



Anglo-Chinese School (Primary)

MID-YEAR EXAMINATION 2012  
SCIENCE  
PRIMARY FOUR  
BOOKLET A

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

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

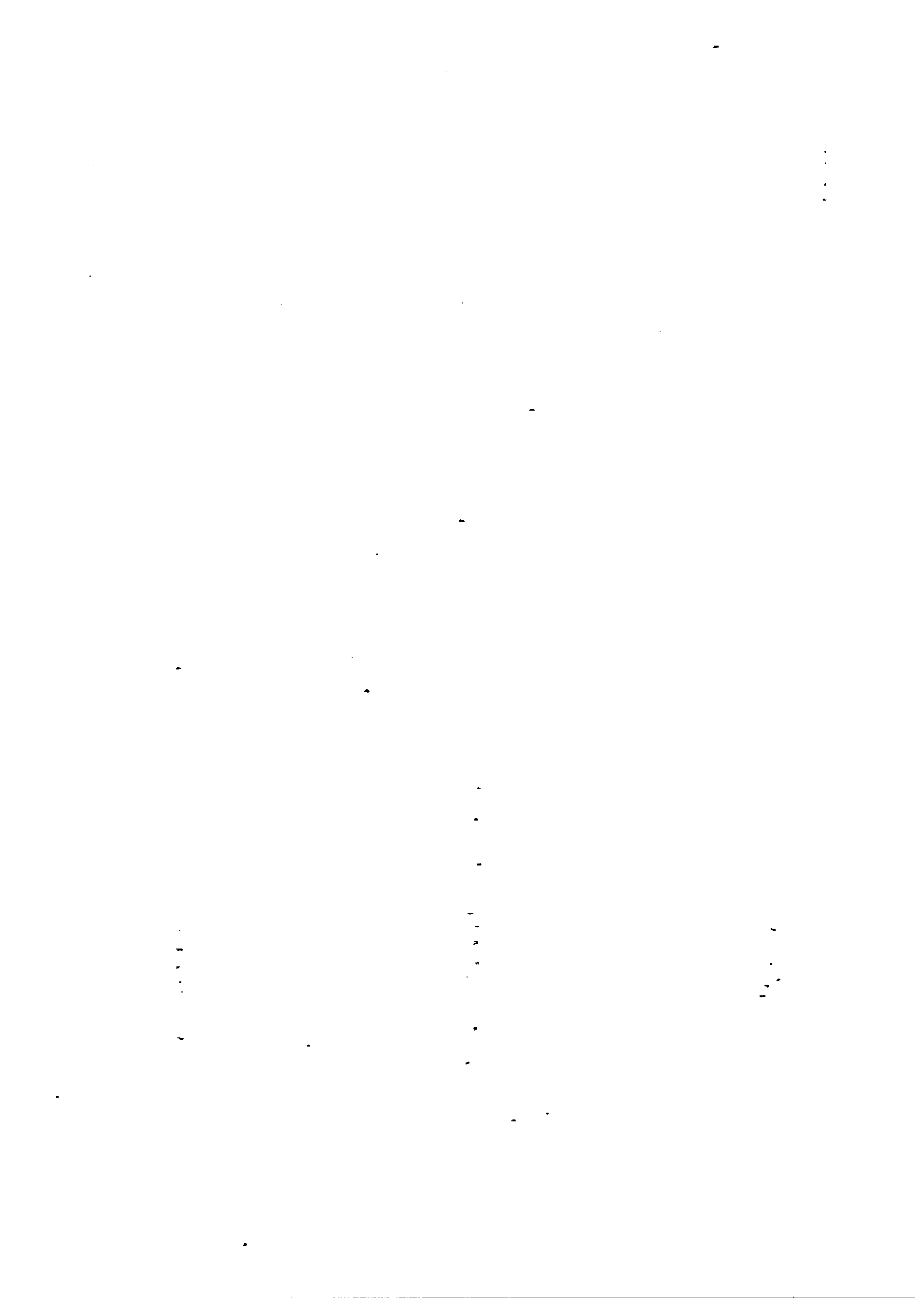
Date: 10 May 2012

Duration of paper: 1 h 45 min

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Parent's/Guardian's signature

INSTRUCTIONS TO CANDIDATES

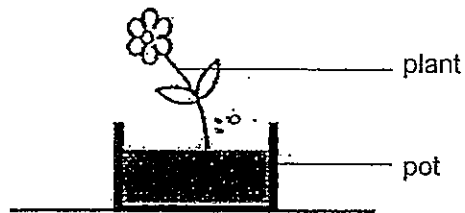
1. This question paper consists of 17 printed pages including this cover page.
2. Do not turn this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answer on the Optical Answer Sheet (OAS) provided.




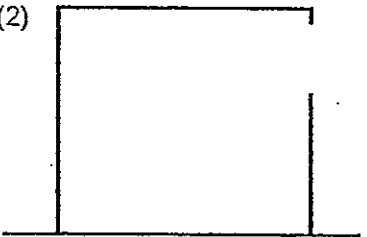

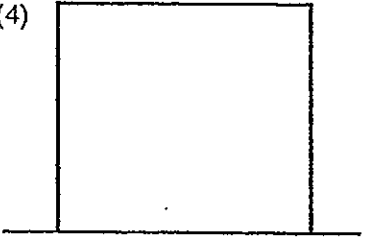
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

(60 marks)

- 1 Fiona wanted to test how plants respond to changes in the surroundings. She put a plant in a black box and watered it daily. After a week, Fiona drew a picture of how the plant looked like as shown below.



Which one of the following boxes did she use?

(1) 	(2) 
(3) 	(4) 

- 2 The tables below show how Craig and Cindy classified some organisms into two groups.

Craig's classification:

Group X	Group Y
Bird's Nest Fern Mushroom	Rose Hibiscus

Cindy's classification:

Group P	Group Q
Mushroom	Rose Hibiscus Bird's Nest Fern

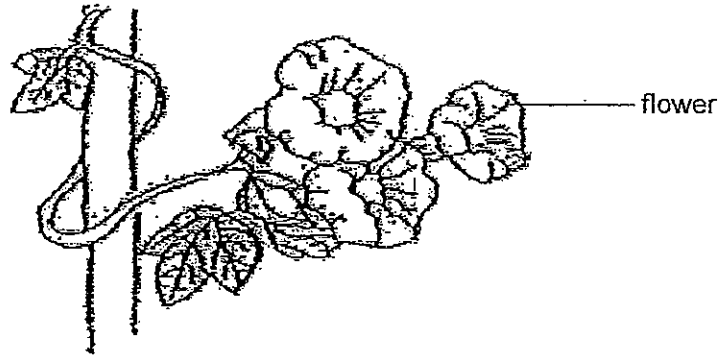
Which one of the following groups of classifications shows how they have grouped the organisms?

