Rosyth School
Mid-Year Examination 2021
SCIENCE
Primary 4

Name: _____ Total Marks: /56

Class: Pr 4- _____ Register No. _____ Total time for Booklets A and B: 1 h 45 min

Date: 7 May 2021

Booklet A

Instructions to Pupils:

1. Do not open the booklet until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets, Booklet A and Booklet B.
4. For questions 1 to 28 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.

* This booklet consists of 25 printed pages (including 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). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** (56 marks)

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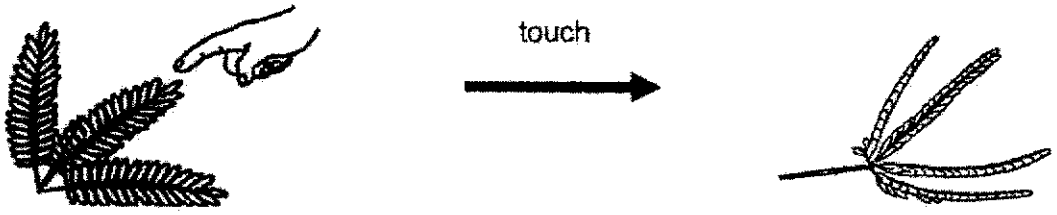
1. Observe the following picture.



What characteristic of living things is shown by the picture above?

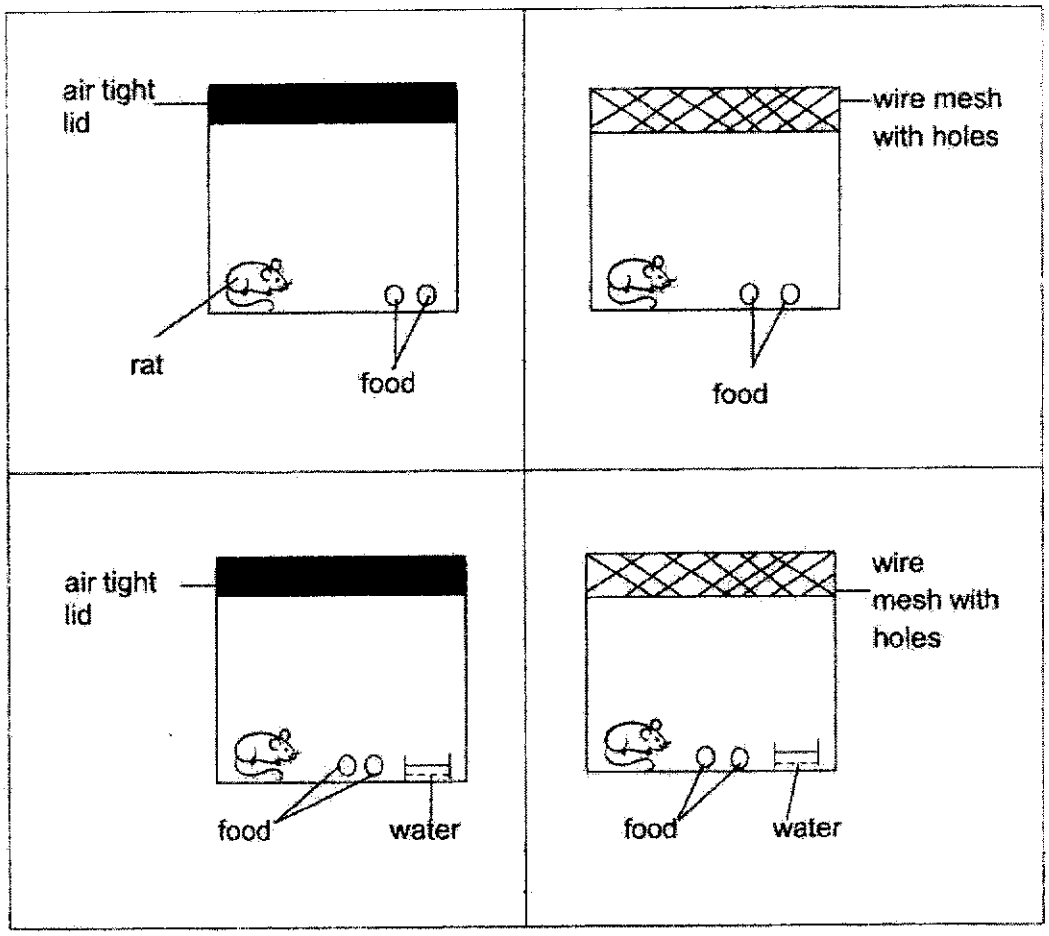
(1) Living things can die.

(2) Living things can grow.

(3) Living things can move from place to place.

(4) Living things respond to changes around them.

2. Ali prepared four set-ups as shown below.



Ali wanted to investigate the factors needed for the survival of the rat. Using the set-ups above, which factor(s) can he investigate?

(1) Air only

(2) Air and water only

(3) Food and water only

(4) Air, food and water

3. A tick (√) in the table below describes the characteristics of animal groups J and K.

Characteristics	J	K
Have moist skin	√	
Live on land and in water	√	
Have hard and dry scales		√
Reproduce by laying eggs	√	√

Which one of the following best represents animal groups J and K?

	J	K
(1)	amphibians	reptiles
(2)	reptiles	amphibians
(3)	amphibians	fish
(4)	fish	reptiles

4. Which of the following characteristic is found in both birds and humans?

(1) Can fly

(2) Lay eggs

(3) Have two legs

(4) Have three body parts

5. The characteristics of living things A, B, C and D are given in the table below.

	Characteristics of Living Things			
Questions	**A**	**B**	**C**	**D**
Can it reproduce?	Yes	Yes	Yes	Yes
Can it reproduce by spores?	Yes	No	No	Yes
Can it only be seen through a microscope?	Yes	No	Yes	No

Based on the characteristics given, which of the following is a bacteria?

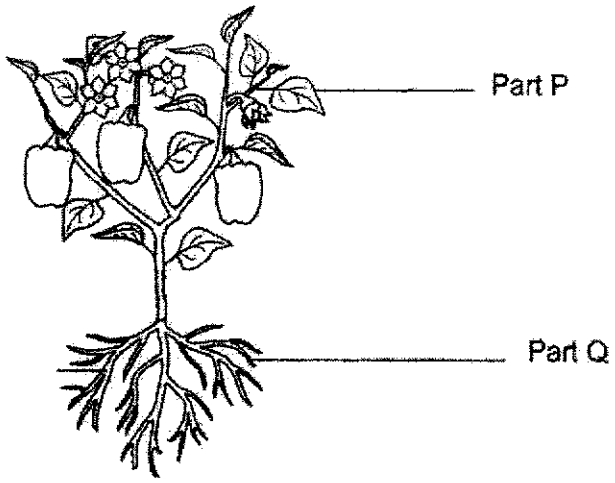
(1) A

(2) B

(3) C

(4) D

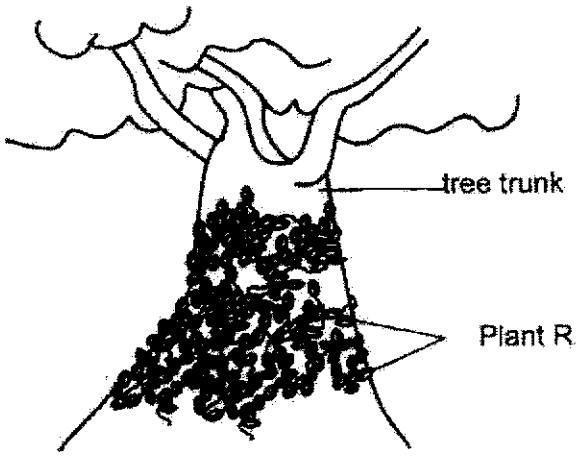
6. The diagram below shows a plant.



Which one of the following best represents the functions of Parts P and Q respectively?

