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**METHODIST GIRLS' SCHOOL**

Founded in 1887



**END-OF-YEAR EXAMINATION 2016  
PRIMARY 4  
SCIENCE**

**BOOKLET A**

Total Time for Booklets A and B: 1 hour 30 minutes

**INSTRUCTIONS TO CANDIDATES**

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Shade your answers in the Optical Answer Sheet (OAS) provided

Name \_\_\_\_\_

Class: \_\_\_\_\_

Date : 28 October 2016

This booklet consists of 16 printed pages including this 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). Shade the correct oval on the Optical Answer Sheet (OAS).

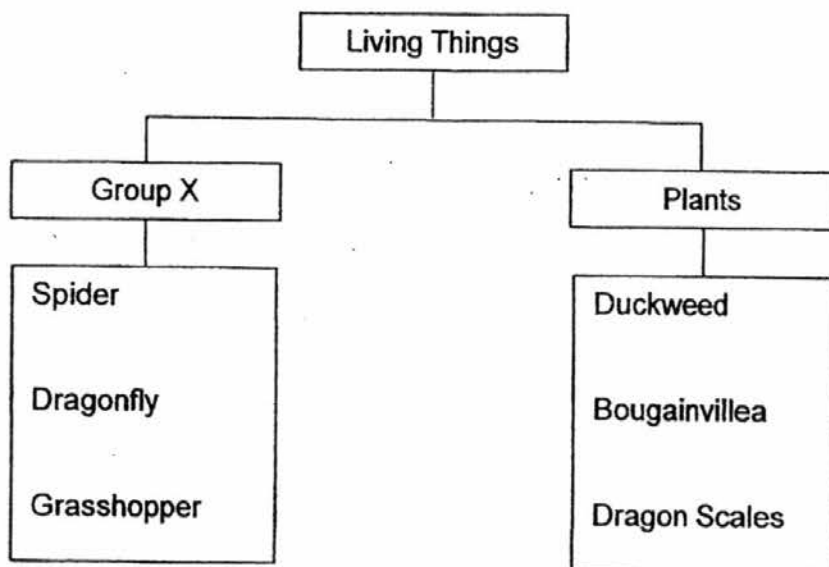
[56 marks]

1. A tadpole swims away when a twig drops into the pond.



This shows that the tadpole is a living thing because it can \_\_\_\_\_.

- (1) grow
  - (2) breathe
  - (3) respond
  - (4) reproduce
2. The table below shows how some living things can be grouped.



Which one of the following is the most suitable heading for group X?

- (1) Fungi
- (2) Insects
- (3) Animals
- (4) Bacteria

(Go on to the next page)

3. Siva made the following observations on the life cycle of an animal.

- There are four stages in the life cycle
- The young does not look like the adult

Which animal was Siva observing?

- (1) toad
- (2) mosquito
- (3) cockroach
- (4) grasshopper

4. Which one of the following is the function of the stem of a rose plant?

- (1) makes food
- (2) absorbs water
- (3) absorbs mineral salts
- (4) holds the plant upright

5. In which part of the digestive system does digestion take place?

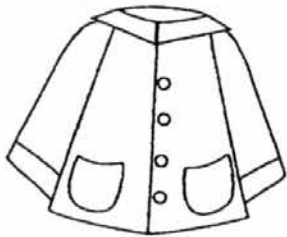
- (1) anus
- (2) gullet
- (3) mouth
- (4) large intestine

6. Which one of the following shows the correct order when food moves through some parts of the digestive system?

- (1) mouth → stomach → gullet
- (2) gullet → stomach → small intestine
- (3) small intestine → stomach → gullet
- (4) large intestine → small intestine → stomach

7. Which one of the following objects is not made of a waterproof material?

(1) raincoat



(2) bath towel



(3) water bottle



(4) plastic umbrella



8. Which one of the following properties is true for both air and a nail?

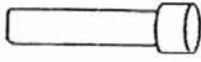
- (1) They can be seen.
- (2) They occupy space.
- (3) They have fixed shapes.
- (4) They have fixed volumes.

9. Which one of the following materials is the best conductor of heat?

- (1) metal
- (2) paper
- (3) plastic
- (4) wood

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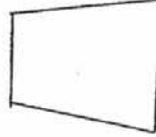
10. The set-up below shows light shining on a wooden cube.



Torch



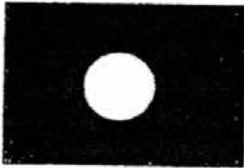
Wooden cube



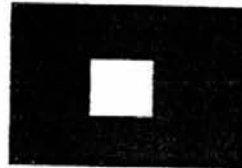
Screen

Which one of the following would likely be seen on the screen?

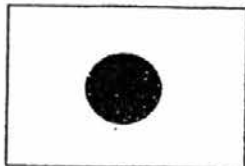
(1)



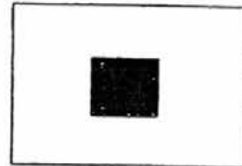
(2)



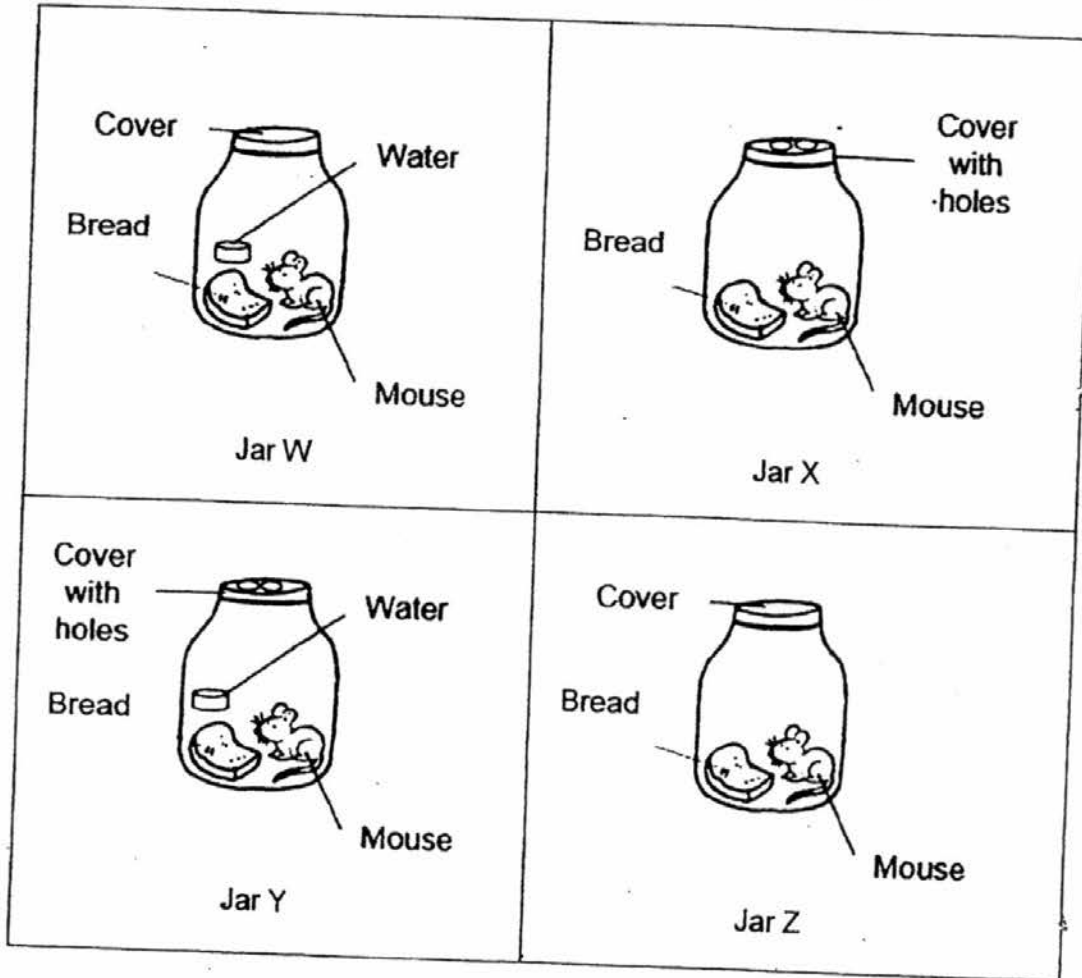
(3)



(4)



11. Study the following set-ups of four identical jars, W, X, Y and Z.



In which one of the following jars would the mouse be able to survive the longest?