	Craig's classification		Cindy's classification	
	X	Y	P	Q
(1)	<del>Fungi</del> Plants	<del>Plants</del> Fungi	Non-flowering plants	Flowering plants
(2)	Non-flowering plants	Flowering plants	Fungi	Plants
(3)	Reproduce by spores	Reproduce by seeds	Fungi	Plants
(4)	Fungi	Plants	Non-flowering plants	Flowering plants

- 3 Caleb carried out an experiment with four rulers of similar size but made of different materials. He scratched them against one another and observed the depth of the scratches made. What ~~is~~ <sup>was</sup> the possible aim of his experiment?

- (1) To find out which ruler is the hardest.
- (2) To find out which ruler is the strongest.
- (3) To find out which ruler is the most elastic.
- (4) To find out which ruler is the least flexible.

- 4 The diagram below shows a flowering plant.



Based on your observation of the diagram above only, which of the following statements about the flowering plant are true?

- A It is poisonous.
- B It has a weak stem.
- C Its flowers grow in a cluster.
- D Its leaves have parallel veins.

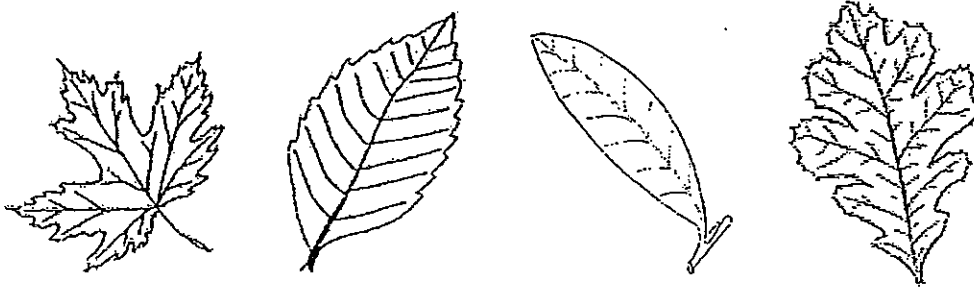
- (1) A and B only
- (2) A and C only
- (3) B and C only
- (4) B and D only

- 5 Which of the following statements are not true about bread mould?

- A It reproduces by spores.
- B It is a non-flowering plant.
- C It gets food from the bread itself.
- D It makes the bread fluffy and tastier.

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

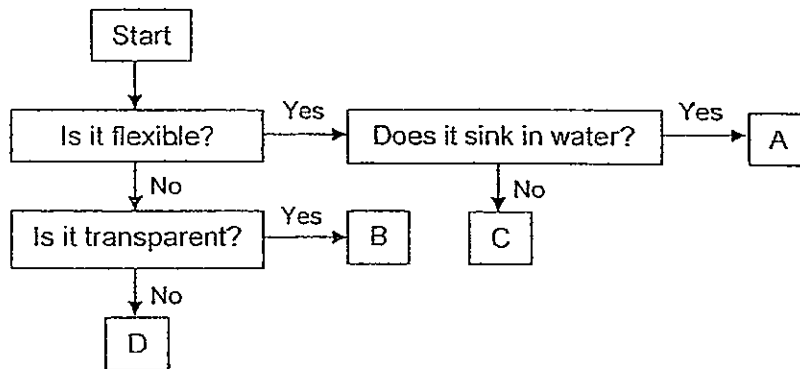
6 Gerald collected four leaves from the school eco-garden as shown below.



Based on your observation of the above pictures only, what characteristic of the leaves can he use to classify all of them under the same group?

- (1) Shape
- (2) Texture
- (3) Leaf edge
- (4) Vein pattern

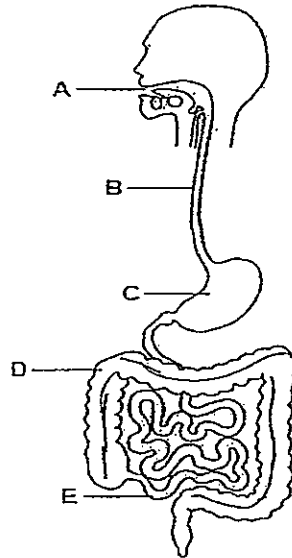
7 Study the flow chart shown below carefully.



In which one of the boxes, A, B, C or D would you place an eraser?

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

- 8 The diagram below shows parts of the human digestive system.



Which one of the following shows the correct pathway in which food travels through the digestive system before it enters the blood stream?

- (1) A → B → C → D  
 (2) A → B → C → E  
 (3) A → B → C → D → E  
 (4) A → B → C → E → D
- 9 Which of the following statements about the saliva are true?

- A Saliva softens the food.  
 B Saliva digests the food partially.  
 C Saliva carries the digested food to different parts of the body.  
 D Saliva is produced in the mouth, stomach and small intestine.

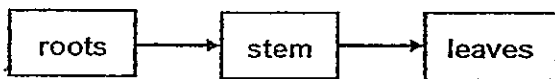
- (1) A and B only  
 (2) A and D only  
 (3) B and C only  
 (4) B and D only

10 Muscles are found in the walls of the gullet, stomach, small intestine and large intestine of the digestive system. How do these muscles help in the digestion of food?

- A The muscles produce digestive juices.
- B The muscles absorb the digested food.
- C The muscles help to move food along the digestive tract.
- D The muscles help to mix the food, liquid and digestive juice.

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

For Questions 11 and 12, study the flow diagram below that shows the movement of a substance in the transport system of a plant.



11 The arrows show the path taken by \_\_\_\_\_ in the plant.

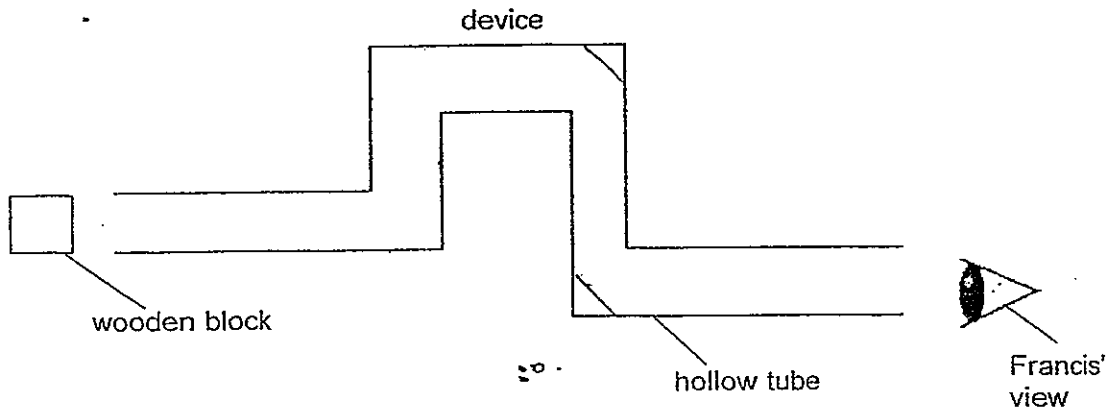
- (1) air
- (2) food
- (3) water
- (4) sunlight

12 Which one of following human body systems performs a similar function as the plant's transport system shown in the above flow diagram?

