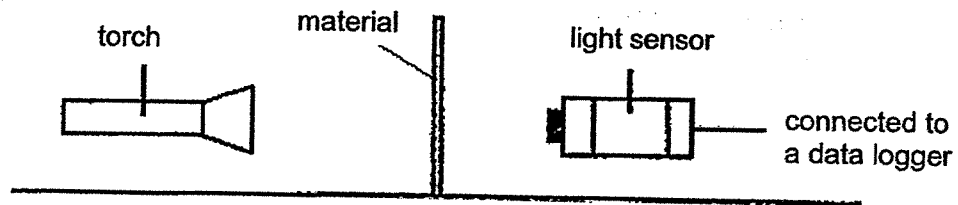
Reason one: \_\_\_\_\_

Reason two: \_\_\_\_\_

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Score	4
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- 40 Samuel conducted an experiment to find out the amount of light that would pass through four different materials, P, Q, R and S. He used a light sensor to detect the amount of light that passed through each material. The set-up for the experiment is shown below.



When no material was placed between the torch and light sensor, the amount of light detected was 500 units.

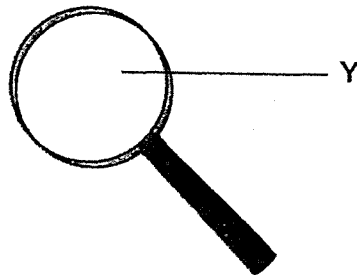
The following table shows his results when the different materials were placed between the torch and light sensor.

Material	Amount of light detected (units)
P	497
Q	390
R	180
S	0

Based on Samuel's results, which of the materials, P, Q, R or S will be most suitable to make part Y of the magnifying glass below?

Give a reason for your answer.

[2]



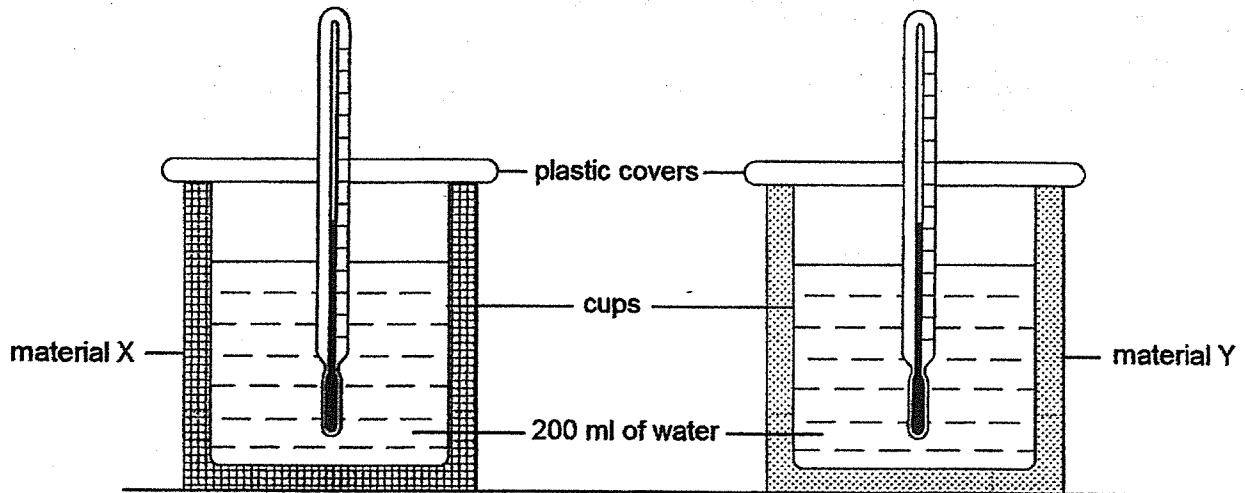
Material: \_\_\_\_\_

Reason: \_\_\_\_\_  
 \_\_\_\_\_

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Score	2
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- 41 Lionel used the set-up below to find out which of the materials, X or Y, is a better conductor of heat.



He recorded the temperatures of water in both cups at the start of the experiment and 30 minutes later. His results are shown below.

Material	Temperature of water (°C)	
	Start of experiment	After 30 minutes
X	60	50
Y	60	40

- (a) At the start of the experiment, Lionel ensured that the water used in both cups were of the same temperature. Give a reason why he did that. [1]

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- (b) Based on the results above, which material, X or Y, would be more suitable to keep a person warm in cold weather? Explain your answer. [2]

Material \_\_\_\_\_

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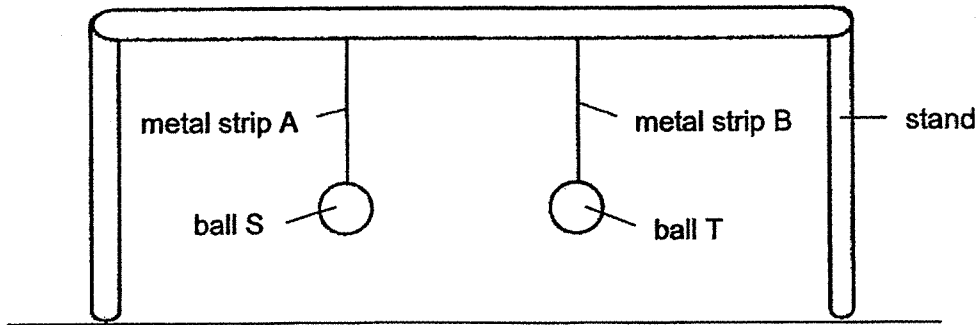


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Score	3
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- 42 Farid hung two identical balls, S and T, from a stand in the school field as shown. Both the metal strips were of the same length and thickness.