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

(Go on to the next page)

12. Study the classification table below.

Group A	Group B
Maiden Hair's fern	Tomato plant
Dragon Scales fern	Papaya plant
Staghorn fern	Sunflower plant

Which one of the following options best represent the headings for Group A and Group B?

	Group A	Group B
(1)	Have no roots	Have roots
(2)	Have green leaves	Have brown leaves
(3)	Produce flowers	Do not produce flowers
(4)	Reproduce by spores	Reproduce by seeds

13. The young of a cockroach goes through moulting. Which one of the following statements is not true of this process?

- (1) The nymph moults more than once.
- (2) Both the adult and nymph undergo moulting.
- (3) The nymph moults because it is growing bigger.
- (4) The nymph sheds its old body covering and grows a new one.

14. Which of these statements are true of plants?

- A: Plants grow only from seeds.  
 B: Leaves help to make food as the seedling grows.  
 C: Seeds found inside fruits can grow into new plants.  
 D: Each new plant goes through the same life cycle as the parent plant.

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

15. The diagram below shows a plant that takes in nutrients from another plant as it grows. The plant, however, will die if its leaves are removed.



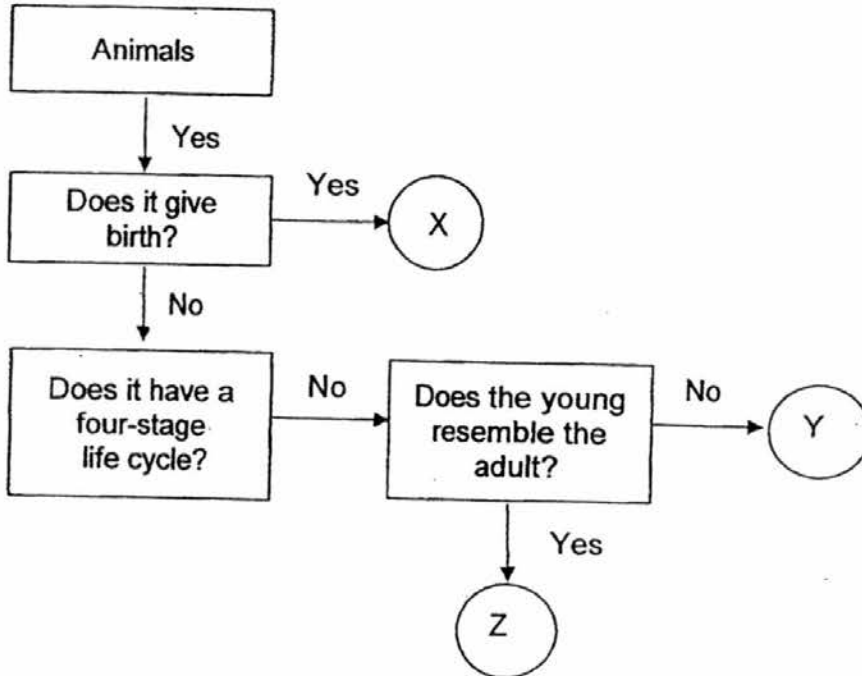
Which one of the following statements correctly explains why the plant dies when its leaves are removed?

- (1) It cannot make food.
  - (2) It cannot absorb water.
  - (3) It cannot obtain enough nutrients from other plants.
  - (4) It cannot grow on other plants to obtain more nutrients.
16. Which one of the following options describes the functions of leaves?

	Take in	Give out
(1)	Water	Gases
(2)	Mineral	Light
(3)	Light	Minerals
(4)	Gases	Gases



17. Study the flowchart below.

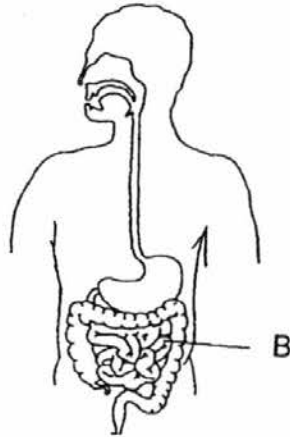


Based on the information given in the flow chart, which of the following correctly represents X, Y and Z?

	X	Y	Z
(1)	Molly	Mosquito	Donkey
(2)	Monkey	Frog	Penguin
(3)	Ostrich	Cockroach	Turtle
(4)	Alligator	Toad	Grasshopper

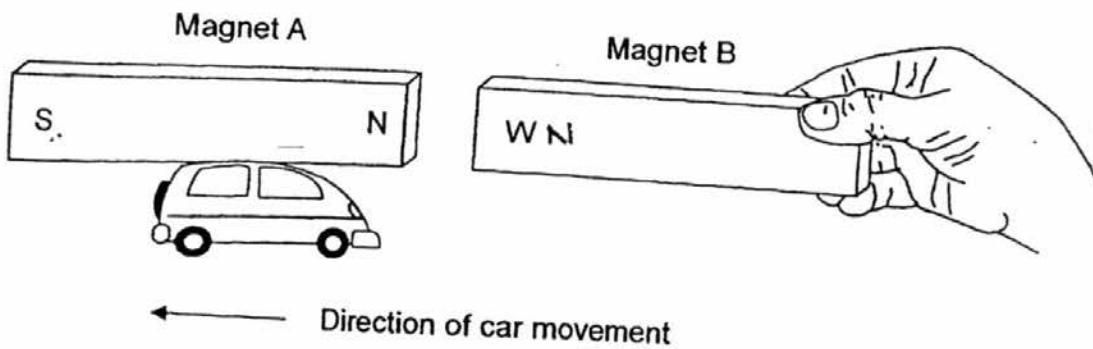
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18. The diagram below shows the human digestive system.



What takes place at the part labelled B?

- (1) Absorption of water.
  - (2) Absorption of digested food.
  - (3) Production of more digestive juices.
  - (4) Undigested food is broken into smaller pieces.
19. Edward attached a bar magnet A to a toy car as shown and used another bar magnet B to move the car backwards.

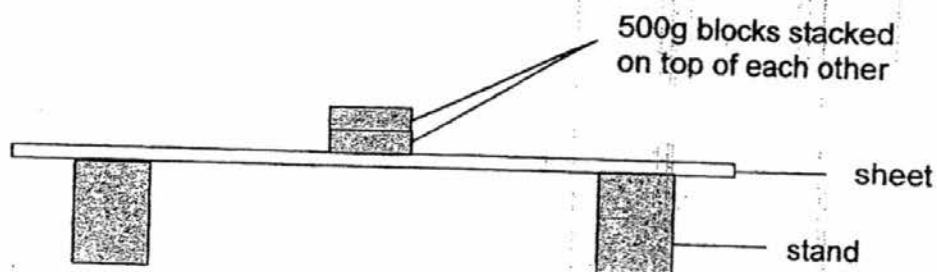


Which one of the following options shows the correct pole of W and the reason why the car moves backwards?

