

NANYANG PRIMARY SCHOOL
PRIMARY 4 SCIENCE
SEMESTRAL ASSESSMENT 2 (2005)

Name : _____ ()

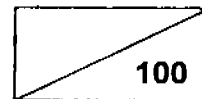
Date : 26th Oct 05

Class : Primary 4 ()

Duration : 1 h 45 min

Parent's signature: _____

Score :



Section A (30 x 2 marks = 60 marks)

For each question from 1 to 30, 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 provided.

1. John inflated a balloon. There is a change in the _____ of the balloon.

- A shape
- B volume
- C mass

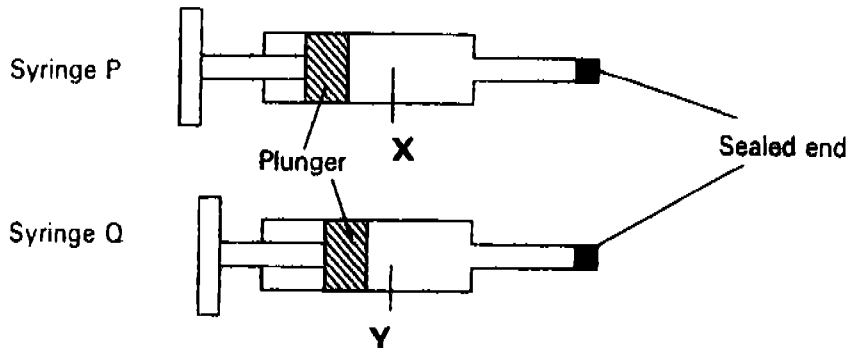
- (1) A and B only
- (2) A and C only
- (3) B and C only
- (4) A, B and C

2. A certain solid melts at 10 °C and boils at 80 °C. At which of the following temperature is it most likely to be a gas?

- (1) 0 °C
- (2) 10 °C
- (3) 60 °C
- (4) 85 °C

3. Two syringes, P and Q, contained substances X and Y respectively. One end of each syringe was sealed.

The plunger in syringe P could not be pushed in but the plunger in syringe Q could still be pushed in slightly, as show in the diagram below.



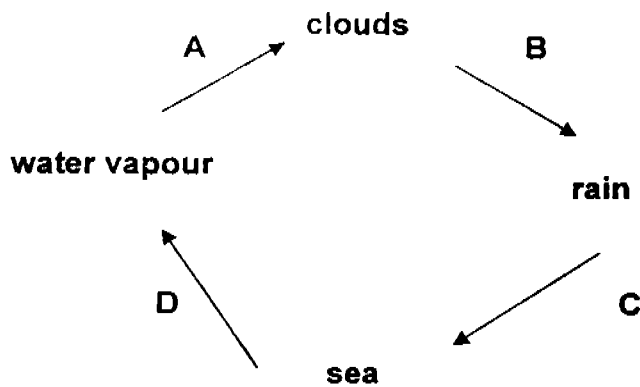
From the above experiment, which of the following best represent X and Y?

- | | <u>X</u> | <u>Y</u> |
|-----|----------|----------|
| (1) | salt | flour |
| (2) | water | oil |
| (3) | blood | air |
| (4) | air | oil |

4. Which one of the following does not conserve water?

- (1) Using a running water hose to wash the car.
- (2) Using a smaller pail of water to wash the floor.
- (3) Using a mug to contain water when brushing teeth.
- (4) Using the water from the washing machine to wash the corridor.

Study the diagram below and use it to answer questions 5 and 6.



5. At which part of the water cycle will there be a loss of heat?

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

6. At which part of the water cycle does evaporation occur?

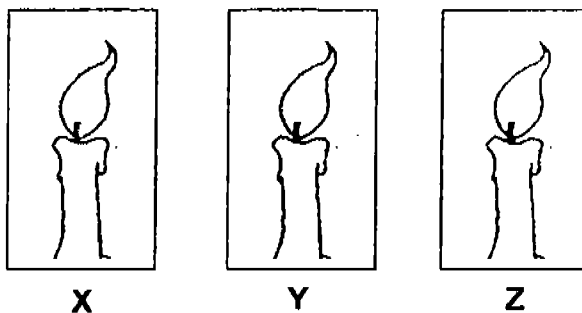
- | | | | |
|-----|---|-----|---|
| (1) | A | (2) | B |
| (3) | C | (4) | D |

7. Which of the following statements about air is / are correct?

- A Air can be felt.
- B Air is unable to take up the space in our ears.
- C Water vapour is a gas that can be found in the air.
- D Gases in the air have different colours at room temperature and when the gases are mixed together, air becomes colourless.