- (1) Digestive system
- (2) Muscular system
- (3) Circulatory system
- (4) Respiratory system



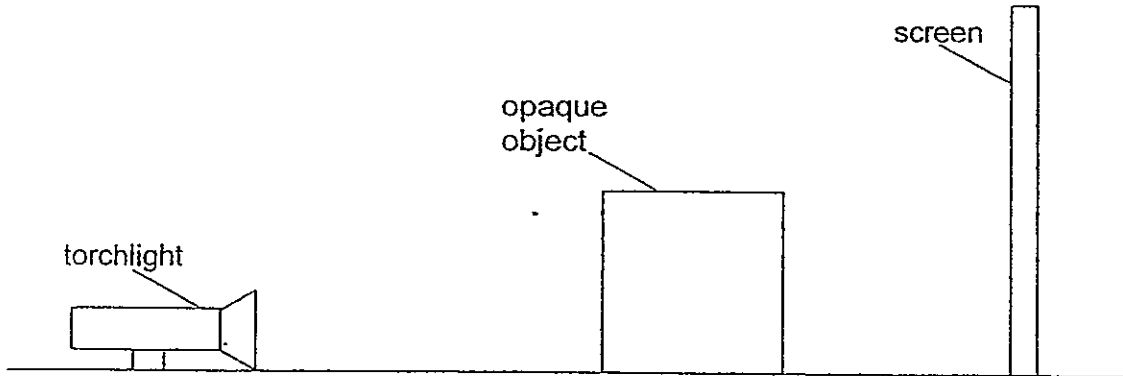
- 13 The diagram below shows how Francis would use the device below to see the wooden block at the other end. What is the least number of mirrors that are needed to be placed in the device for him to see the wooden block through the hollow tube?



- (1) 7  
 (2) 6  
 (3) 5  
 (4) 4
- 14 Study the table below carefully. Which one of the following pairs of items is classified incorrectly?

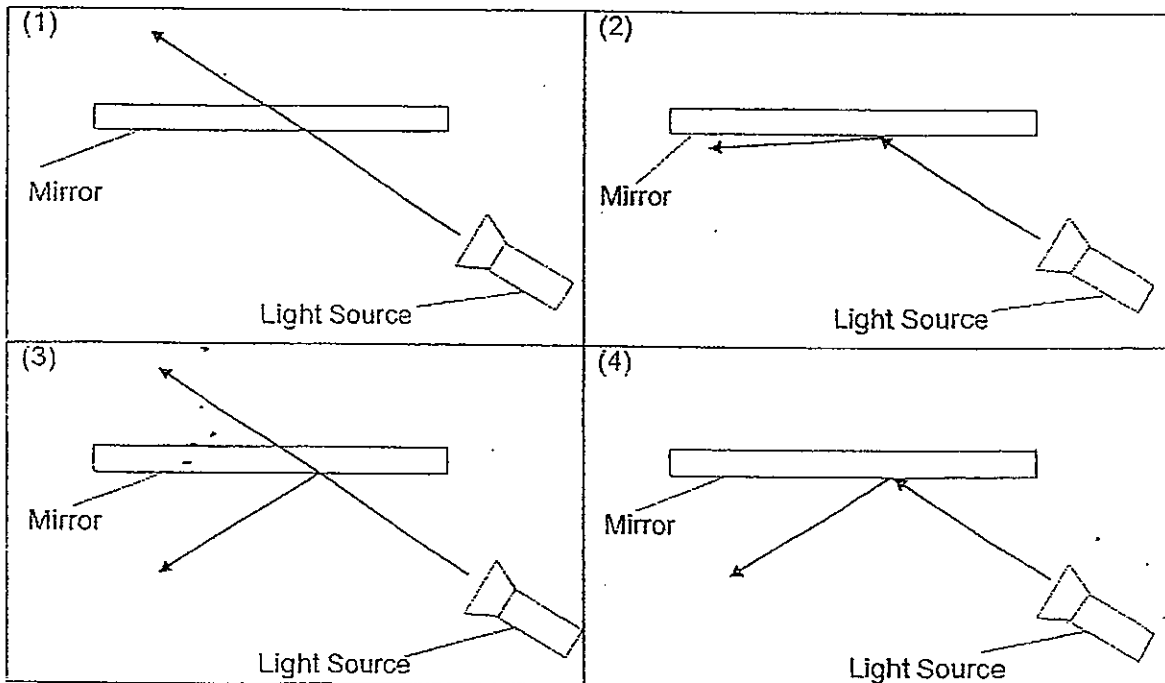
	Natural Sources of Light	Artificial Sources of Light
(1)	Sun	Lit Matchstick
(2)	Star	Laser Beam
(3)	Moon	Glass Mirror
(4)	Lightning	Fireworks

- 15 Keane shone a torchlight at an opaque object to cast a shadow on a screen as shown in the diagram below.

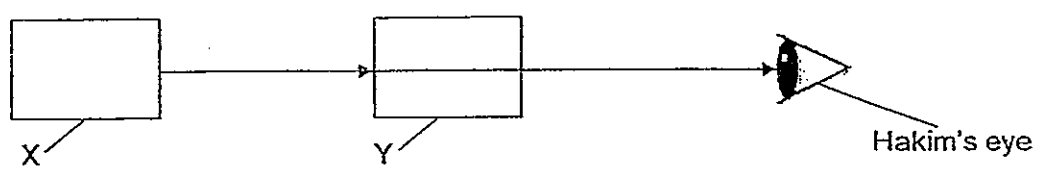


What can he do to cast a smaller shadow on the screen?

- (1) Move the opaque object closer to the screen.
  - (2) Move the torchlight closer to the opaque object.
  - (3) Move the opaque object further away from the screen.
  - (4) Move the screen further away from the opaque object.
- 16 Which one of the following diagrams shows the correct path of light when a torch is shone onto a flat mirror?



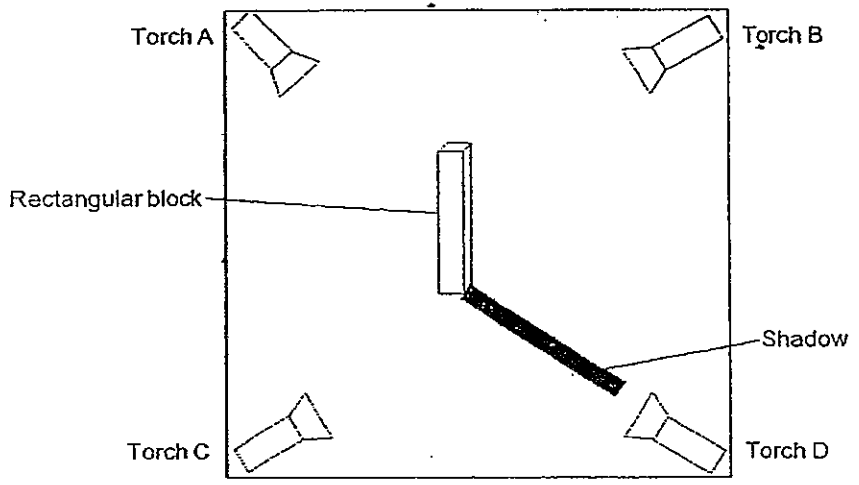
17 The diagram below shows the path of light from ~~from~~ X to Y to Hakim's eye.