	W	Reason
(1)	North pole	Like poles repel
(2)	North pole	Like poles attract
(3)	South pole	Unlike poles repel
(4)	South pole	Unlike poles attract

(Go on to the next page)

20. Hong Kai set up an experiment using four identical sheets, W, X, Y and Z, of different materials. He used the experimental set-up shown below for each sheet. He kept stacking blocks on each sheet until it broke:



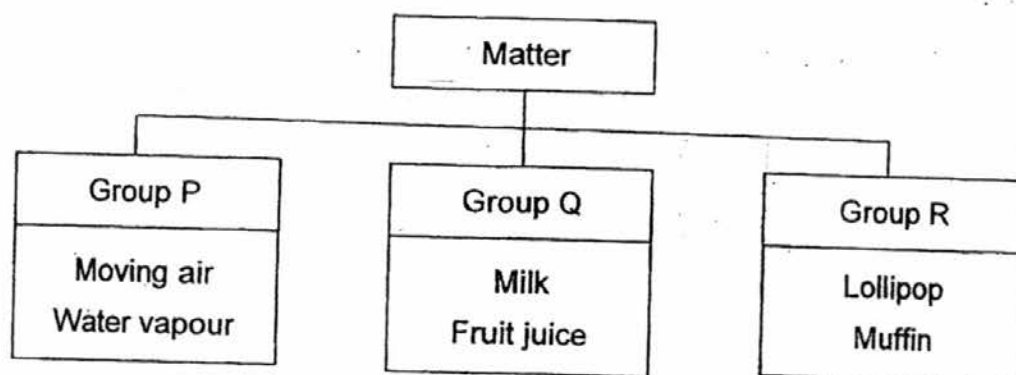
He recorded his observations in the table below.

	Sheet W	Sheet X	Sheet Y	Sheet Z
Number of 500g blocks that caused the sheet to break	2	18	9	31

What could Hong Kai conclude from his observations?

- (1) Sheet Y is most flexible sheet.
- (2) Sheet Z is the strongest sheet.
- (3) Sheet X is stronger than Sheet Z.
- (4) Sheet W is more flexible than Sheet Y.

21. Study the classification chart as shown below.

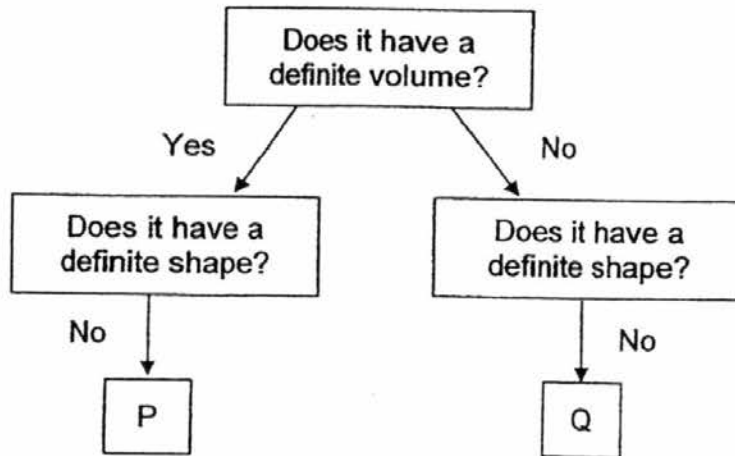


In which group can uncooked egg white be classified?

- (1) P only
- (2) Q only
- (3) R only
- (4) None of the above

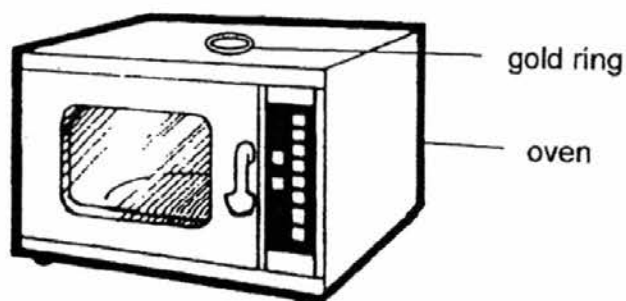
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22. Study the flowchart below.



Which of the following is correct?

- (1) P is a solid, Q is a gas.
  - (2) P is a solid, Q is a liquid.
  - (3) P is a liquid, Q is a solid.
  - (4) P is a liquid, Q is a gas.
23. Donovan's mother left her gold ring on a hot oven while she was cooking. When she put her ring on, she found that it was loose.

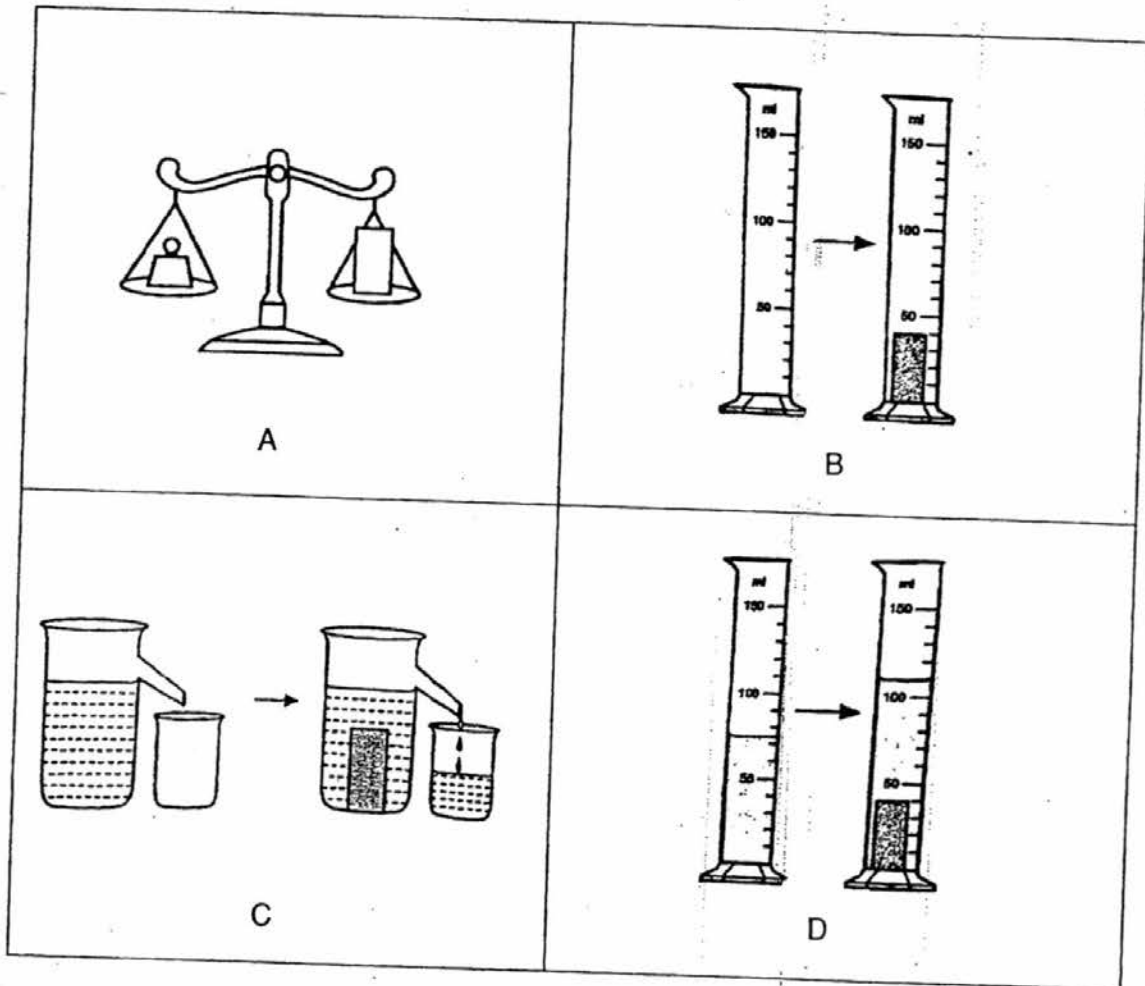


Why was the ring on her finger loose?