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

8. Hassan prepared three transparent jars of equal sizes, X, Y and Z, containing different gases. He started the stopwatch as soon as he placed a burning candle into each jar as shown below.



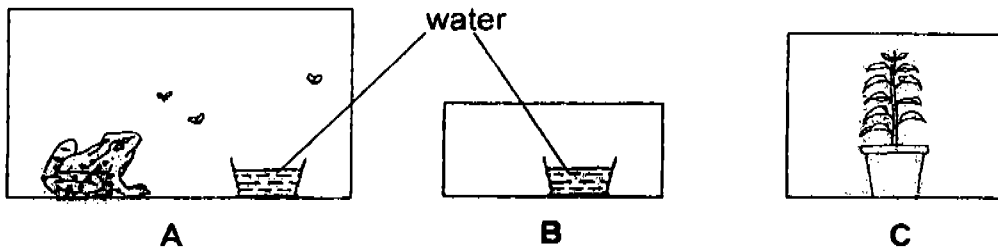
The time taken for each candle flame to go off is recorded in the table below.

Jar	Time taken for candle flame to go off (s)
X	35
Y	0.2
Z	15


Which of the following gases were used to fill up the three jars?

	X	Y	Z
(1)	Oxygen	Carbon dioxide	Mixture of nitrogen and carbon dioxide
(2)	Air	Carbon dioxide	Nitrogen
(3)	Oxygen	Nitrogen	Air
(4)	Air	Mixture of nitrogen and carbon dioxide	Air

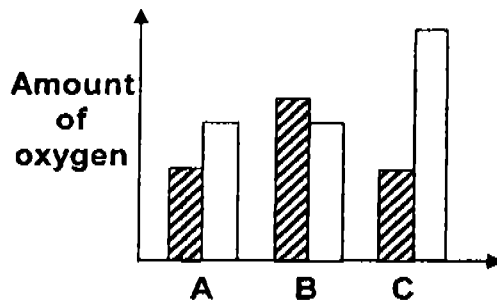
9. Three transparent boxes, A, B and C were placed under the Sun at 11 a.m. Different items were then placed into each box and the boxes were sealed.



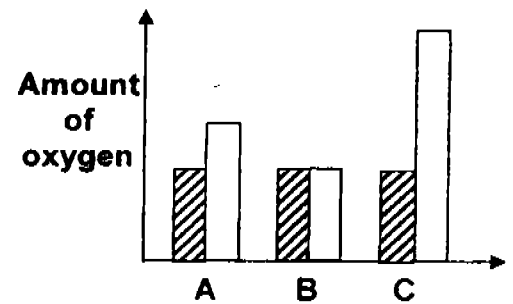
Which one of the following graphs shows the amount of oxygen in the three boxes, A, B and C, at 11 a.m. and at 3 p.m.?

Key:  11 a.m.
 3 p.m.

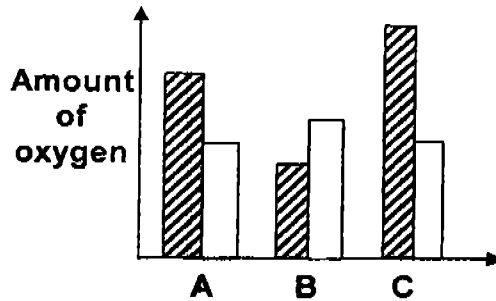
~~(A)~~



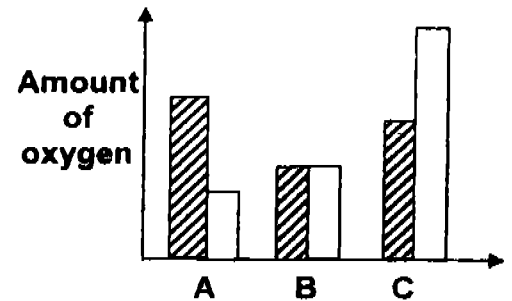
~~(B)~~



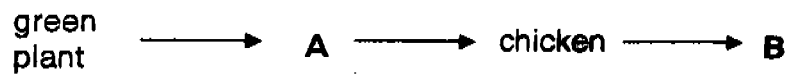
~~(C)~~



~~(D)~~



13. The diagram below shows how energy is transferred from one living thing to another.



Which of the following best represent A and B?