Which one of the following pair of objects correctly shows what X and Y are?

	X	Y
(1)	Rice Paper	Cardboard
(2)	Lit Torch Light	Glass Window
(3)	Frosted Cup	Wooden Plank
(4)	Clay Bowl	Metal Ruler

18 John conducted an experiment as shown in the diagram below. He placed four identical torches at each corner of the setup, and placed a rectangular block in the centre. One of the torches was switched on and a shadow was cast as shown below.



Based on your observation, which one of the following torches is most likely to be the one being switched on?

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

- 19 Four students, A, B, C and D wrote down procedures to be followed when reading a laboratory thermometer.



- A Observe the level of the liquid in the thermometer.
- B Hold the thermometer upright by its tip.
- C Keep your eyes at the level of the liquid in the thermometer.
- D Read the marking nearest to the level of the liquid.

Arrange the procedures as mentioned by the four pupils in the correct order to be followed when reading a laboratory thermometer.

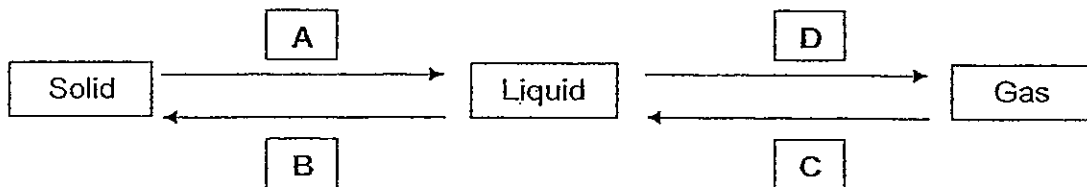
- (1) B, A, C, D
  - (2) A, C, D, B
  - (3) C, B, A, D
  - (4) B, A, D, C
- 20 Which of the following statements are true about heat?
- A Heat is a form of energy.
  - B Heat is the same as temperature.
  - C Heat can be measured using a thermometer.
  - D Heat travels from a hotter place to a cooler place.
- (1) A and B only
  - (2) A and D only
  - (3) B and C only
  - (4) C and D only

21 Which of the following objects ~~is~~ are a source of heat?

- A Wool cap
- B Sunglasses
- C Burning fuel
- D Warm water

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

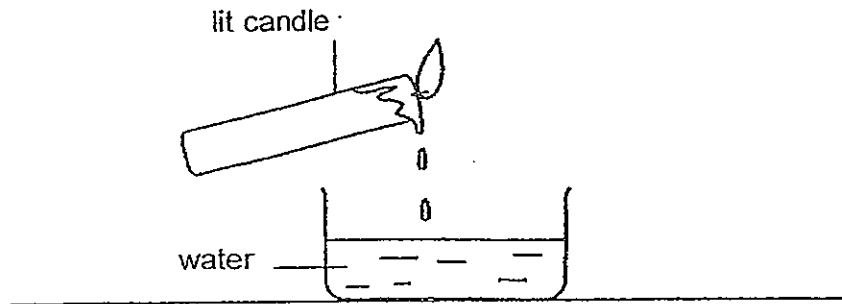
22 The diagram below shows the changes <sup>in</sup> of states of matter.



Which one of the following correctly represents the letters in the diagram?

	A	B	C	D
(1)	Heat Loss	Heat Gain	Heat Gain	Heat Loss
(2)	Heat Gain	Heat Loss	Heat Loss	Heat Gain
(3)	Heat Gain	Heat Loss	Heat Gain	Heat Loss
(4)	Heat Loss	Heat Gain	Heat Loss	Heat Gain

23 Study the diagram shown below carefully.



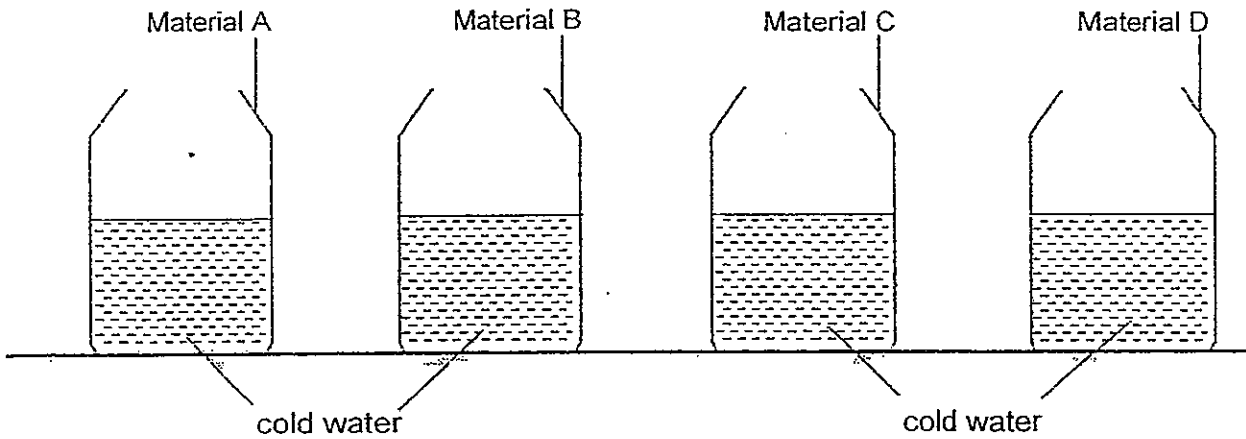
What would likely happen when the liquid wax falls onto the water surface?

- (1) Both the wax and water gain heat.
- (2) Both the wax and water lose heat.
- (3) The wax gains heat, but the water loses heat.
- (4) The wax loses heat, but the water gains heat.

24- A factory manufactures four different types of thermometers, each with its own temperature range. Which one of the following thermometers is best suited to measure the temperature as indicated in the table below?

	Temperature range	To measure the temperature of
(1)	35°C to 42°C	Human Body
(2)	-10°C to 90°C	Boiling Water
(3)	5°C to 25°C	Ice Cubes
(4)	40°C to 100°C	Air-conditioned Room

- 25 Christine conducted an experiment where she poured an equal amount of cold water into four similar-sized bottles made of different materials A, B, C and D as shown below:



After fifteen minutes, the temperature of the water in each bottle was measured and recorded as shown in the table below.