- (a) After a few hours under the hot sun, Farid observed that both balls were hanging at a lower height from the top of the stand. Explain this observation. [1]

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- (b) However, ball S was observed to be hanging at a lower height compared to ball T. Explain why this happened. [1]

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End of Paper

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Score	2
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## ANSWER KEY

**YEAR : 2021**  
**LEVEL : Primary 4**  
**SCHOOL : Anglo-Chinese School**  
**SUBJECT : SCIENCE**  
**TERM : SA2 Practice Paper**

### BOOKLET A

Q1	2	Q2	3	Q3	4	Q4	4	Q5	2
Q6	2	Q7	3	Q8	1	Q9	3	Q10	3
Q11	3	Q12	2	Q13	4	Q14	4	Q15	1
Q16	1	Q17	2	Q18	4	Q19	3	Q20	4
Q21	2	Q22	4	Q23	1	Q24	4	Q25	2
Q26	2	Q27	2	Q28	4				

### BOOKLET B

Q29	(a) absorb (b) waterproof										
Q30											
Q31	<table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; border: none;"><u>organ systems</u></th> <th style="text-align: left; border: none;"><u>functions</u></th> </tr> </thead> <tbody> <tr> <td style="border: none;">digestive system</td> <td style="border: none;">supports our body and gives it shape</td> </tr> <tr> <td style="border: none;">skeletal system</td> <td style="border: none;">breaks down food into simpler substances</td> </tr> <tr> <td style="border: none;">circulatory system</td> <td style="border: none;">takes air into and out of the body</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;">transports digested food, water and oxygen to all parts of the body</td> </tr> </tbody> </table>	<u>organ systems</u>	<u>functions</u>	digestive system	supports our body and gives it shape	skeletal system	breaks down food into simpler substances	circulatory system	takes air into and out of the body		transports digested food, water and oxygen to all parts of the body
<u>organ systems</u>	<u>functions</u>										
digestive system	supports our body and gives it shape										
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circulatory system	takes air into and out of the body										
	transports digested food, water and oxygen to all parts of the body										
Q32	less pins than										
Q33	candle lamp										
Q34	<p>(a) Similarity one : They both have three stages in their life cycles.            Similarity two : They both start as an egg in their life cycle.</p> <p>(b) The frogs young does not resembles it adult while the grasshopper's young resembles its adult.</p> <p>(c) They hatched</p>										

	(d) To ensure at least some of the eggs would be able to hatch.
Q35	<p>(a) The higher the temperature, the shorter the length of the larve stage of the mosquito.</p> <p>(b) No, as the temperature increases, the amount of days for the eggs to hatch remain at 2 days, thus temperature does not affect the eggs.</p> <p style="text-align: center;">Life cycle of a mosquito</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>lives on land</p> <div style="border: 1px solid black; padding: 5px; width: 80px; height: 80px; display: flex; align-items: center; justify-content: center;"> <del>adult</del> </div> </div> <div style="text-align: center;"> <p>lives in water</p> <div style="border: 1px solid black; padding: 5px; width: 80px; height: 80px; display: flex; flex-direction: column; align-items: center; justify-content: center;"> <div style="margin-bottom: 5px;">eggs</div> <div style="margin-bottom: 5px;">larva</div> <div style="margin-bottom: 5px;">pupa</div> </div> </div> </div> <p>(c)</p>
Q36	<p>(a) Park K : leave Part L : root</p> <p>(b) The length of part L increases.</p> <p>(c) More nutrients are needed for the plants to grow thus, more roots are needed, hence part L increases in length.</p> <p>(d) water warmth</p>
Q37	<p>(a) Property one : occupies space Property two : Has mass</p> <p>(b) (i) <math>600\text{cm}^3</math> (ii) Air has no definite volume.</p>
Q38	<p>(a) There was air in the smaller bottle which occupies space thus there is lesser space for the detergent to flow in.</p> <p>(b) There was air that occupied space in the smaller bottle and could not escape to make space for the detergent to flow into the bottle.</p> <p>(c) Method one : Remove the funnel Method two : lift the funnel up so that it does not touch the mouth of the bottle.</p>
Q39	<p>(a) Nickel nail is a magnetic material.</p> <p>(b) A magnet is the strongest at its poles.</p> <p>(c) Reason one : There is two batteries for the steel nail while there is one battery for the nickel nail. Reason two : There is lesser coils than the nickel nail.</p>
Q40	<p>Material : P Reason : To let the user to be able to see through the magnifying glass clearly.</p>
Q41	<p>(a) So that it would be a fair experiment.</p> <p>(b) Material X X was <math>10^\circ\text{C}</math> warmer than Y after 30 minutes thus X is better.</p>
Q42	<p>(a) Both metal strip gained heat and expanded vertically thus lowering both balls.</p> <p>(b) Metal strip A expended more than Metal strip B.</p>