	A	B	
(1)	corn	rabbit	X
(2)	caterpillar	snake	
(3)	Sun	eagle	X
(4)	earthworm	cow	X

14. A glass of ice water is left on a table for a few minutes as shown below.



The formation of water droplets on the glass surface involves a change in _____ energy.

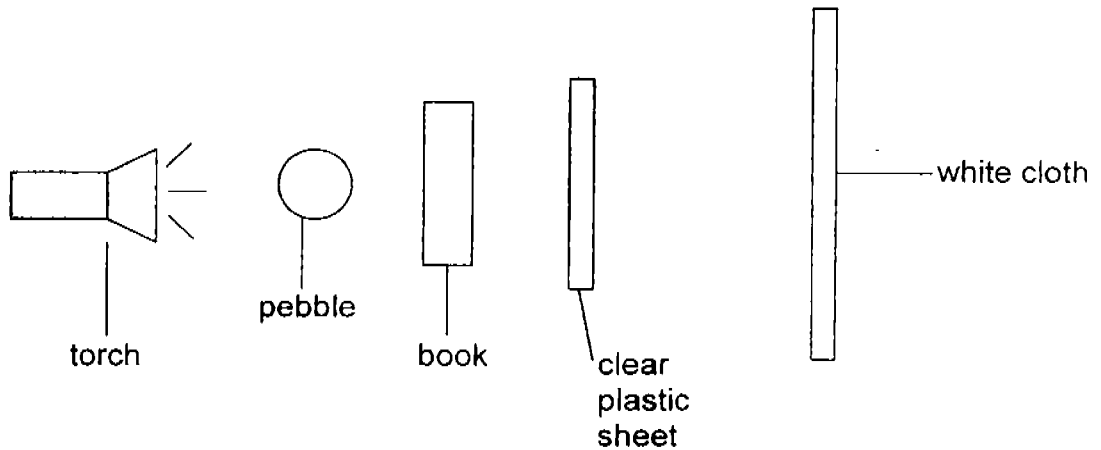
- (1) light
 (2) heat
 (3) electrical
 (4) movement
15. Maria went to the school field on a windy day to fly a paper aeroplane. The paper aeroplane got its energy to fly from _____.
- A the Sun
 B the wind
 C the paper
 D Maria's arm
- (1) A and B only
 (2) A and C only
 (3) B and D only
 (4) B, C and D only

16. Light energy must be present to _____.

- A light up a star
- B make sure that the Sun's temperature is high
- C enable us to classify objects according to colours
- D allow us to see objects outside a transparent window pane

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

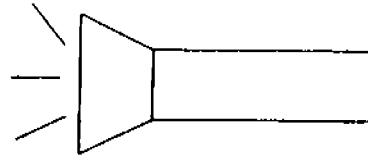
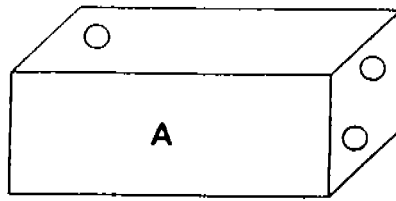
17. Yanti placed a pebble, a book and a clear plastic sheet between a torch and a piece of white cloth as shown below.



How many different shadows would Yanti see altogether?

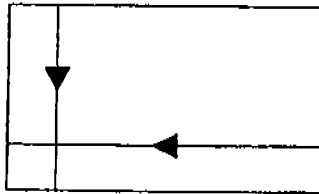
- (1) 1
- (2) 2
- (3) 3
- (4) 4

18. Wei Heng poked three holes through a box. He placed the box in a very dark room and shone a torch at the box as shown below.

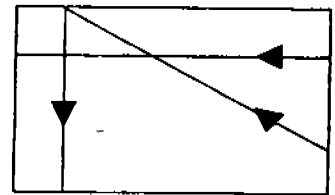


Which one of the following shows how the light rays travel through the box if Wei Heng looks through surface A?