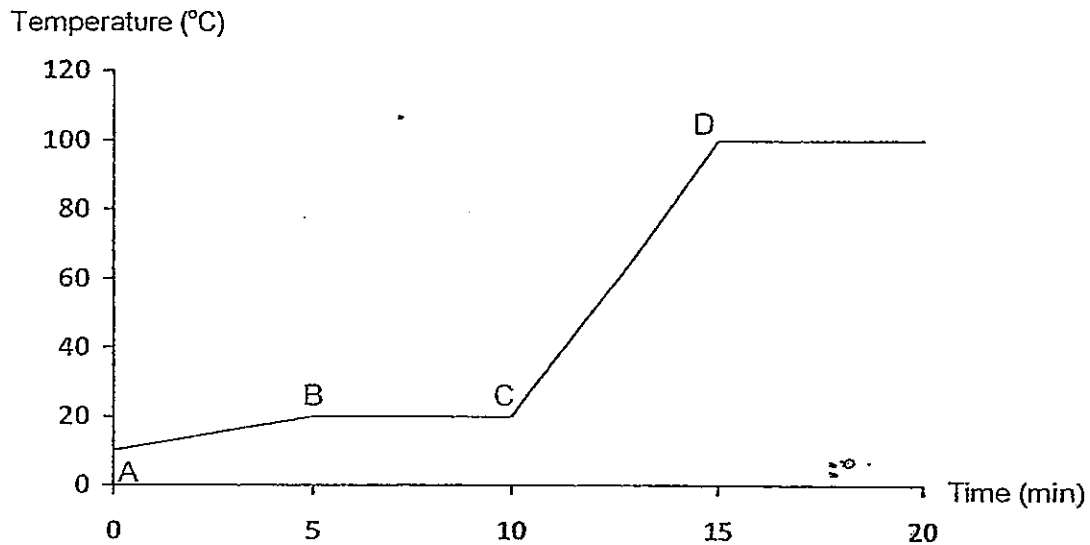
Material bottle was made of...	Temperature of water after 15 minutes ( $^{\circ}\text{C}$ )
Material A	15
Material B	26
Material C	22
Material D	19

Based on the results from the table above, which one of the following conclusions is most likely to be correct?

- (1) Material A is the best conductor of heat.
- (2) Material B is the worst conductor of heat.
- (3) Material B conducts heat better than Material C.
- (4) Material D is a poorer conductor of heat than Material A.

The graph below shows the temperature changes that were observed in a beaker of cold water.

Use the graph to answer Questions 26 and 27.



26 Which one of the following most likely has caused the temperature change in CD?

- (1) The water was heated.
- (2) Warm water was added.
- (3) Heat was removed from the beaker.
- (4) The water was left on the table at room temperature.

27 Which part(s) of the graph show(s) that the water is gaining heat?

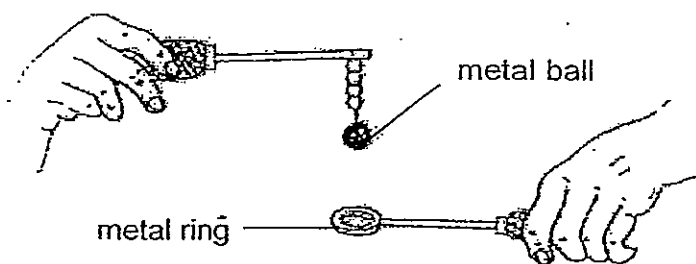
- (1) AB only
- (2) BC only
- (3) AB and CD only
- (4) BC and CD only



28 Mrs Ho took out a bottle of pickles from the refrigerator. She was unable to open the bottle, so she poured some hot water over the metal lid of the bottle. She was then able to unscrew the metal lid. Why was this possible?

- (1) The heat caused the metal lid to crack.
- (2) The heat caused the metal lid to expand.
- (3) The heat caused the metal lid to contract.
- (4) The heat caused the air in the bottle to expand and loosen the metal lid

29 The diagram below shows a metal ball and ring apparatus. At first, the metal ball is unable to pass through the metal ring completely.



Which of the following steps will enable the metal ball to pass through the metal ring completely?

- A Dip the metal ball in cold water.
  - B Heat the metal ball over a flame.
  - C Heat the metal ring over a flame.
  - D Both the metal ball and ring should be heated over a flame.
- (1) A and C only
  - (2) A and D only
  - (3) B and C only
  - (4) B and D only

- 30 Robert wants to find out if the material of the containers affects the rate at which water loses heat to the surroundings. He has four similar-sized containers, P, Q, R and S made of different materials. The table below shows the amount of water and the temperature of the water in each container at the start of the experiment.

Container	Amount of water in container (ml)	Temperature of water in container at the start of the experiment ( $^{\circ}\text{C}$ )
P	100	80
Q	150	70
R	100	70
S	100	80

Which two containers should he use for the experiment to ensure a fair test?

- (1) P and R only
- (2) P and S only
- (3) Q and R only
- (4) R and S only



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BOOKLET B

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

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

Date: 10 May 2012

Duration of paper: 1 h 45 min

\_\_\_\_\_  
Parent's/Guardian's signature

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of 14 printed pages including this cover page.
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.

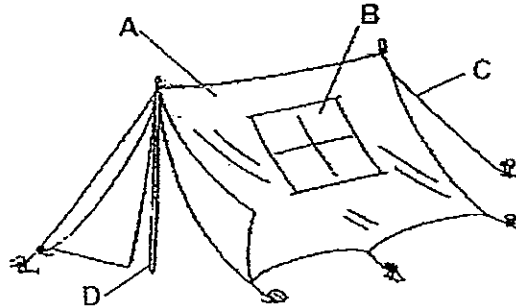
Booklet	Maximum marks	Marks obtained
A	60	
B	40	
Total	100	



For questions 31 to 44, write your answers in the spaces provided in this booklet.

The number of marks available is shown in the brackets [ ] at the end of each question or part question. (40 marks)

31 The following picture shows a camping tent with a 'window', B.



Four different materials were chosen based on their properties indicated below. Use a ruler and pencil to draw straight lines to match the different properties most suitable for the different parts of the tent. [2]

<u>Properties of the material</u>	•	•	<u>Part of the tent</u>
strong and flexible	•	•	A
waterproof and transparent	•	•	B
strong, stiff and hard	•	•	C
waterproof and opaque	•	•	D

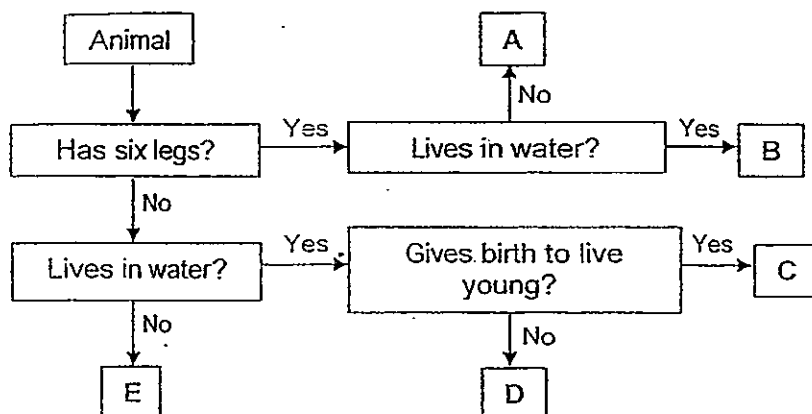
32 Put a tick (✓) in the appropriate boxes to indicate whether each statement below is 'True' or 'False'. [2]

	Statement	True	False
(a)	Bacteria reproduce by spores.		
(b)	All fungi can be seen by the naked eye.		
(c)	Mushrooms cannot make their own food.		
(d)	Fungi and bacteria can be both useful and harmful to humans.		