	Part P	Part Q
(1)	Makes food	Supports the plant upright
(2)	Takes in food	Takes in mineral salts
(3)	Makes food	Holds the plant firmly to the ground
(4)	Takes in food	Takes in water

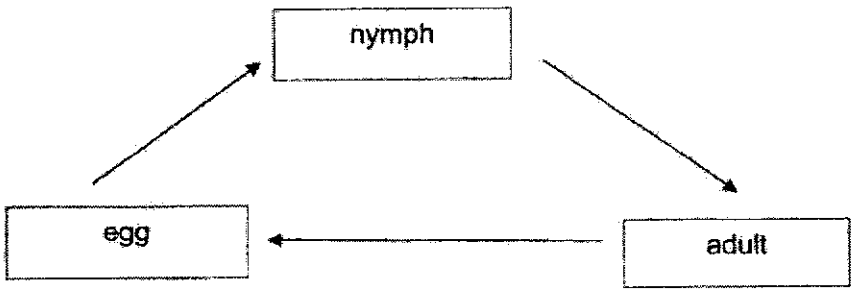
7. Study the picture below. It shows plant R growing on a tree trunk.



Plant R is growing on the trunk of the tree to obtain more _____.

(1) air
(2) water
(3) warmth
(4) sunlight

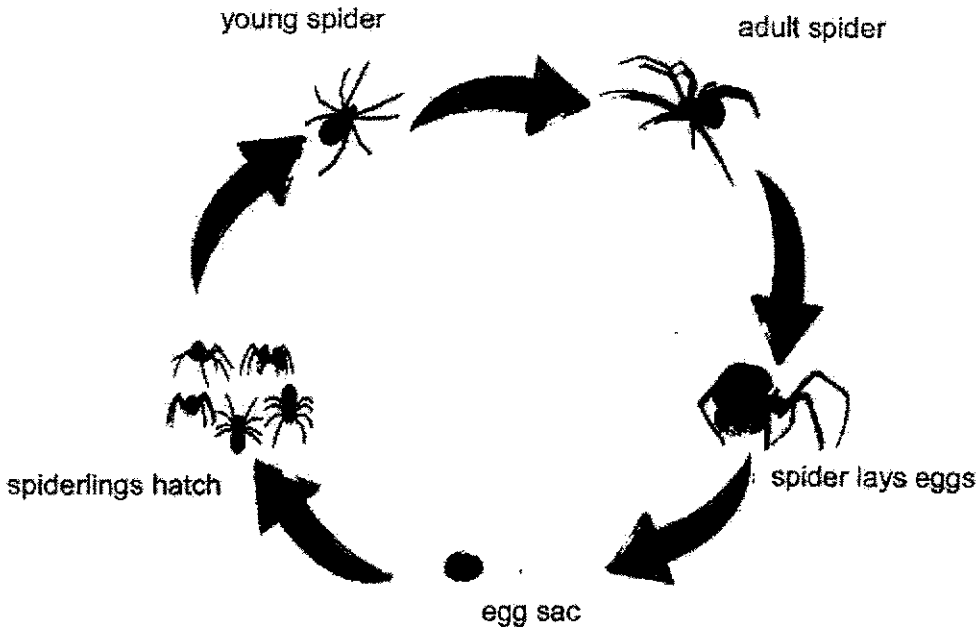
8. The diagram below shows the life cycle of an animal.



Which animal has the life cycle as shown above?

(1) frog
(2) chicken
(3) butterfly
(4) cockroach

9. The diagram below shows the developmental life cycle of a spider.



Based on the diagram, the spider has a _____- stage life cycle.

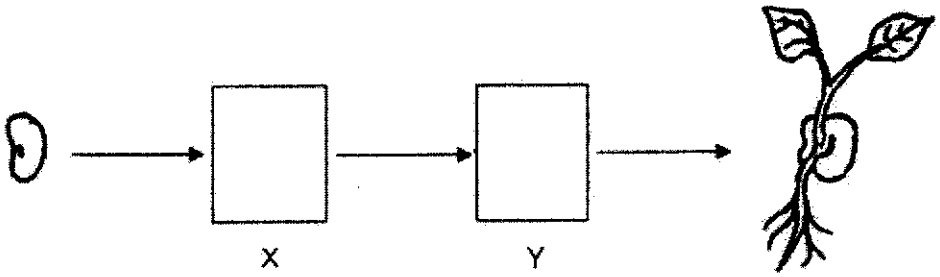
(1) five

(2) two

(3) three

(4) four

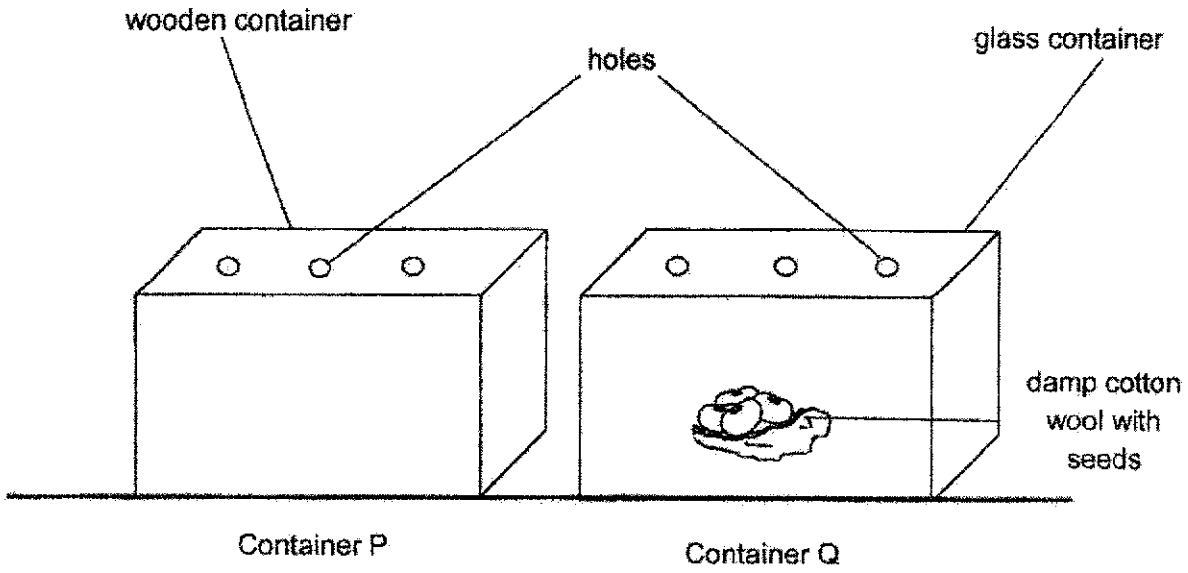
10. The diagram below shows a seed germinating into a seedling. There are two missing stages X and Y.



Which one of the following shows the correct stages for X and Y?

	X	Y
(1)		
(2)		
(3)		
(4)		

11. Mr Tan conducted an experiment on the germination of seeds using two containers, P and Q. Both containers are of the same size. Container P is made of wood but container Q is made of clear glass as shown below.



He put four similar seeds in each of the containers on some damp cotton wool. Both containers had holes on them and were left in the garden.

Based on the conditions for germination, which one of these is a possible observation after a few days?