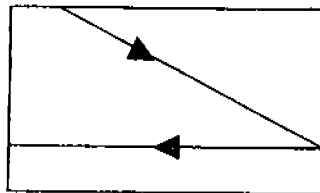
(1)



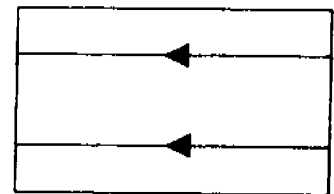
(2)



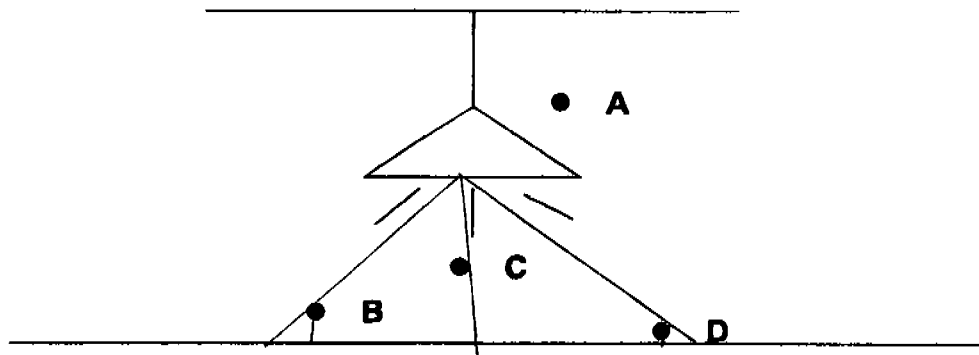
(3)



(4)



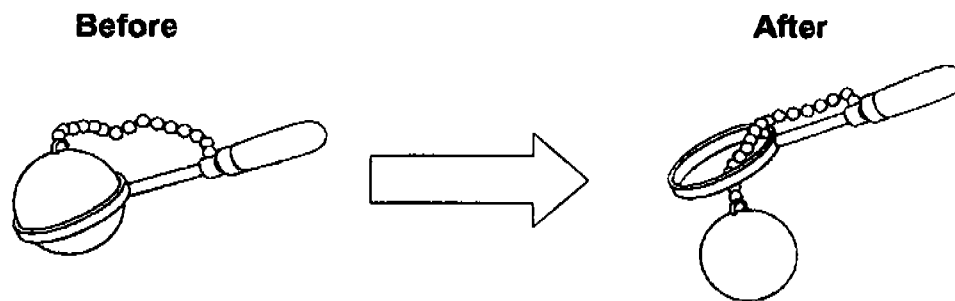
19. A lamp has a cover made of aluminium as shown below.



In which position, A, B, C or D should an eraser be placed such that the longest shadow is cast?

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

20. Study the picture below.



Which one of the following correctly explains what had happened?

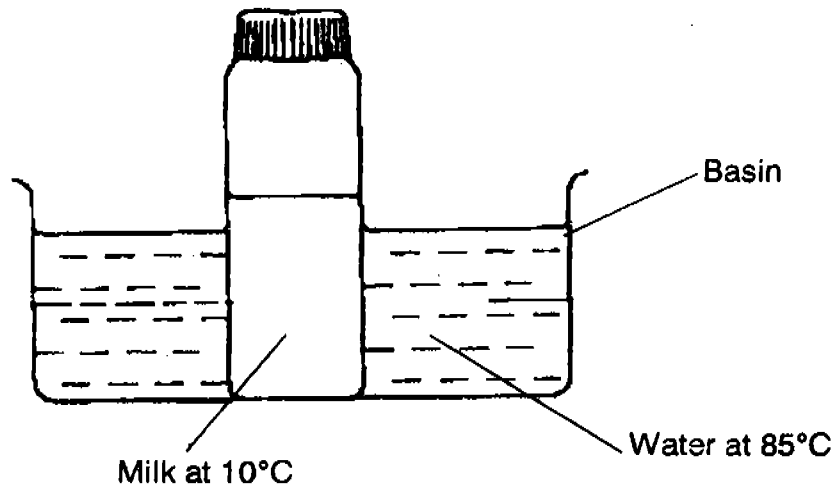
- | | Before | After |
|-----|-----------------------|---------------------|
| (1) | metal ball heated | ring expanded |
| (2) | metal ball contracted | metal ball heated |
| (3) | ring heated | ring expanded |
| (4) | ring contracted | metal ball expanded |