(Go on to the next page)

Score	4
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33 Study the flow chart below carefully.



- (a) Based on the above flow chart, state one similarity and one difference between Animal B and Animal C. [2]

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

\_\_\_\_\_

Difference: \_\_\_\_\_

\_\_\_\_\_

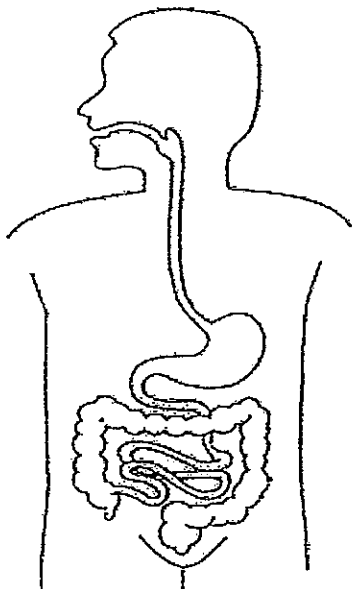
- (b) Which one of the animals, A, B, C, D or E is most probably a guppy in the given flow chart above? [1]

\_\_\_\_\_

(Go on to the next page)

Score	3
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34 The diagram below shows a human digestive system.



- (a) On the above diagram, using a ruler and pencil, label the part of the digestive system in which most of the water in food is absorbed. [1]
- (b) Muthu was down with diarrhoea (watery stools). Based on your answer in part (a), explain how that could have happened. [2]

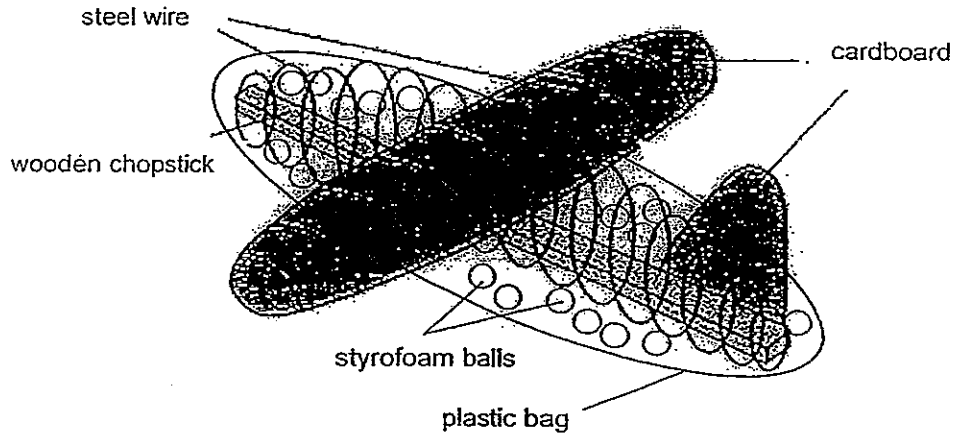
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Score	3
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- 35 Together with his father, Jacky built an aeroplane using wooden chopstick, steel wire, cardboard, plastic bag and styrofoam balls as shown below. His father told him that the framework of the aeroplane is made up of the wooden chopstick and steel wire, while the styrofoam balls and the plastic bag made up the body of the aeroplane.



- (a) Name the human body system that serves the same function as the framework of the above aeroplane. [1]

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- (b) State two similarities between the functions of the framework in humans and the aeroplane. [2]

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Score	3
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- 36 George wanted to find out how different variables affect the growth of kang kong seedlings. Below is a list of variables that he would take into consideration.

V	Type of soil
W	Amount of light
X	Amount of water
Y	Amount of fertilizer

He made a list of two possible aims of experiments which he would like to conduct in the table below.

- (a) Complete the table below by filling in the variables (V, W, X or Y) to be kept constant for each experiment, to ensure that they are carried out fairly. [2]

	Aim of the experiment	To be kept constant		
		Variable 1	Variable 2	Variable 3
(i)	To find out if the amount of light affects the growth of kang kong seedlings.			
(ii)	To find out if the amount of water affects the growth of kang kong seedlings.			

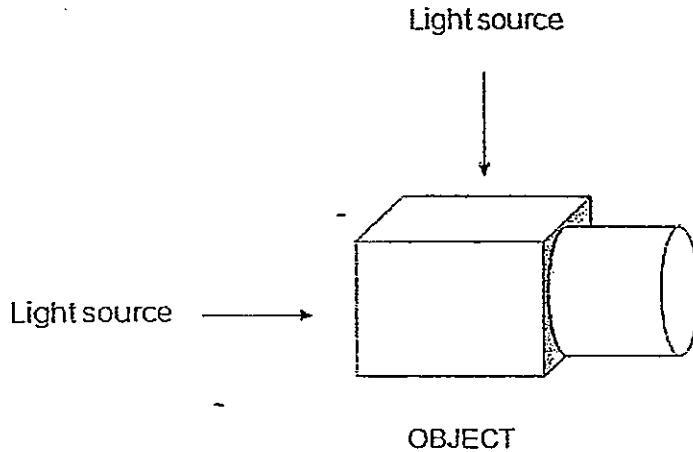
- (b) For the two aims indicated above, what is one other common variable that must be kept the same, to ensure that these two experiments carried out are fair? [1]
- 

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Score	3
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37 A torch light is shone onto an object as shown in the diagram below.

- (a) In the boxes provided below, using a ruler and pencil, draw out the shadows that will be cast if the light is shone from the top and if the light is shone from the left side of the object respectively. [2]



Shadow formed if direction of light:  
Top down

Shadow formed if direction of light:  
From the left

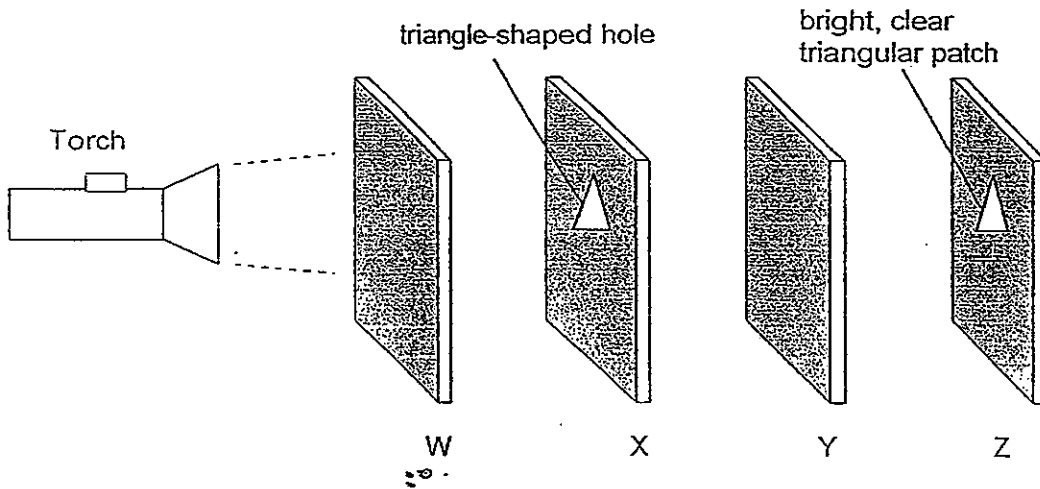
- (b) Fill in the blanks with a suitable word each. [1]

The shadow of the object changes in \_\_\_\_\_ when the \_\_\_\_\_ of the light source changes.