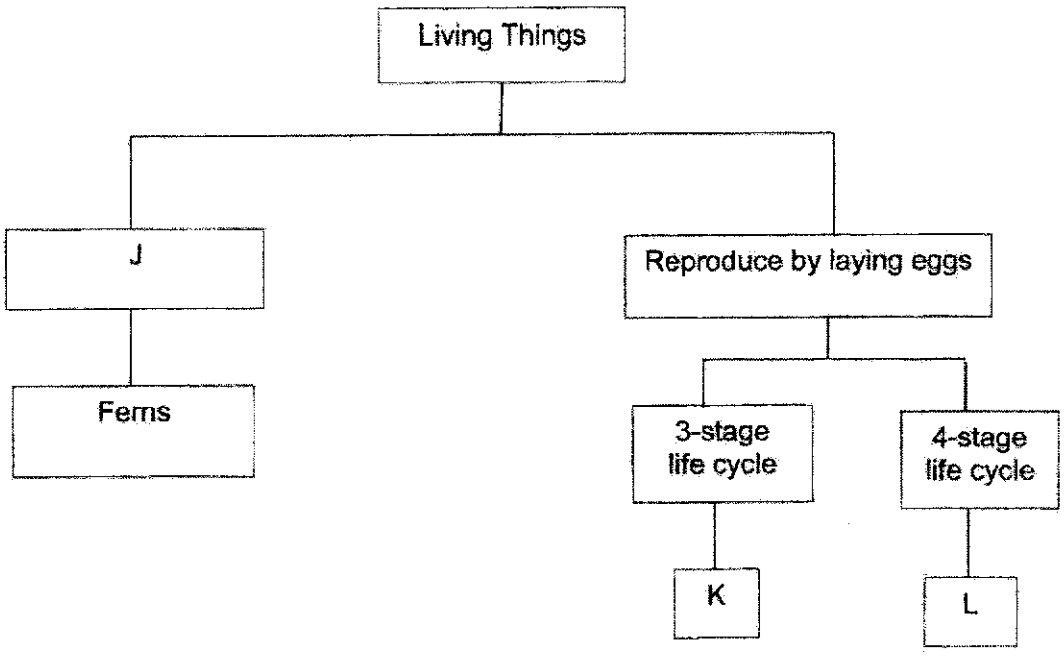
(1) Only seeds in container P germinated.

(2) Only seeds in container Q germinated.

(3) Seeds in both containers, P and Q, germinated.

(4) Seeds in both containers, P and Q, did not germinate.

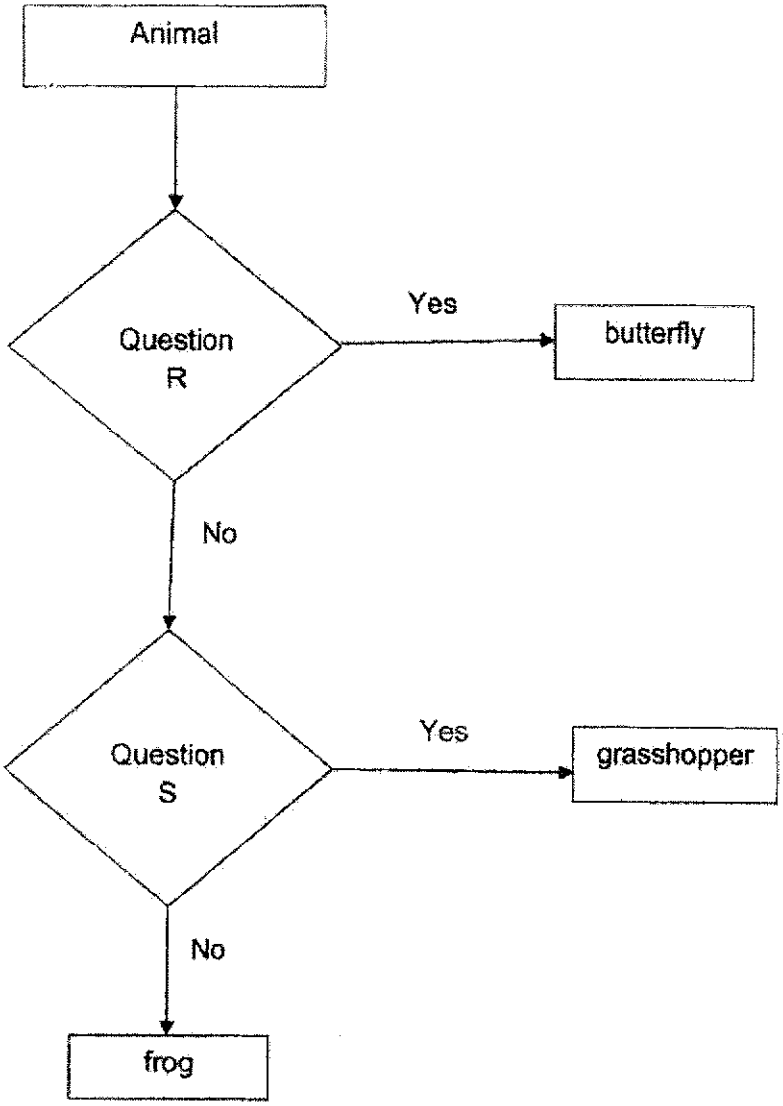
12. Study the classification table below.



Which of the following best describes J, K and L?

	J	K	L
(1)	reproduce by seeds	cockroach	butterfly
(2)	reproduce by seeds	butterfly	chicken
(3)	reproduce by spores	grasshopper	mosquito
(4)	reproduce by spores	chicken	frog

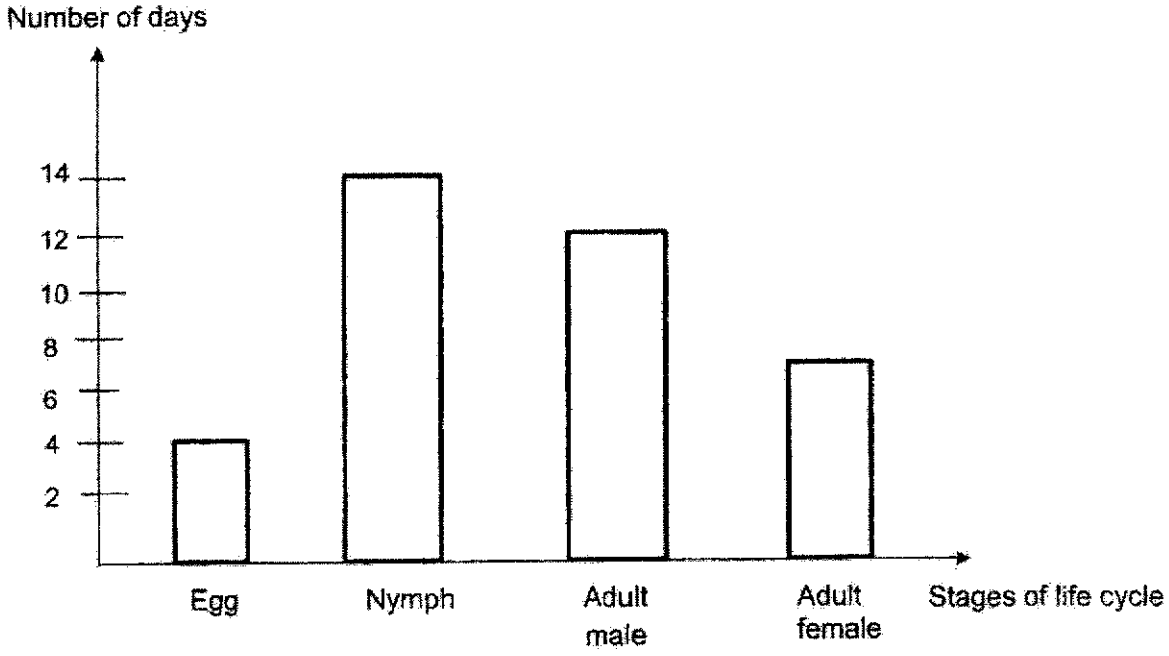
13. Study the flow chart below.



Which of the following represent questions R and S?

	R	S
(1)	Does it have a 4-stage life cycle?	Does it have a life cycle partly in water?
(2)	Does the young resemble the adult?	Does it have a 3-stage life cycle?
(3)	Does it have a 4-stage life cycle?	Does the young resemble the adult?
(4)	Does the young resemble the adult?	Does it have a life cycle partly in water?

14. The graph below shows the number of days each stage lasts in the life cycle of Organism P.



Based on the graph, which of the following statements about the life cycle of Organism P is true?

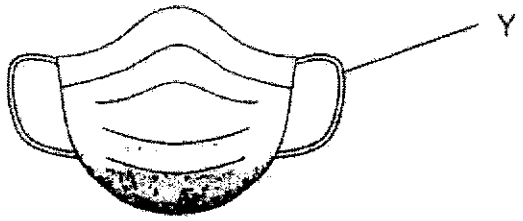
(1) It is a 4-stage life cycle.