- (1) The ring lost heat to the hot oven and expanded.
- (2) The ring lost heat to the hot oven and contracted.
- (3) The ring gained heat from the hot oven and expanded.
- (4) The ring gained heat from the hot oven and contracted.

(Go on to the next page)

24. Study the diagram below carefully.

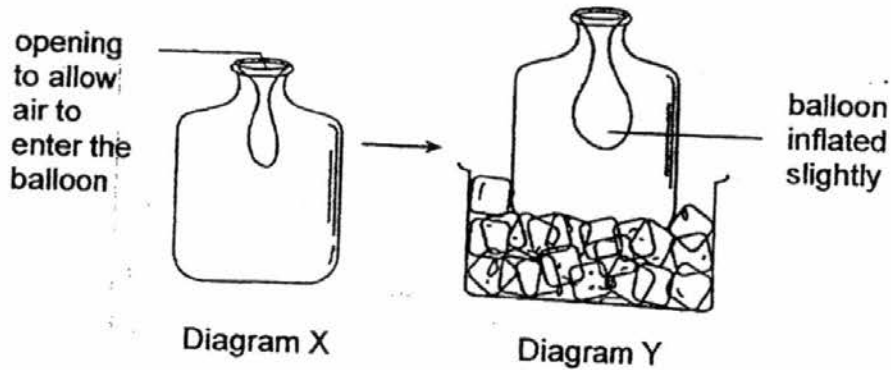


Which one of the following diagrams shows the correct way to measure the volume of a solid?

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

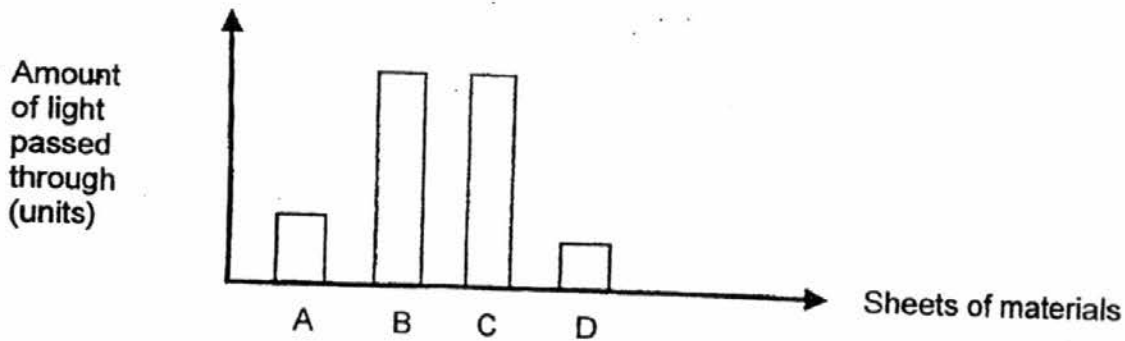
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25. Diagram X shows a balloon inside a bottle with the opening of the balloon stretched over the mouth of the bottle. Diagram Y shows that the balloon became slightly inflated after the bottle was placed in a container of ice cubes for some time.



The balloon had inflated because the \_\_\_\_\_.

- (1) air inside the bottle contracted and occupied a smaller space.
  - (2) air inside the balloon contracted and occupied a bigger space.
  - (3) bottle expanded and caused the balloon to expand as well.
  - (4) bottle expanded and caused the air in it to expand as well.
26. Sharifah used a light sensor and data logger to find out how much light could pass through four sheets, A, B, C and D. Each sheet is made of a different material. She drew the graph below to show her results.

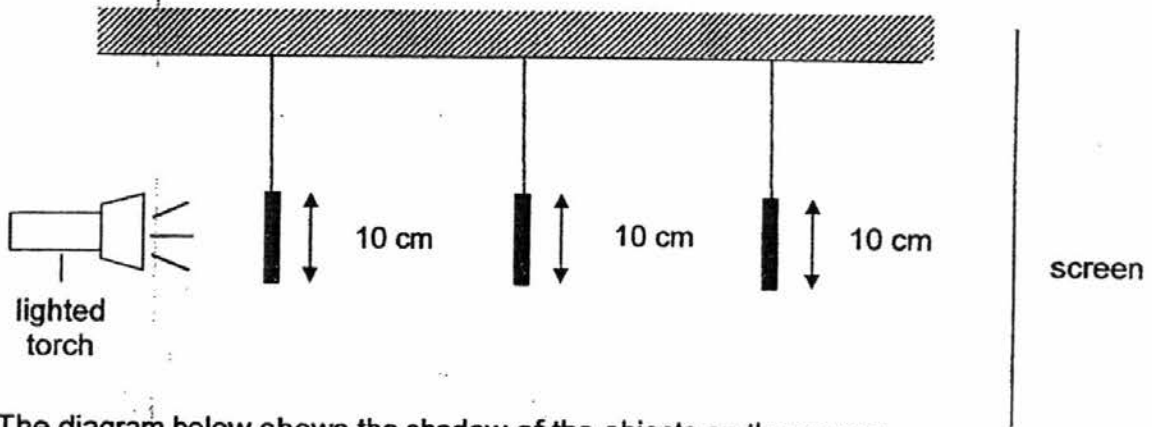


What materials could sheets C and D be made of?

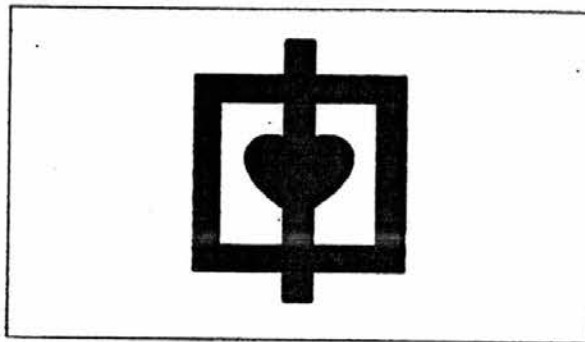
	C	D
(1)	Clear glass	Fabric
(2)	Wood	Clear plastic
(3)	Ceramic	Wood
(4)	Clear plastic	Clear glass

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27. Mabel uses a lighted torch to <sup>shine</sup> shine on three wooden objects A, B and C. They are placed at different distances from the torch.