21. Which of the following show an expansion in matter due to heat?

- A freezing of water
- B blowing air into a balloon
- C a baby growing up into a child
- D mercury moving up in a thermometer

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

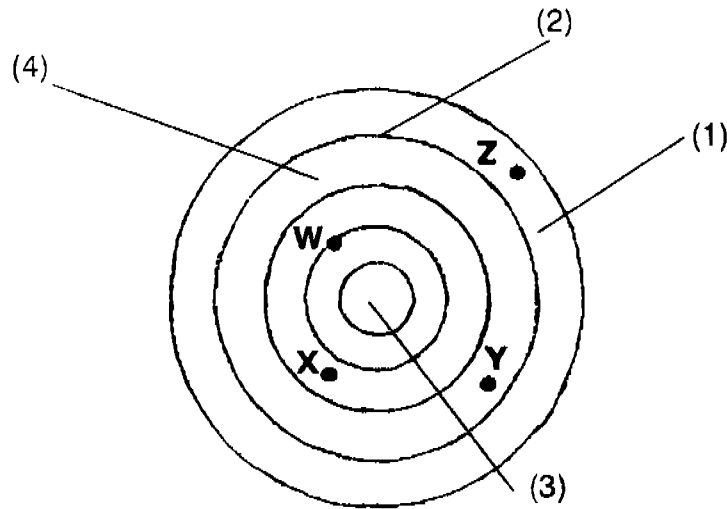
22. Mrs Tan put a sealed bottle of milk into a basin of water in the kitchen.



Which one of the following statements is incorrect?

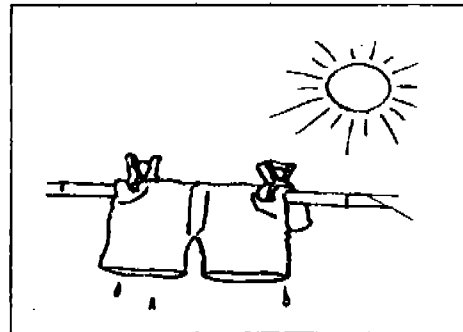
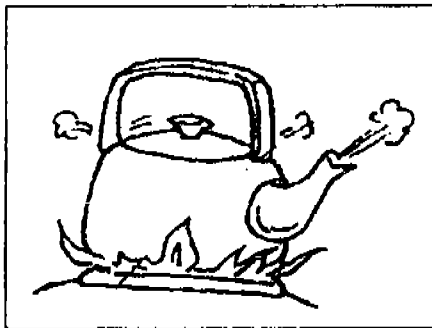
- (1) The basin gained heat energy from the water.
- (2) The mass of air in the milk bottle will decrease.
- (3) There is a transfer of heat between the milk and the water.
- (4) Both the milk and the water will be at room temperature after some time.

23. Four droplets of wax of the same size, W, X, Y and Z were put on a round metal sheet as shown below.



In which position, (1), (2), (3) or (4), should a candle flame be placed such that Z melts first and X melts last?

24. Study the diagrams below.



Which of the following show(s) the similarity/similarities in the two diagrams above?

- A boiling takes place
- B water vapour is released
- C only heat energy is present
- D the Sun is the main source of energy

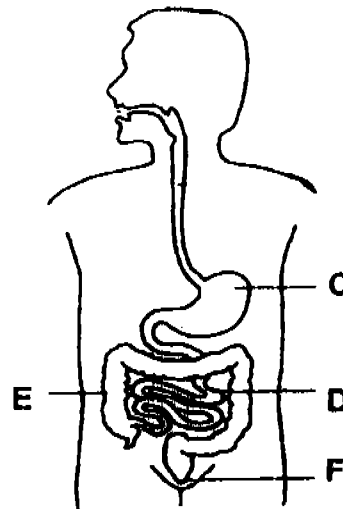
(1) B only

(3) A and C only

(2) D only

(4) None of the above

25. The diagram below shows the digestive system.



Which part of the diagram shows where the food is digested completely?

- (1) C
(2) D
(3) E
(4) F
26. When Peter touched the hot water kettle, he moved his hand away. Which of the following organs were used in his response?

- A Eyes
B Skin
C Ears

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

27. A blind person cannot tell the difference between a _____ and a _____.

- (1) pen, ruler
(2) red apple, green apple
(3) drawing block, credit card
(4) green bean, grain of rice

28. Which of the following statements are true?

- A Not all plants produce fruits.
- B Only plants with flowers can reproduce.
- C Root hairs are formed near the tip of the root.
- D Some plants can make food without chlorophyll.