(2) The nymph moults more than the adult.

(3) It takes 14 days for a nymph to become an adult.

(4) One complete life cycle of organism P takes about 18 days.

15. The diagram below shows a piece of surgical face mask.



Which material is most suitable to make part Y?

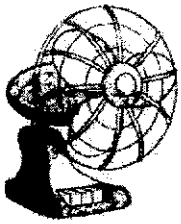
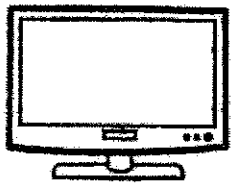
(1) Wood

(2) Metal

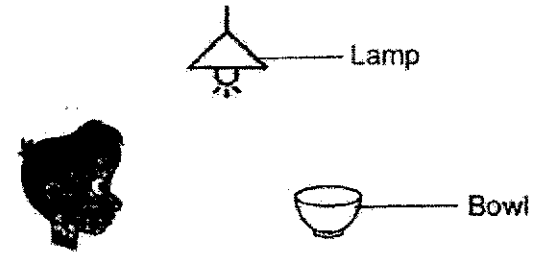
(3) Glass

(4) Fabric

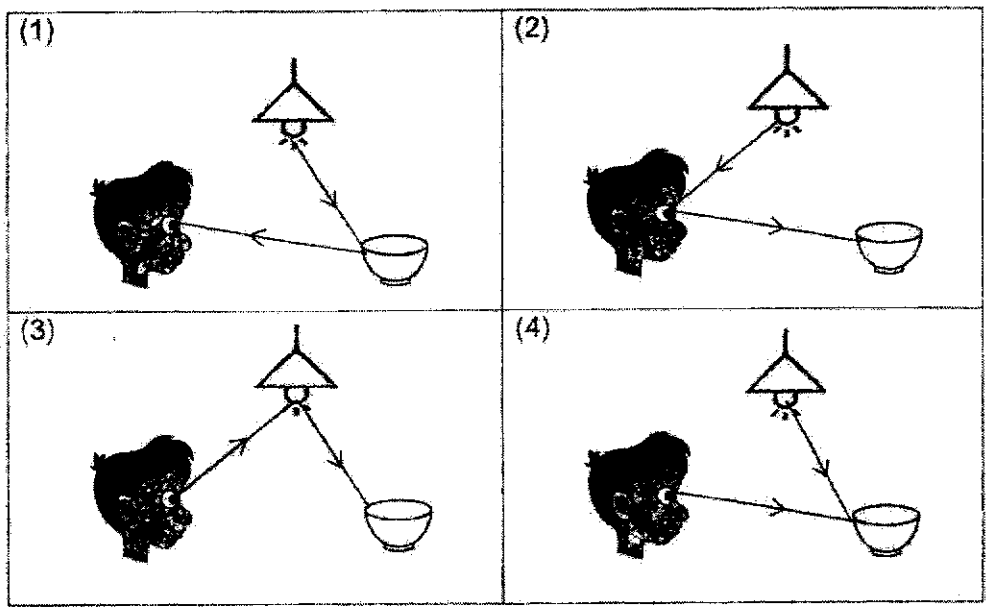
16. Which one of the following is a source of light?

(1) a mirror 	(2) a fan that is turned on 
(3) the moon 	(4) a television that is turned on 

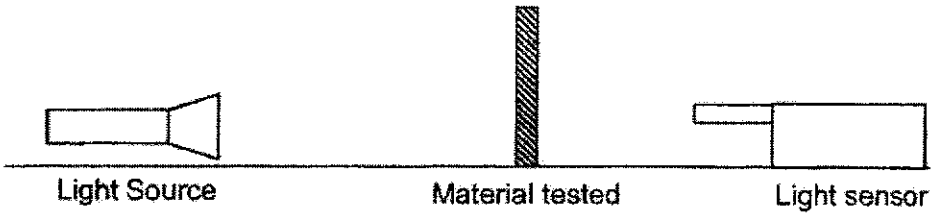
17. Study the picture below.



Which one of the following shows why Amos can see the bowl?



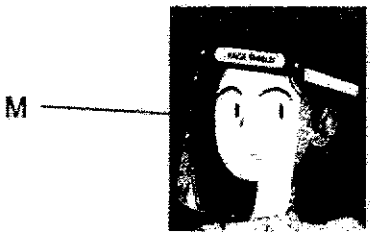
18. Four different materials A, B, C and D of equal length and thickness were used in an experiment set-up shown below.



A light sensor was used to measure the amount of light that can pass through each material. The results are as shown in the table below.

Material	Amount of light (units)
No material	5000
A	25
B	390
C	2500
D	4800

Based on the picture below, which material A, B, C or D is most suitable for making part M of a face shield?



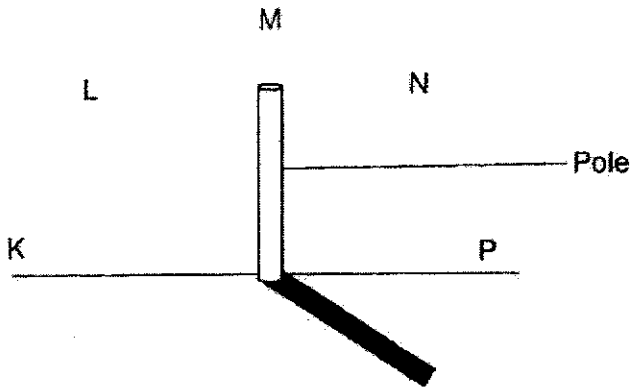
(1) A

(2) B

(3) C

(4) D

19. Study the diagram below. There are two light sources shining on the pole. They are placed at different positions K, L, M, N or P.



Based on the diagram above, which are possible positions for the two light sources?

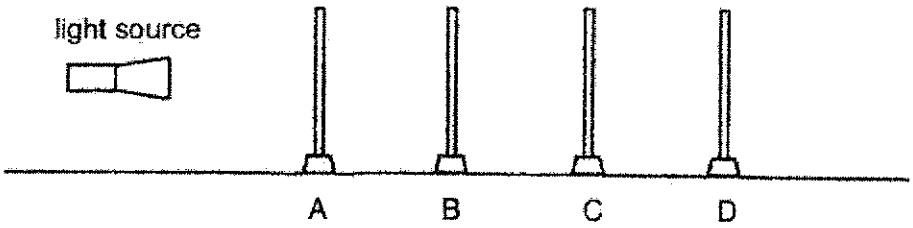
(1) K and P

(2) N and M

(3) L and M

(4) K and L

20. Jayden carried out the experiment as shown below in a dark room. He placed materials A, B, C and D in a straight line.



A triangle was cut out from material A as shown below.

When the light source is switched on, a bright patch of light in the shape of a triangle was seen only on material C.

Based on the information, which of the following statement is definitely true?

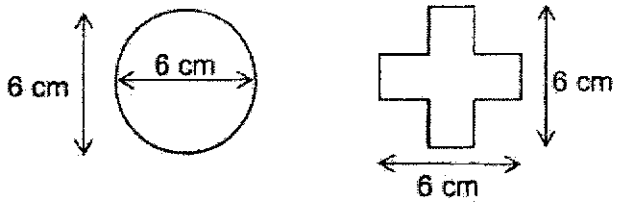
(1) A allows most light to pass through it.

(2) C does not allow light to pass through it.

(3) B and C allow most light to pass through them.

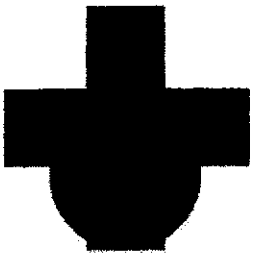
(4) A and D do not allow light to pass through them.