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Score	3
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- 38 Daniel set up an experiment using four sheets of different materials W, X, Y and Z. He lined them up in a straight line as shown below. There is a triangle-shaped hole on sheet X. When a torch light is shone at the four materials from the left, a bright clear triangular patch was observed at sheet Z.



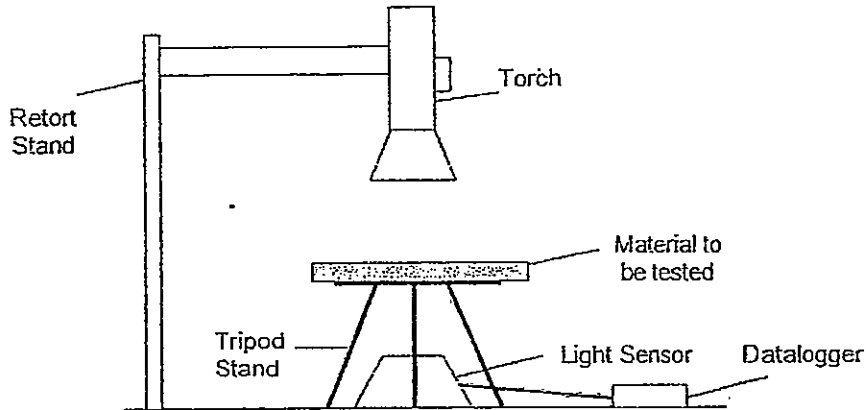
Based on the observation above only, indicate the property that sheet W, X, Y and Z has by putting a tick (✓) in the appropriate boxes in the table below. [2]

Material	Transparent	Opaque
W		
X		
Y		
Z		

(Go on to the next page.)

Score	2
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- 39 Nigel wanted to find out which cloth is the best for making window curtains for his room. He selected four fabrics A, B, C and D. Using a datalogger and a light sensor, he positioned the respective material in between a light source and the light sensor as shown in the diagram below.



The readings in the datalogger were recorded in a table below.

Fabric	Amount of light detected by the light sensor (units)
A	455
B	20
C	110
D	880

After the experiment, Nigel decided that he wants the curtain to have only one purpose, which is to make sure no one can see through his window from the outside.

- (a) Based on the results above, which one of the fabrics (A, B, C or D), is best suited to make Nigel's window curtains? Give a reason for your answer. [1]

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- (b) Name two variables in this experiment that must be kept constant so as to make this a fair test. [2]

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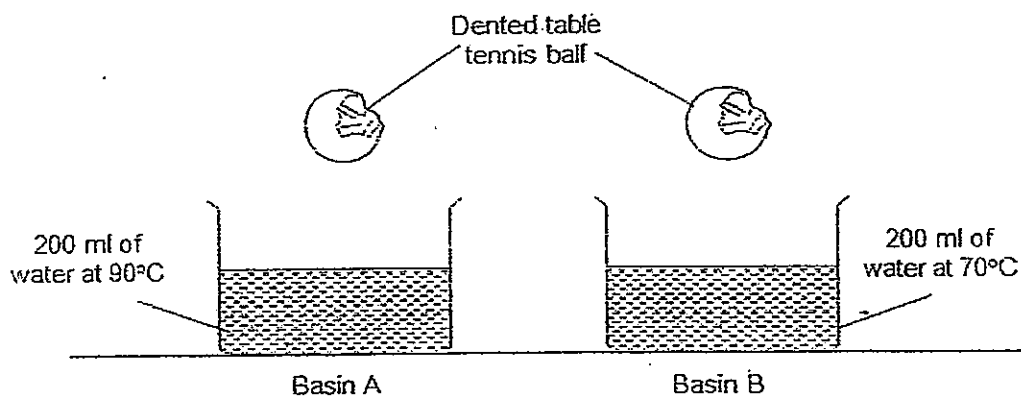


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Score	3
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- 40 A dented table tennis ball can return to its original shape by placing the ball in a basin of hot water. Yu Ling had two identical table tennis balls that were similarly dented and she placed them into two basins of water separately.

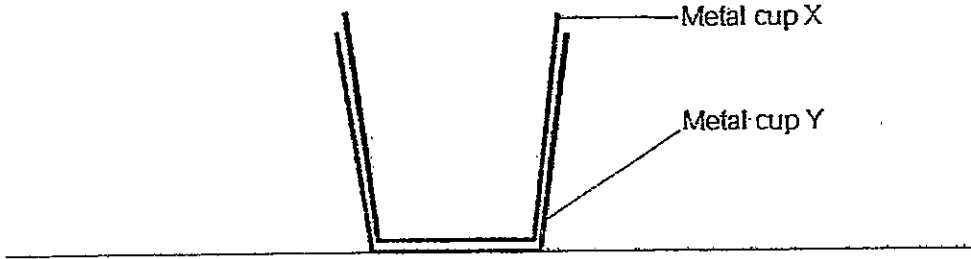


- (a) State which basin of water will make the dented table tennis ball round faster? [1]
- \_\_\_\_\_
- (b) Which basin of water has more heat? Explain your answer. [1]
- \_\_\_\_\_
- \_\_\_\_\_
- (c) Why is it possible for the dented ball to become round when the ball is placed in a basin of hot water? [1]
- \_\_\_\_\_
- \_\_\_\_\_

(Go on to the next page)

Score	3
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41 Two metal cups are stuck onto each other as shown in the diagram below.



(a) How can the cups be separated by using both ice and hot water at the same time? [1]

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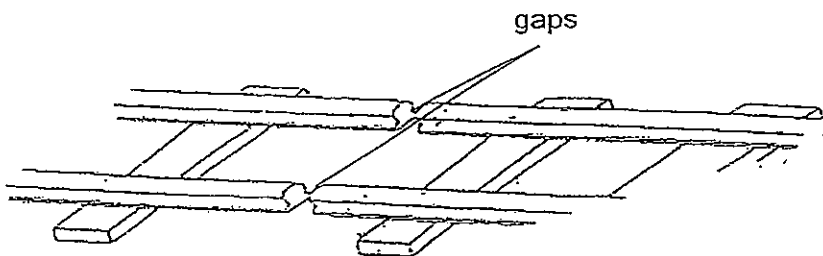
(b) Explain how the method you have mentioned in (a) works. [1]

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(c) The figure below shows part of a railway track. Gaps are observed between the tracks.