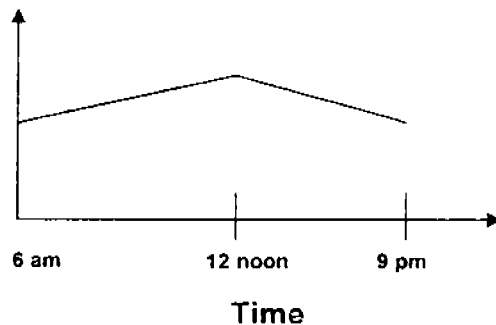
- (1) A and B only (2) A and C only
(3) B and C only (4) B and D only

29. Which part of a plant usually protects its seeds?

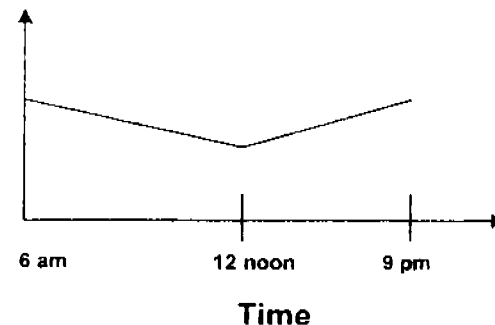
- (1) leaves (2) flowers
(3) fruits (4) stem

30. Ali measured the amount of carbon dioxide in the air surrounding the plants inside an enclosed greenhouse. Which one of the following graphs correctly shows the amount of carbon dioxide over a period of 24 hours? (Assume there is sunlight during the daytime.)

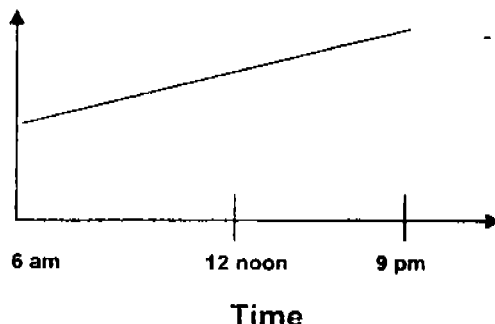
(1) Amount of carbon dioxide



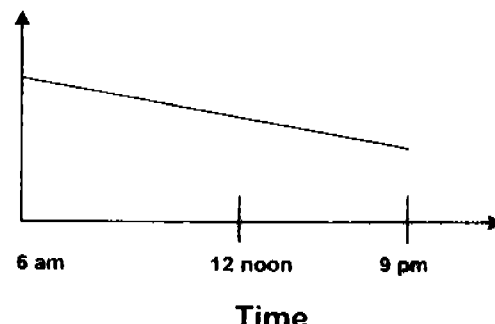
(2) Amount of carbon dioxide



(3) Amount of carbon dioxide



(4) Amount of carbon dioxide



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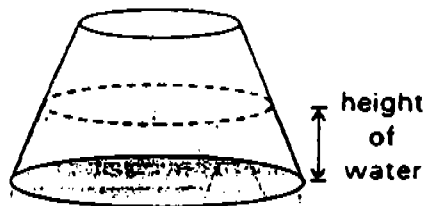
Name : _____ () Date : 26th Oct 2005

Class : Primary 4 ()

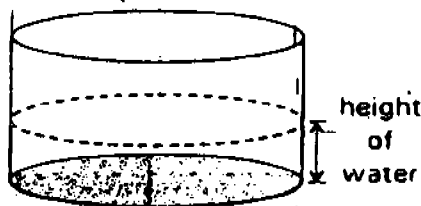
Section B (40 marks)

Write your answers to questions 31 to 46 in the spaces provided.
Marks will be deducted for misspelt key words.

31. Beng Seng poured 300 cm^3 of water into two containers made of the same material, A and B. Both containers have the same base area as shown by the shaded portion in the diagram. The containers were left in the open.