21. The diagram below shows two pieces of cardboard G and H.

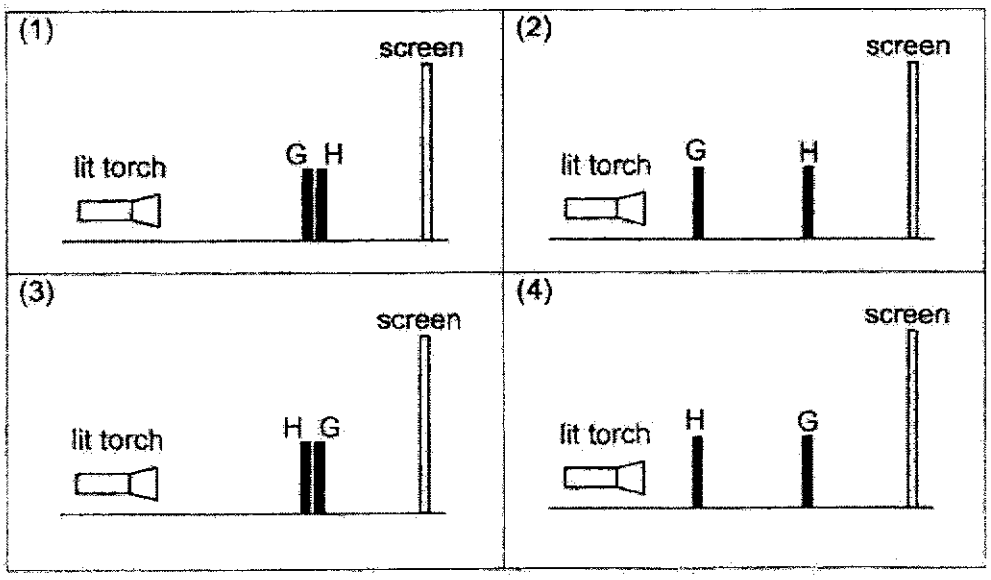


G H

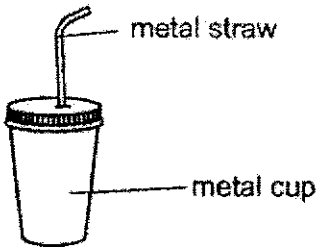
The two pieces of cardboard were arranged in a way to form a shadow on the screen as shown below.



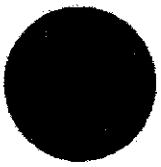
Which one of the following correctly shows where G and H were placed between the lit torch and the screen?



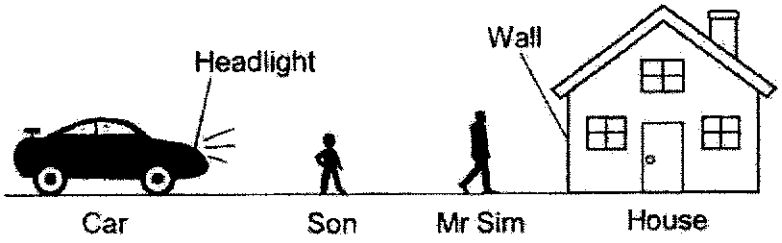
22. Study the object below.



The object was placed between a torch and a screen in different positions. Which of the following **cannot** be a shadow formed by the object?

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

23. Mr Sim had parked his car with the headlight on as shown in the diagram below. His son waited for him in front of the car while he walked towards their house.



Without looking back, Mr Sim was able to know that his son was walking towards their car by looking at the wall of the house. Which one of the following observations did Mr Sim make from the wall?

(1) There was no shadow of the boy.

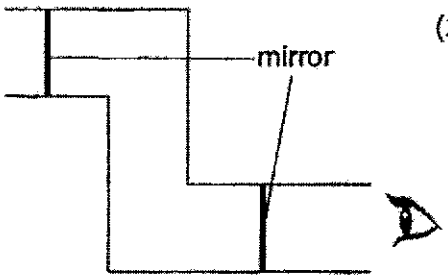
(2) The size of the shadow was increasing.

(3) The size of the shadow was decreasing.

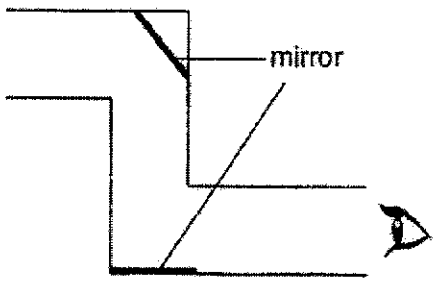
(4) The size of the shadow remained the same.

24. Which of the following shows the correct arrangement of mirrors to see an object through a tube as shown below?

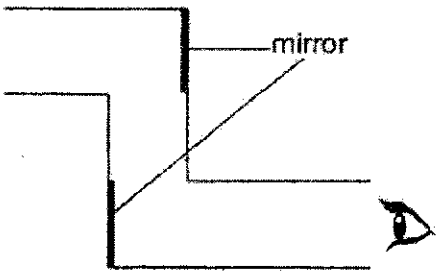
(1)



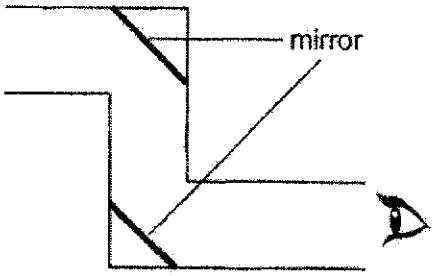
(2)



(3)



(4)



25. Which one of the following is not a matter?

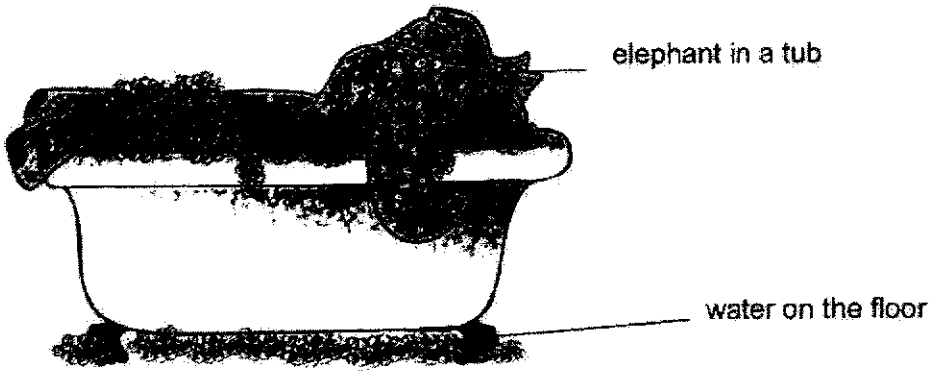
(1) Air

(2) Light

(3) Water

(4) Pebble

26. In a cartoon, Daniel saw an elephant getting into a tub that is filled to the brim with water. Some water overflowed when the elephant got in as shown below.



The above picture shows that the elephant _____.

A: has mass
B: has volume
C: can increase the volume of water

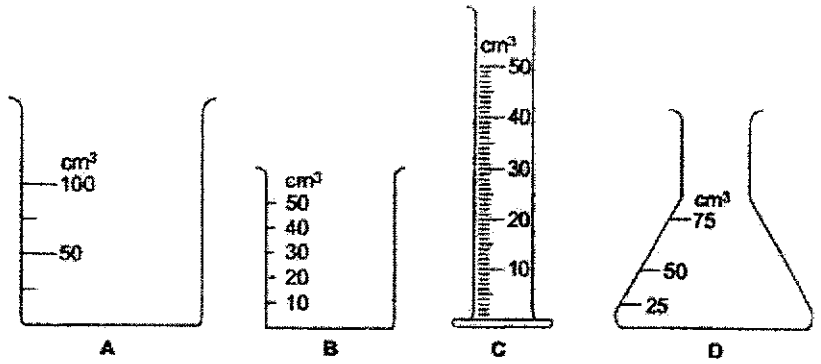
(1) A only

(2) B only

(3) A and B only

(4) A, B and C

27. The diagrams below show four measuring containers.



Which is the best measuring container to measure 15 cm^3 of water accurately?