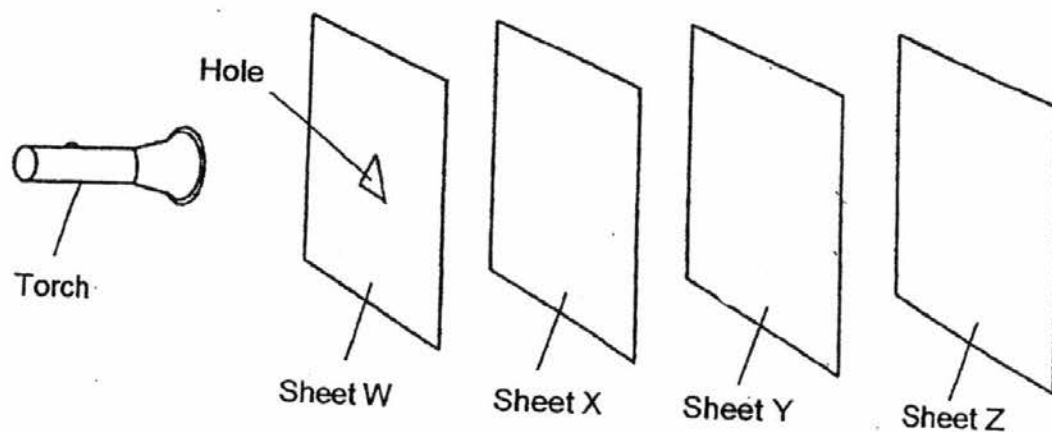
The diagram below shows the shadow of the objects on the screen.



What are objects A, B and C?

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

28. The experiment shown below is carried out in a dark room.



Sheets W, X, Y and Z are arranged in a straight line. When the torch is switched on, a bright triangular patch of light is seen on Sheet Y only.

Which one of the following options correctly describes the properties of the materials that sheets W, X, Y and Z are made of?

	Allows light to pass through	Does not allow light to pass through	Not possible to tell
(1)	X	Y	W and Z
(2)	X	W and Y	Z
(3)	W and X	Z	Y
(4)	W and Z	Y	X

End of Booklet A

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END-OF-YEAR EXAMINATION 2016  
PRIMARY 4  
SCIENCE

BOOKLET B1

Total Time for Booklets A and B: 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Name \_\_\_\_\_

Class: \_\_\_\_\_

Date : 28 October 2016

	56
Booklet B1	17
Booklet B2	17
Total	90
Parent's Signature	

This booklet consists of 8 printed pages including this page.

For questions 29 to 34, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question

[17 marks]

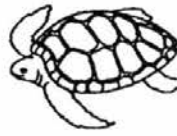
29. The pictures below show animals A, B, C and D.



A: Frog



B: Ladybird



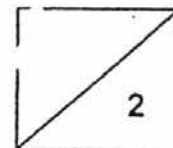
C: Turtle



D: Bird

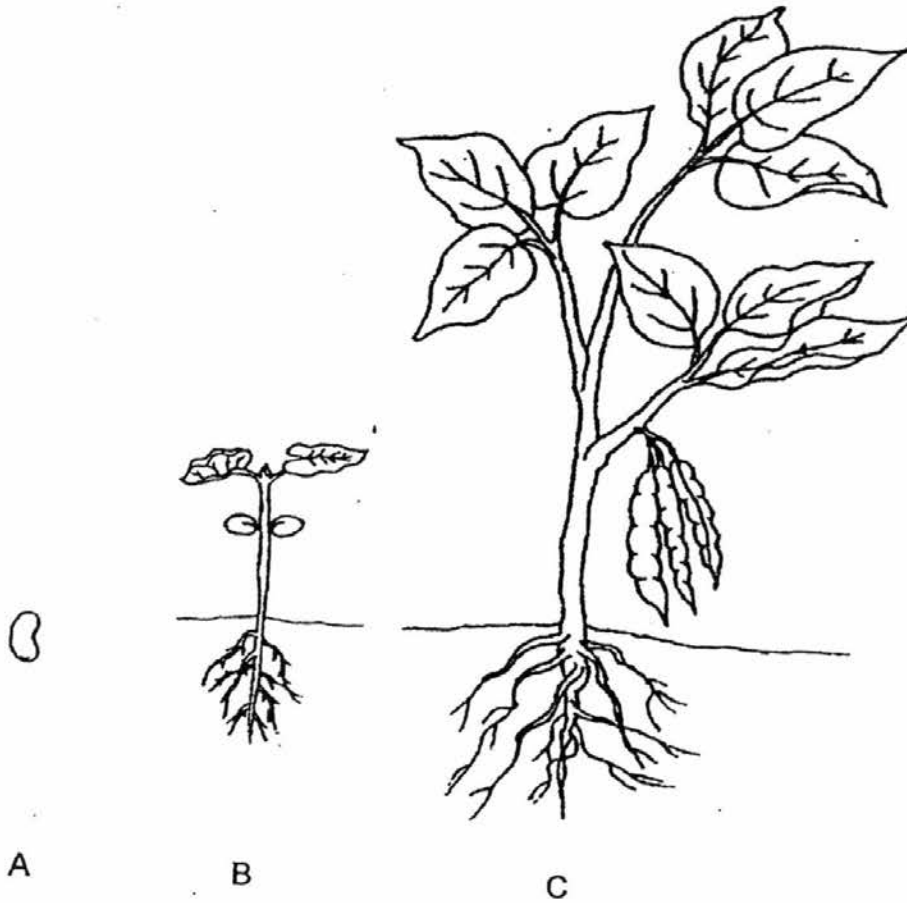
Classify the animals, A, B, C and D according to the number of stages in their life cycle. [2]

Three stages	Four stages



(Go on to the next page)

30. The diagram below shows the stages in the life cycle of a plant.



Choose the correct words from the box to answer the question below.

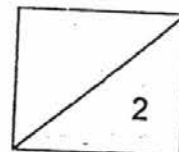
young plant      fruit      seed leaves      seed      adult plant

Name the stages A and C in the life cycle of the plant.

[2]

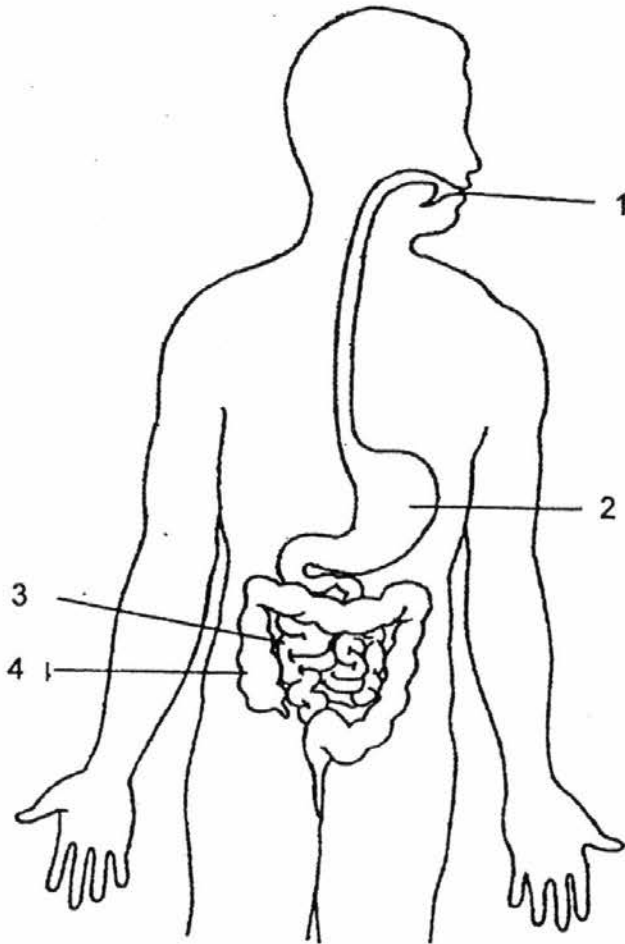
A: \_\_\_\_\_

C: \_\_\_\_\_



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31. The diagram below shows the human digestive system with parts labelled 1, 2, 3 and 4.