What will happen to the railway track on a very hot day if it was a continuous track with no gaps in between? [1]

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Score	3
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- 42 A winter garment factory is testing out four different materials to find out which one of them is suitable to be used in their winter wear. The procedures of the test are as follows:

Step 1: Pour 100 ml of boiling water into four identical glass jars.

Step 2: The jars are wrapped up with a material. Each jar is wrapped with a different type of material.

Step 3: The jars are then placed at the same time in a common room.

Step 4: After 20 minutes, the temperature of the water in the jars are measured and the readings are recorded in a table as shown below.

Material used to wrap the jar	Temperature of water in the jar after 20 minutes ( $^{\circ}\text{C}$ )
Cotton Wool	60
Animal Fur	80
Sheep Wool	88
Fleece	70

- (a) The jar wrapped in \_\_\_\_\_ loses the most heat. [1]

- (b) Based on the results above, which one of the materials is the best for making winter wear? Explain why [1]

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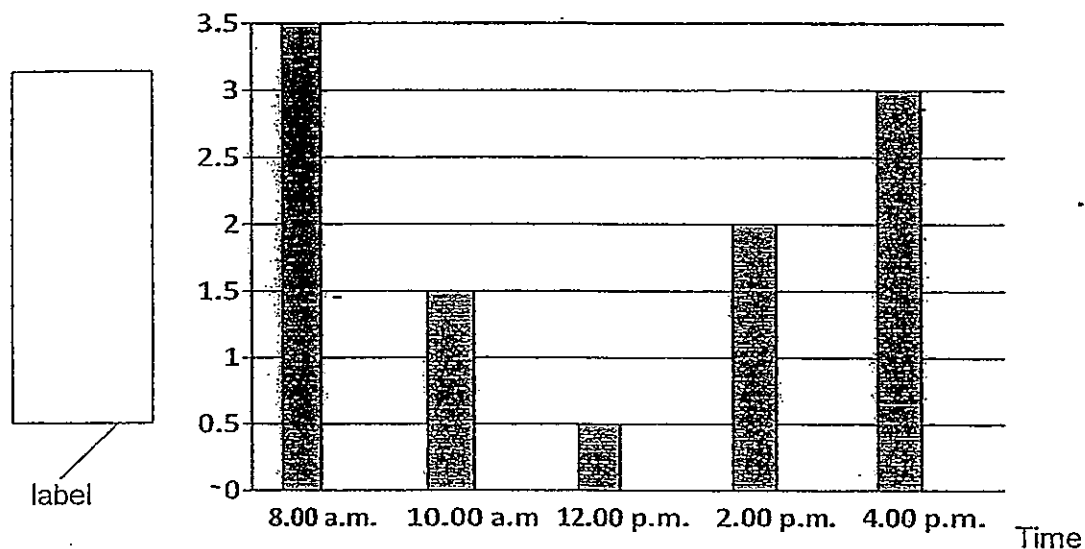
- (c) Circle the correct answer in the sentence below.

Poor conductors of heat (allow / do not allow heat to pass through them easily). [1]

(Go on to the next page)

Score	3
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- 43 Julian measured the length of the shadow of a flagpole (in metres) at different times of the day. He recorded his results in a bar graph as shown below.



- (a) What label should be placed for the vertical axis in the bar graph as indicated by the empty box above? [1]
- 
- (b) Based on the graph above, predict the length of the shadow cast at 1 p.m. [1]
- 
- (c) Explain how the shadow of the flagpole is formed during the day. [1]
- 

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Score	3
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- 44 Zuriel left a cup of cold drink in the kitchen. He recorded the temperature of the drink over a period of time as shown below.

Time (min)	Temperature of drink ( $^{\circ}\text{C}$ )
0	6
5	9
10	13
15	16
20	20
25	25
30	28
35	30
40	30
45	30

- (a) What was the temperature of the drink at the 15<sup>th</sup> minute? [1]

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- (b) Explain the cause of the change in the temperature of the cold drink. [1]

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- (c) Based on the information above, what is the likely temperature of the kitchen? [1]

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- (d) Describe the change in temperature of the cold drink if the drink is placed in an air-conditioned room. [1]

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- End of Booklet B -

Score	4
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123



# ANSWER SHEET

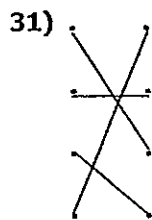
EXAM PAPER 2012

SCHOOL : ACS  
SUBJECT : PRIMARY 4 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	3	1	3	3	4	1	2	1	4	3	3	4	3	1	4	2

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	1	2	4	2	4	1	3	1	3	2	1	2

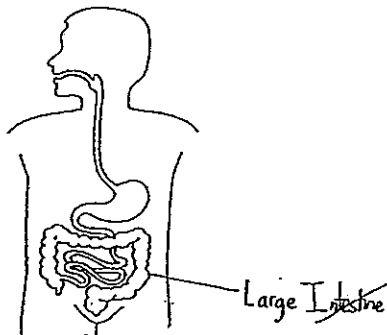


32)a)F b)F c)T d)F

33)a)Similarity: Both Animal B and C lives in water.  
Difference: Animal B has six legs while Animal C does not.  
b)Animal C.

34)a)

b)The large intestine did not absorb much water.



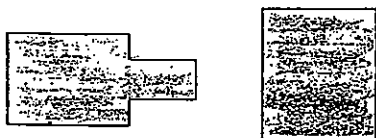
35)a)Skeletal system.

b)It gives humans and aeroplanes shape and protects inside/other part of the body.

36)a)i)V X Y

b)The location of the kang kong seedling.

37)a)



b)shape , position

38)W : Transparent    X : Opaque    Y : Transparent    Z : Opaque

39)a)B, the least amount of light is able to pass through.

b)The location and the distance of the torch to the materials must be the same.

40)a)Basin A.

b)Basin A has more heat as it contains the same volume of water (200ml)but is at a higher temperature.(90°C).

c)The air in the dented ping pong ball gain heat from the heated water in the basin and expanded, thus allowing it to become round again.

41)a)Pour ice water in metal cup X and pour hot water below Metal Cup Y.

b)It you pour ice water in Metal cup X it will contract and if you pour hot water below Metal cup Y making it expand then both cup would not be stuck anymore.

c)The trains tracks will break resulting in accidents.

42)a)cotton wool

b)Sheep wool, it loses the least amount if heat.

c)do not allow

43)a)Length of shadow (in metres)

b)1m.

c)An object blocks the light from a light source and makes a shadow.

44)a)16°C.

b)The cold drink comes into contact with the atmospheric air and gains heat from it.

c)30°C.

d)The cold drink will gain heat less slowly from the atmospheric air and the difference in temperature at each 5 minute interval will be smaller.