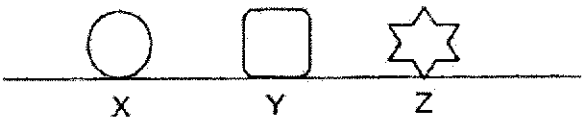
(1) A

(2) B

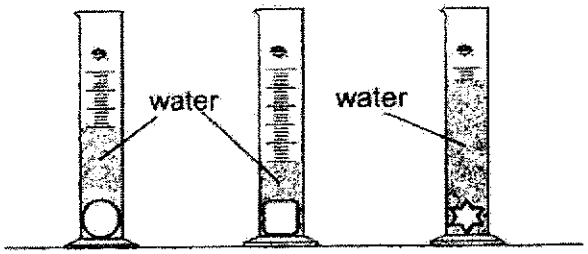
(3) C

(4) D

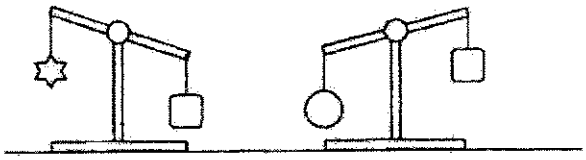
28. Joyce has three objects X, Y and Z as shown below.



She then placed the three objects into three similar measuring cylinders, each containing 10ml of water.



She also compared the masses of the three objects as shown using a lever balance.



Which one of the following correctly states the objects with the smallest volume and mass?

	Smallest volume	Smallest mass
(1)	X	Z
(2)	Y	X
(3)	X	Y
(4)	Y	Z

(Go to Booklet B)

Rosyth School
Mid-Year Examination 2021
SCIENCE
Primary 4

Name: _____ Total Marks: /44

Class: Pr 4- _____ Register No. _____ Total time for Booklets A and B: 1 h 45 min

Date: 7 May 2021 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 29 to 40, write your answers in the spaces given in this booklet.

	Maximum	Marks Obtained
Booklet A	**56 marks**	
Booklet B	**44 marks**	
Total	**100 marks**	

* This booklet consists of 14 printed pages (including cover page).

For questions 29 to 40, write your answers in this booklet. (44 marks)

29. In an experiment, Jane kept four slices of cake P, Q, R and S under different conditions. A tick (√) indicates the presence of the condition.

Cake	Conditions	
	Presence of moisture	Presence of light
P		√
Q		
R	√	√
S	√	

After three weeks, Jane counted the number of patches of mould on the four slices of cake. She recorded the results in the table below.

Cake	Number of patches of mould
P	0
Q	1
R	7
S	15

(a) Based on the results , state the best conditions for mould to grow. [1]

_____

(b) In the experiment above, how does the mould get its food? [1]

_____

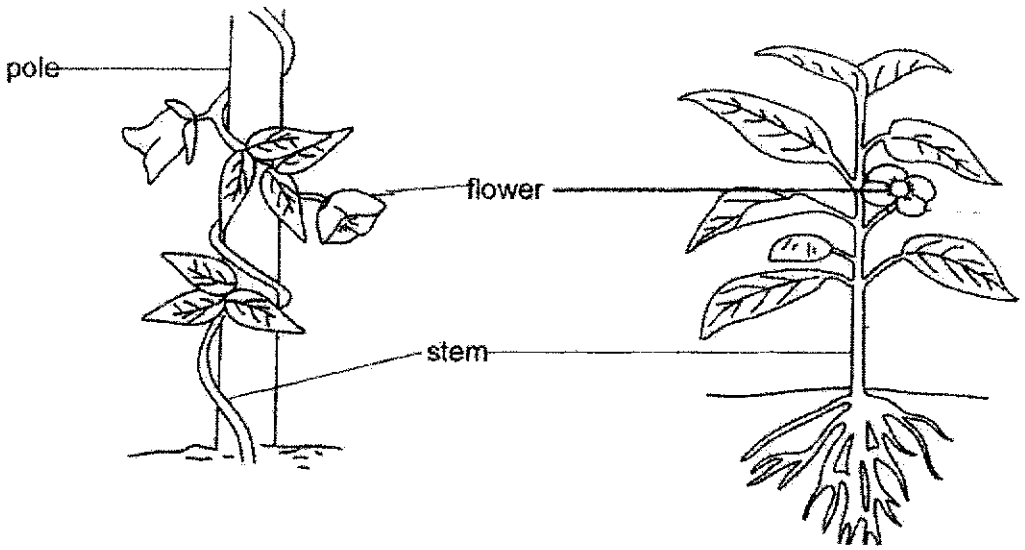
(c) How does mould reproduce? [1]

_____

(d) Jane wants to find out if mould grows faster on a cake or a bread. In the table below, indicate with a tick (√) the variable(s) that she must keep the same so that she can ensure a fair test. [1]

Variables	Keep the same
Type of food	
Amount of moisture present	
Temperature of the surrounding	
Amount of mould growing on the food	

30. Study the two plants J and K below.



Plant J Plant K

(a) Based on observation, state one difference between the stems of Plant J and Plant K. [1]

_____

_____

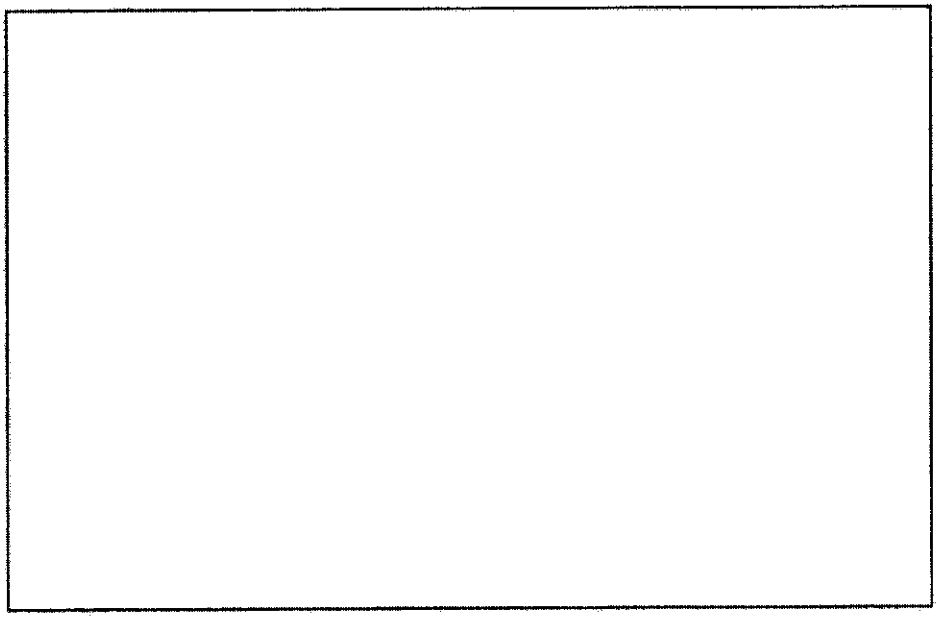
(b) How do Plant J and Plant K reproduce? [1]
Give a reason for your answer.

_____

_____

31. Draw and label the life cycle of a butterfly in the box below. [1]

(a)



(b) It was observed that during one of the stages of the butterfly, moulting takes place.