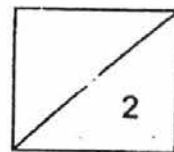
Write the number 1, 2, 3 or 4 in the boxes to show where

(a) digestion first takes place

[1]

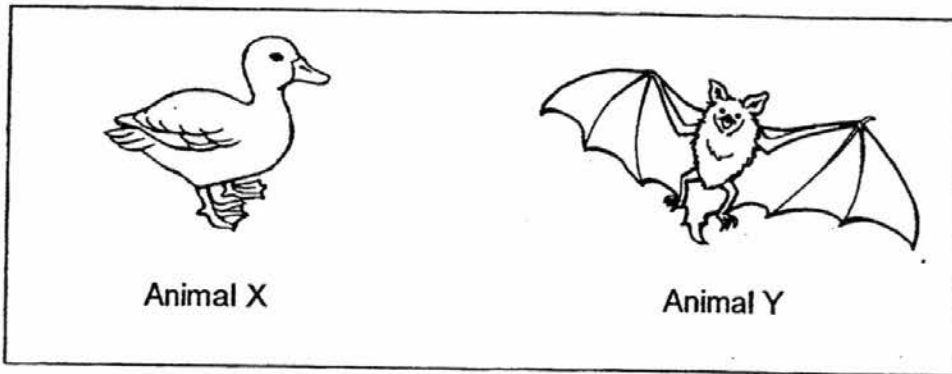
(b) there is no digestion

[1]



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32 Study the two pictures below.



- (a) How are the animals X and Y similar in the way they move? [1]

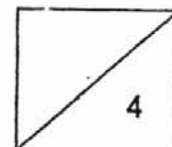
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- (b) Which group of animals do they belong to and what are their body coverings? [2]

Animals	Group of animals	Body coverings
Duck		
Bat		

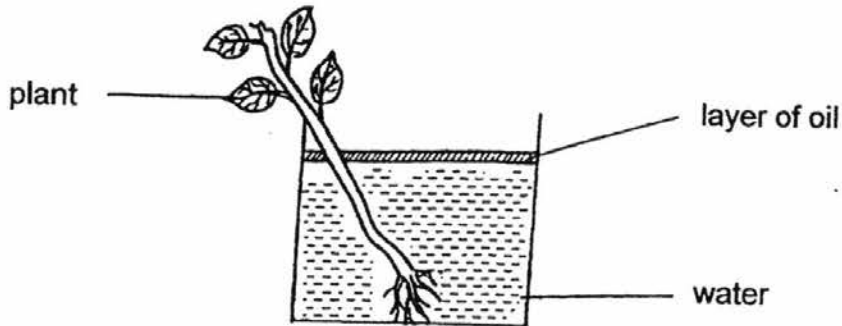
- (c) Do animals X and Y reproduce in the same way? Give a reason for your answer. [1]

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33. Emdias wanted to find out what happens when a plant is placed in a beaker of water. She carried out an experiment as shown below and left it in the sun for 8 hours.



Emdias recorded the results after 8 hours in the table below.

Time	Amount of water in the beaker
At 8 am	100 cm <sup>3</sup>
At 4 pm	90 cm <sup>3</sup>

- (a) Explain the decrease in the amount of water in the beaker after 8 hours. [1]

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- (b) Would Emdias' results be the same if she used a plant with more leaves? Explain your answer. [1]

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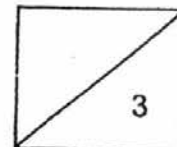
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- (c) What could Emdias do if she wants to show that the stem has a water-carrying tube? [1]

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34. The diagram below shows a human body system.



- (a) Name the two organs that the ribcage protects.

[1]

i) \_\_\_\_\_

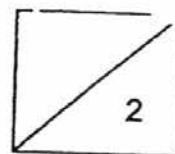
ii) \_\_\_\_\_

- (b) What is the other function of the above system.

[1]

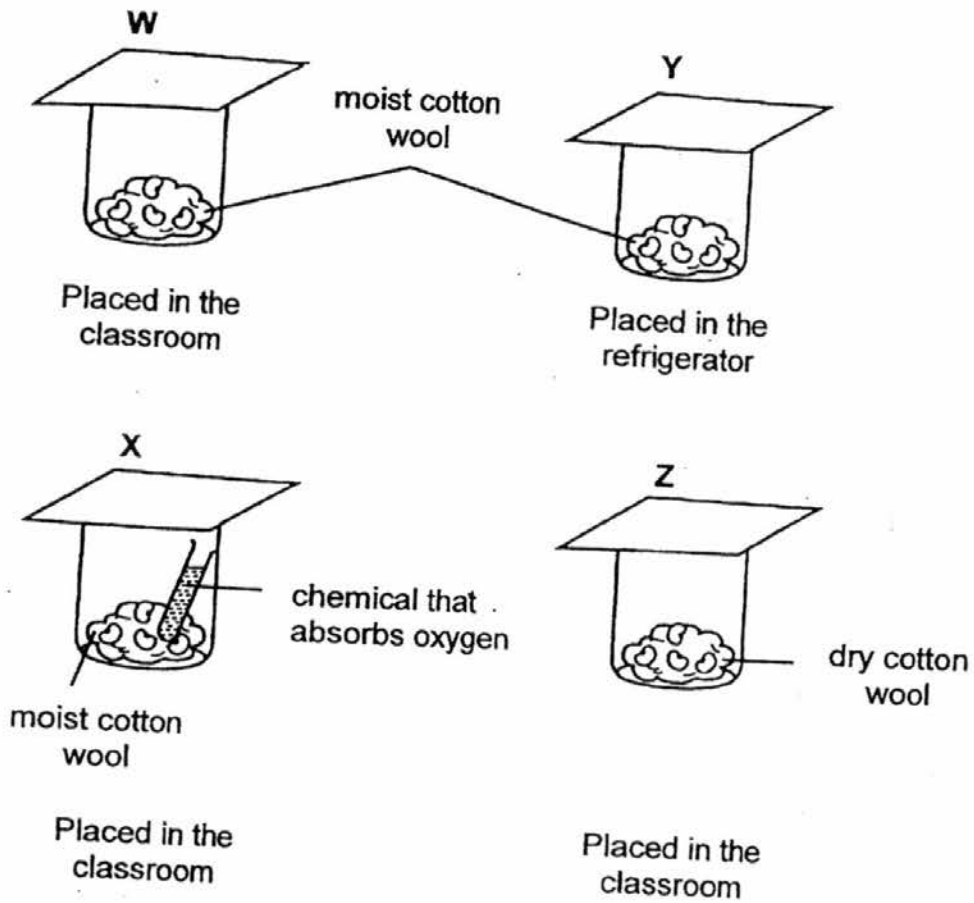
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35. Junita prepared set-ups W, X, Y and Z as shown below.