(i) Identify this stage. [1]

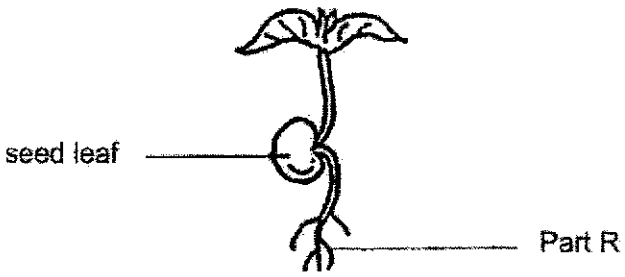
_____

(ii) Why does moulting take place? [1]

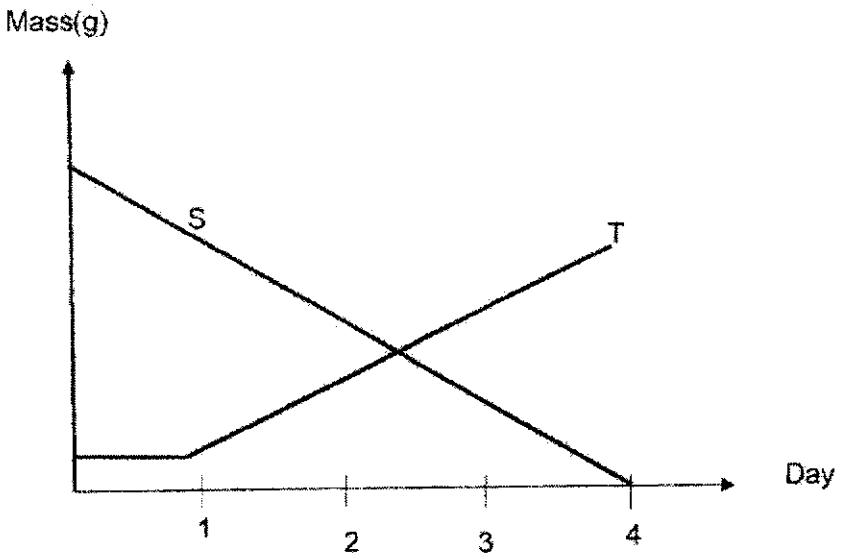
_____

_____

32. Aminah observed the growth of a seedling as shown below.



She plotted a graph to show the changes in the mass of its seed leaf over four days as shown in the graph below.



(a) Which line, S or T, best represents the mass of the seed leaf during the experiment Explain your answer. [1]

_____

_____

(b) How does the seedling continue to grow well from day 4 onwards? [1]

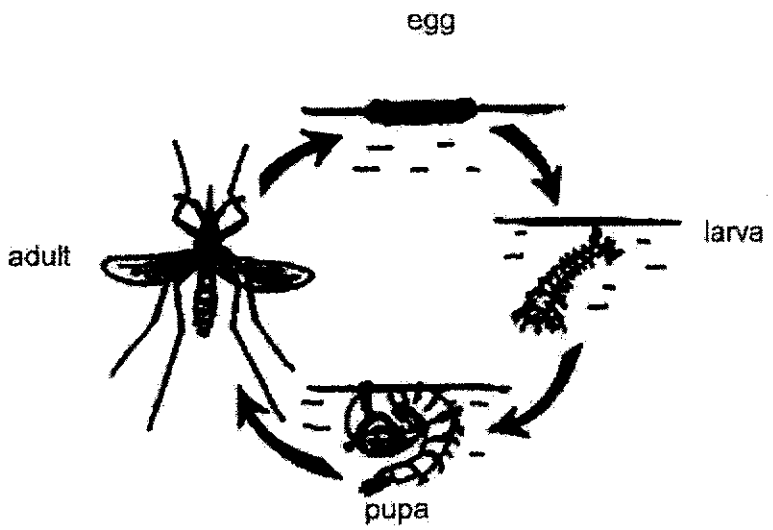
_____

_____

(c) Identify one substance taken in by Part R of the plant. [1]

_____

33. The diagram below shows the life cycle of a mosquito.



(a) The National Environment Agency (NEA) goes to public areas to spray a layer of oil in drains. At which stage(s) of the life cycle of a mosquito would it be most easy to get rid of mosquitoes? [1]

_____

(b) Explain your answer in (a). [1]

_____

_____

_____

(c) In what way is the pupal stage of the mosquito similar to the pupal stage of the mealworm beetle? [1]

_____

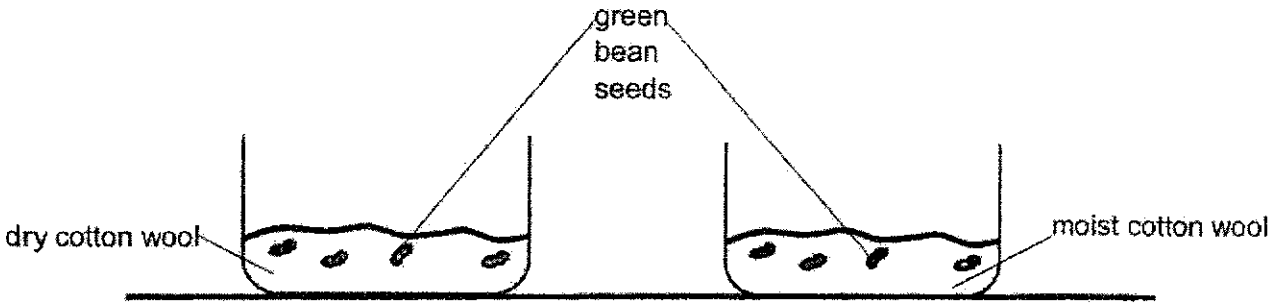
_____

(d) The female adult mosquito lays many eggs at a time. Explain the reason for this. [1]

_____

_____

34. Peter placed some green bean seeds in beakers R and S. He left them in a warm place. After a few days, he observed that only the seeds in Beaker S germinated.



(a) State a reason why only the seeds in Beaker S germinated. [1]

_____

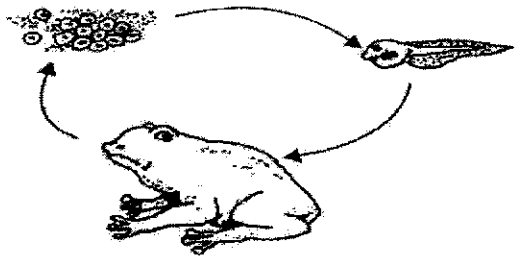
(b) State one other condition for seeds to germinate. [1]

_____

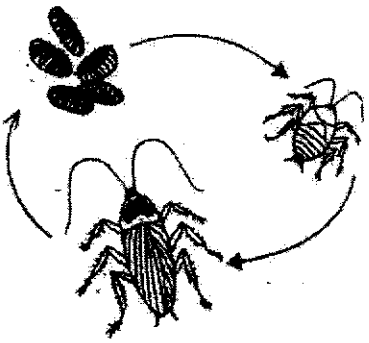
(c) Tick (√) the given statements to indicate if they are true or false. [2]

	Statement	True	False
(i)	The seed leaf will shrivel up after some time.		
(ii)	As the seed germinates, the shoot grows out before the roots.		
(iii)	Flowering plants have a life cycle of three stages which are spore, young plant and adult plant.		
(iv)	Young plants do not have the same life cycle as their parent plant.		

35. The diagram below shows the life cycles of Animal P and Animal Q.



Life cycle of Animal P



Life cycle of Animal Q

(a) Based only on the diagram, state one similarity and one difference between the two life cycles. [2]

Similarity: _____

_____

Difference: _____

_____

(b) Based only on the diagram, state one way a tadpole is different from an adult frog. [1]

_____

_____

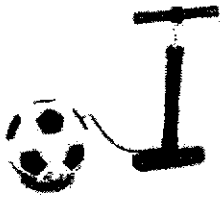
(c) Why are life cycles important to living things? [1]

_____

_____

36. The diagram below shows a flattened ball.

Air was pumped into the ball using an air pump. The mass of the ball was then measured and recorded in the table below.



Number of times air is pumped	Mass of the ball
0	200g
2	210g
4	220g
6	?
8	240g

(a) Why is there a mass of 200 g when the ball is flattened? [1]

_____

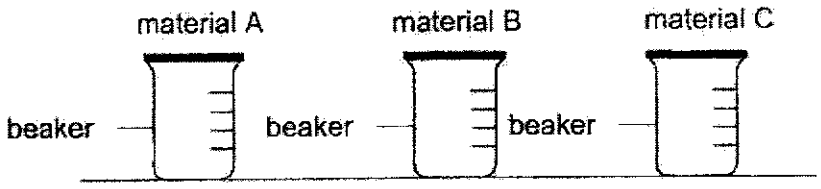
(b) Predict the mass of the ball at the 6th pump of air? [1]

[ ]

(c) Based on the above results, we can conclude that [2]

As more air is being pumped into the ball, the _____ of the ball _____

37. Laurene carried out an experiment with three different materials, A, B and C sealing the beaker. Her set-up was as shown below.