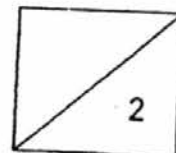


- (a) Junita wanted to find out if oxygen is required for the germination of seeds. Which two set-ups should she use to carry out her experiment? [1]

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- (b) Besides oxygen, what are the other conditions necessary for germination to take place. [1]

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BOOKLET B2

Total Time for Booklets A and B: 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

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Follow all instructions carefully.

Answer all questions.

Shade your answers in the Optical Answer Sheet (OAS) provided.

Name \_\_\_\_\_

Class \_\_\_\_\_

Date : 28 October 2016

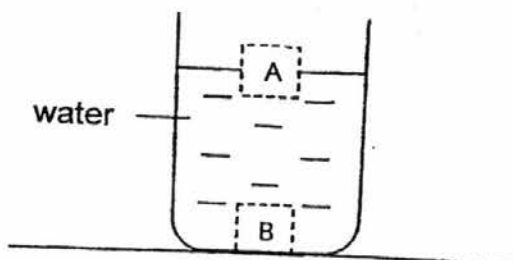
Booklet B2	17
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This booklet consists of 7 printed pages including this page.

For questions 35 to 41, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question.

[17 marks]

36. Jane placed two different blocks, A and B, into a beaker of water as shown below.



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

repels	sinks	floats	soaks
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This shows that block A \_\_\_\_\_ in water, and block B \_\_\_\_\_ in water.

[2]

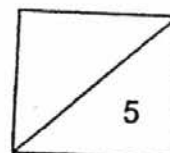
37. Classify the following items into matter and non-matter.

[3]

A: flour	B: thunder	C: oxygen
D: fire	E: snow	F: light

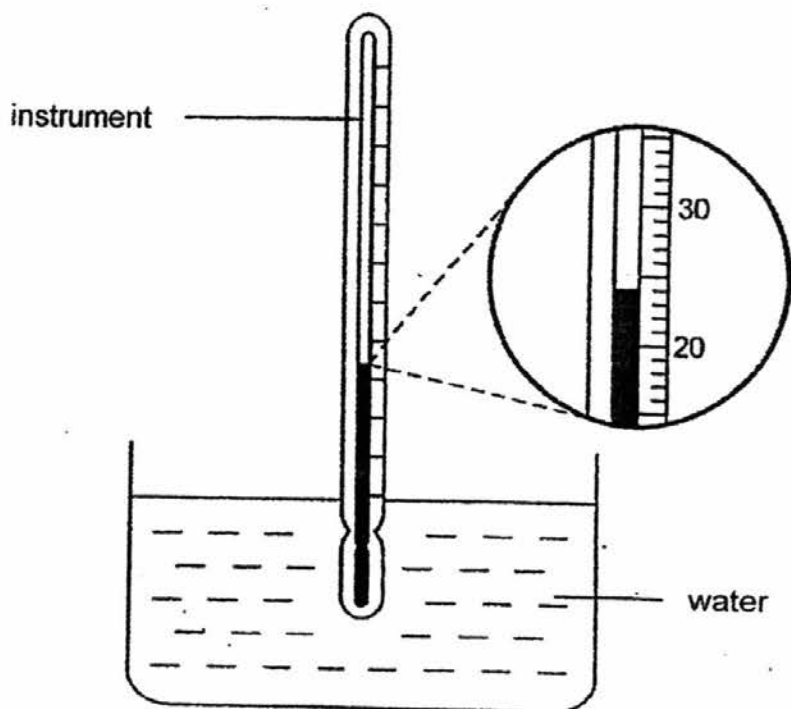
Write the letters A, B, C, D, E and F into the classification table below.

Matter	Non-matter



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38. Sopiati used an instrument to measure the temperature of the water in a basin.

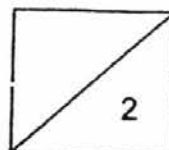


(a) What is the instrument called? [1]

\_\_\_\_\_

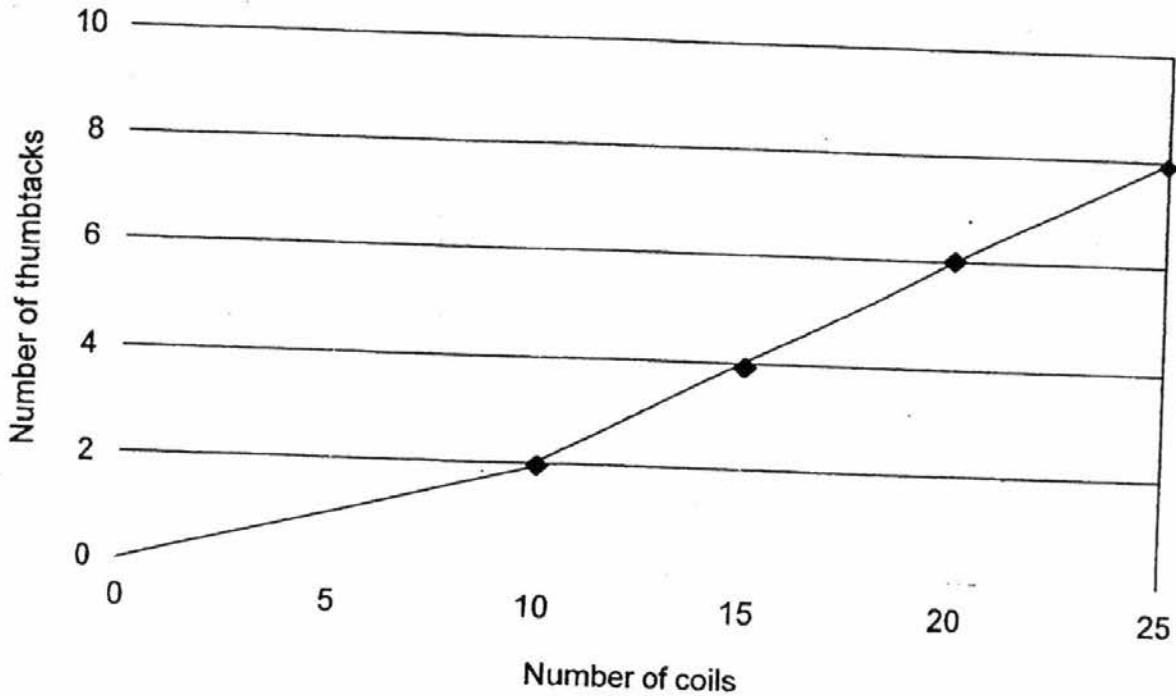
(b) What is the temperature of the water in the basin? [1]

\_\_\_\_\_ °C



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39. Yvette used the electrical method to turn an iron nail into a magnet. The line graph below shows that the number of thumbtacks attracted by the magnet depends on the number of coils of wire.



- (a) Use the information from the line graph to fill in the table below.

[1]

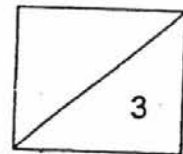
Number of coils	10		20	25
Number of thumbtacks attracted	2	4		8

- (b) What does the graph above tell you about the relationship between the number of coils and the strength of the electromagnet?