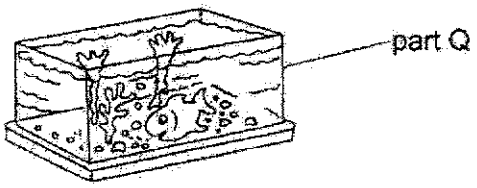


She then poured 30ml of water onto each material. After 10 minutes, she recorded the amount of water collected in the beakers and above the materials as shown in the table below.

Material	Amount of water in the beakers (ml)	Amount of water collected above the material (ml)
A	30	0
B	5	0
C	0	30

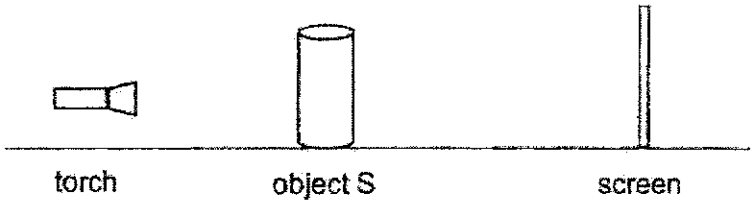
(a) Which material, A, B or C, is most suitable to make a towel? Give a reason for your answer. [2]

(b) The diagram below shows a fish tank.



Based on the information in the table, which material, A, B or C, is most suitable used for making Part Q of the fish tank? Give a reason for your answer. [2]

38. An object S was placed between a torch and a screen in a dark room as shown below.

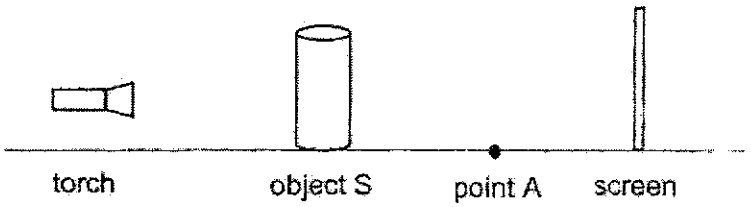


A shadow was observed on the screen.

(a) Draw the shadow that was observed on the screen in the box below. [1]

(b) Explain how the shadow of object S was formed on the screen. [1]

Object S was then shifted to point A.



(c) What would be the change in the size of the shadow formed on the screen? [1]

Q38 continues on page 12

(d) Object S was then replaced with object T. The two objects are of the same size and shape but made of different materials.

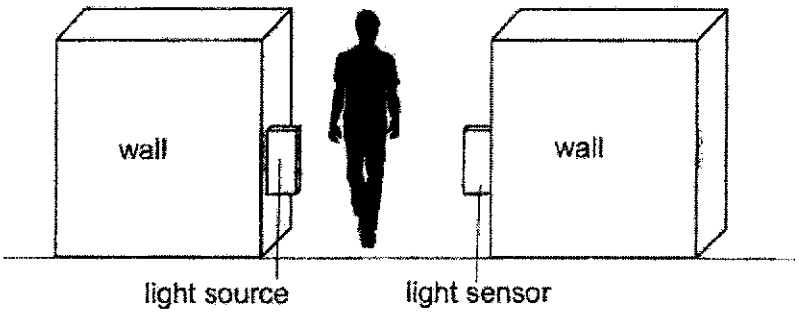
The observation of the shadow formed was recorded in the table below.

Objects	Observation of shadow formed on the screen
S	very dark
T	no shadow formed

Classify the objects, S and T in the table provided below. [1]

Does not allow light to pass through	Allows most light to pass through

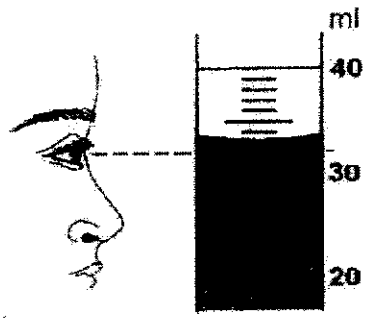
39. In view of the safe distancing measures in public places, a shopping mall had placed a light sensor and a light source at its entrance as shown in the diagram below.



(a) Describe how the light sensor and the light source are used to count the number of people entering the shopping mall. [2]

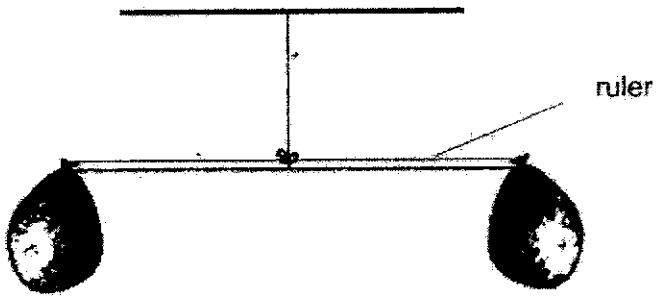
(b) Using the above system, will it be possible to find out if a person is walking slowly or quickly as he walks through the entrance? Explain. [2]

40. The picture shows a part of a measuring cylinder filled with water.



(a) The volume of water is _____ ml. [1]

Bao Ling hung two balloons filled with some air onto a ruler as shown below.



(b) Why is the ruler balanced? [1]

_____

(c) Describe what she should do to show that air has mass and what would be her observation. [2]

She should _____

_____

She would observe _____

_____

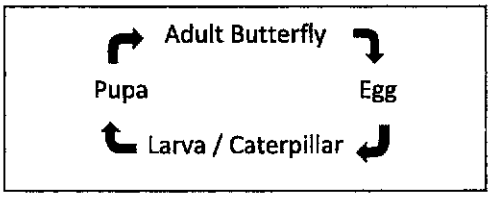
End of Paper

SCHOOL : ROSYTH SCHOOL
LEVEL : PRIMARY 4
SUBJECT : SCIENCE
TERM : SA 1

BOOKLET A

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

BOOKLET B

Q29	a) Mould needs presence of moisture and absence of light. b) It grows on moisture and eats the cake. c) They reproduce by spores. d) Amount of moisture present Temperature of the surrounding
Q30	a) Plant J has a weak stem, but plant K has a strong stem. b) They reproduce by seeds. Both plants have flower
Q31	a)  b) i) The larva stage ii) Moulting takes place because the skin is hard, so it needs to moult to increase in size
Q32	a) S. As the seedling grows, the seedling will use all the food in the seed leaf, thus cauing it to lose its mass. b) It has its own leaves so it can make its own food c) Nutrients
Q33	a) Larva and pupa b) The larva and pupa breathe in air throughthe breathing tubes. The layer of oil prevents air from entering the water. c) Both pupas do not eat or drink d) It is to make sure that at least some of the eggs survive and manage to hatch and grow into an adult mosquito

Q34	a) The seed in S has water to grow. b) The seeds need air to germinate. / survive c) i) True iii) False iv) False v) False
Q35	a) Similarity: both have 3 stages of life cyucle Difference: The young of animal Q resemble its adult but animal P does not b) The tadpole does not have legs but a frog does. c) The life cycle ensures the continuity of its own kind.
Q36	a) Only the air is gone, not the ball thus since a ball has its own mass, there will be a mass of 200g left when the ball is flattened b) 230g c) Size, will increase
Q37	a) B. There is least amount of water in the beaker and above the material b) There is no water in the beaker and all the water is collected above the material. So it is waterproof.
Q38	 a) b) Object S blocked a light path and caused a shadow. c) The size of the shadow willd ecrease. d) S,T
Q39	a) Every time someone passes the light source, light would be blocked from reaching the sensor and the number of times the sensor detects 0 light is the amount of times someone passes through. b) Yes. If the light sensor detected 0 light for a short time it means someone walked through quickly.
Q40	a) 32ml b) Both balloons have the same amount of air in it. c) She should remove the air from one balloon. She would observe that the balace will tilt for the side with the inflated balloon.