[1]

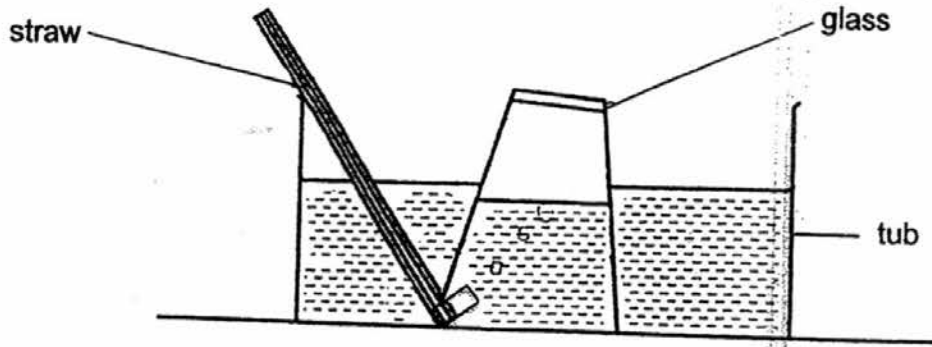
- (c) If Yvette were to use a copper nail instead of the iron nail, would she get the same results? Explain your answer.

[1]



(Go on to the next page)

40. Jonas set up an experiment as shown below.



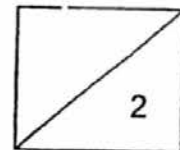
(a) What would happen to the water level in the glass if Jonas used the straw to blow air into the glass? Explain your answer. [1]

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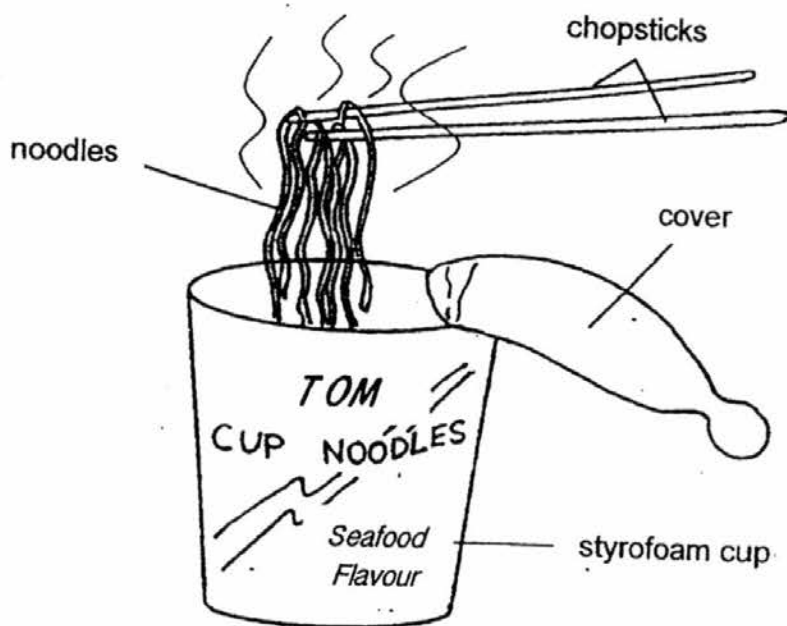
(b) Which property of matter does the above experiment demonstrate? [1]

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(Go on to the next page)

41. Jasper bought cup noodles to eat for lunch. He tore open the cover of the styrofoam cup and poured boiling water into the container. He then covered the cup again. After ten minutes, he started eating his noodles which were now soft but still very hot.

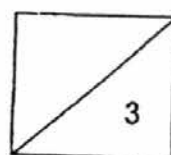


- (a) How was the styrofoam cup able to keep the noodles hot for ten minutes?

[1]

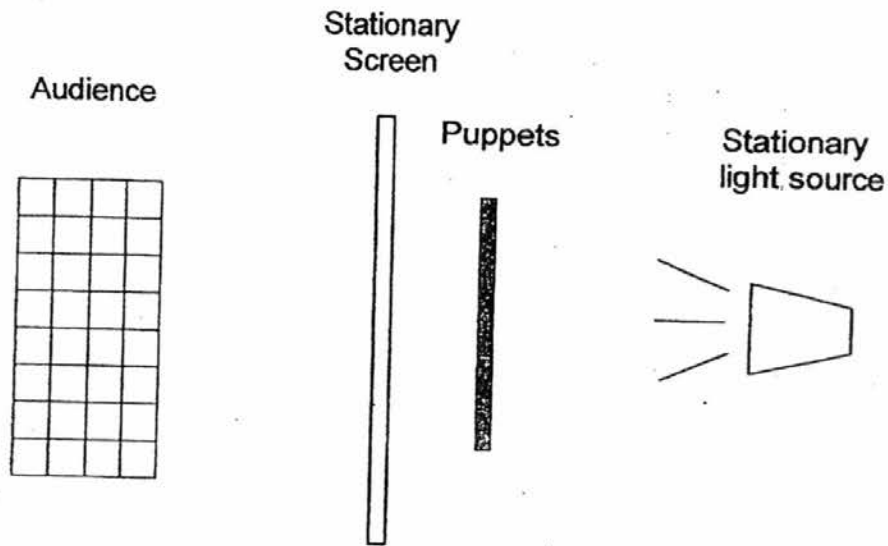
- (b) Before eating, Jasper held the noodles above the cup for a while to cool them. How does this action help to cool the noodles?

[2]



(Go on to the next page)

42. The picture below shows a shadow play of "Little Red Riding Hood" which was held in a dark room. The story was played out with the puppets' shadows thrown onto a screen.



- (a) What must the puppeteer do if he wants to create a bigger shadow on the screen? [1]

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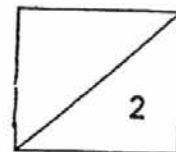
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- (b) If the puppeteer were to use clear plastic to make the puppets on sticks, would the audience be able to enjoy the show? Explain why. [1]

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**YEAR** : 2016  
**LEVEL** : PRIMARY 4  
**SCHOOL** : METHODIST GIRLS'  
**SUBJECT** : SCIENCE  
**TERM** : SA2

**Booklet A**

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

**Booklet B1**

Q29

Three stages	Four stages
A C D	B

Q30

A : seed  
C : adult plant

Q31a

1

Q31b

4

Q32a

Both animals X and Y can fly.

Q32b

Animals	Group of animals	Body coverings
Duck	Birds	Feathers
Bat	Mammals	Hair

Q32c

No. Animal X reproduces by laying eggs but animal Y gives birth to its young alive.



- Q33a The roots of the plant have absorbed some water.
- Q33b No. More water would be required by the leaves to make food.
- Q33c She could use coloured water instead of plain water and cut the stem.
- Q34a i) Heart  
ii) Lungs
- Q34b It is to work together with the muscular system to allow body movement OR It is to give the body its shape.
- Q35a Set-up W and Y.
- Q35b Water and warmth.

Booklet B2

- Q36 This shows that block A floats in water, and block B sinks in water.

Q37

Matter	Non-matter
A	B
C	D
E	F

- Q38a Laboratory thermometer

Q38b 24 °C

Q39a

Number of coils	10	15	20	25
Number of thumbtacks attracted	2	4	6	8

- Q39b As the number of coils increases, the magnetic strength of the electromagnet increases.

Q39c No. Copper is a non-magnetic material so it cannot be magnetised, so she would not get the same results.

- Q40a**      **The water level in the glass will decrease. The air blown into the glass takes up space and pushes the water out of the water.**
- Q40b**      **Air / matter occupies space.**
- Q41a**      **Styrofoam is a poor conductor of heat so heat loss from the noodles to the surrounding air was reduced.**
- Q41b**      **Doing this action allows more surface area of the noodles to be exposed and more heat to escape into the air.**
- Q42a**      **He should move the puppets away from the screen and closer to the light source.**
- Q42b**      **No because clear plastic is transparent and does not block any light so there will be no shadows cast on the screen.**

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**End**