Container A



Container B

- (a) Which container took a longer time for all the water to evaporate? (1 mark)

(b) Explain your answer to (a). (1 mark)

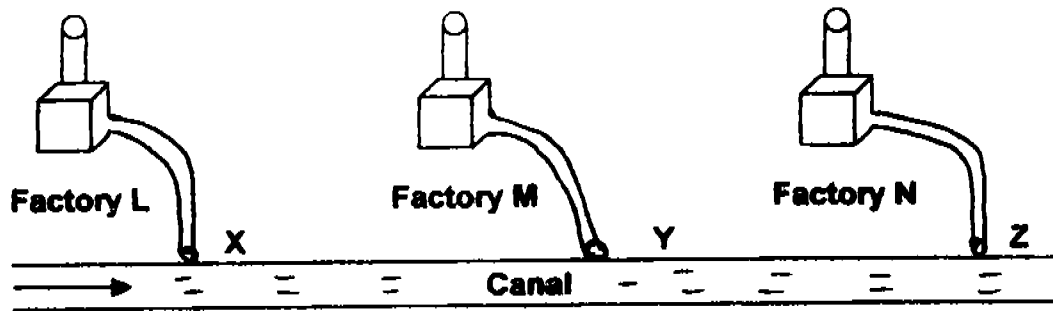
(c) Describe what happened to the rate of evaporation in container A over the same period of time. (1 mark)

(d) Explain your answer to (c). (1 mark)

32. Study the classification table below.
Fill in the boxes (i) and (ii) below with appropriate headings (2 marks)

(i)	(ii)
shadow	nitrogen
heat	oil

33. The diagram below shows three factories L, M and N located along a canal. Each factory discharged its waste into the canal.



The amount of pollutants in the water at location X, Y and Z was measured and recorded in the table as shown below.

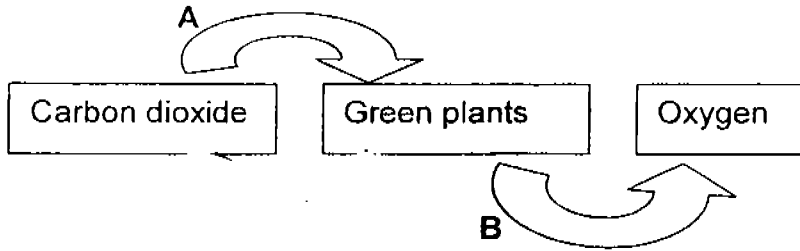
Location	X	Y	Z
Amount of pollutants (grams per litre)	20	45	60

- (a) Which factory contributed the most amount of pollutants? (1 mark)

Factory _____

- (b) Explain your answer in (a). (1 mark)

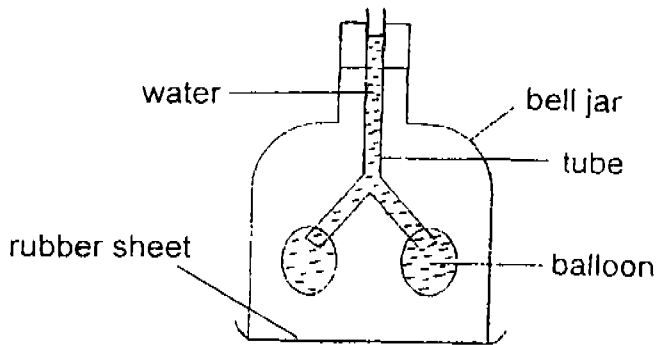
34. Study the diagram below.



(a) What process is taking place in the green plants as represented by arrows A and B? (1 mark)

(b) There is another process that can occur at the same time as the process in (a). Draw and label two arrows, C and D, to represent this process. (2 marks)

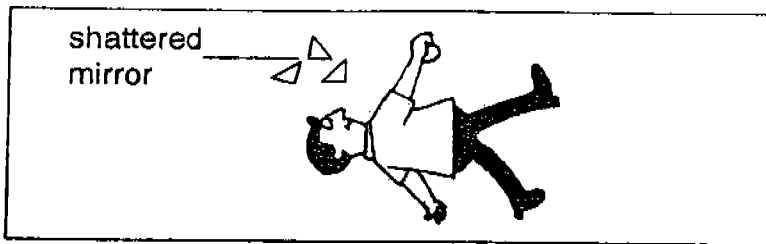
35. Joan set up an experiment as shown below.



(a) What would be Joan's observation of the balloon if she pulled the rubber sheet? (1 mark)

(b) Based on the answer in (a), explain why a person struggles to breathe when he is drowning. (2 marks)

36. Detective James saw a man lying unconscious in a room.

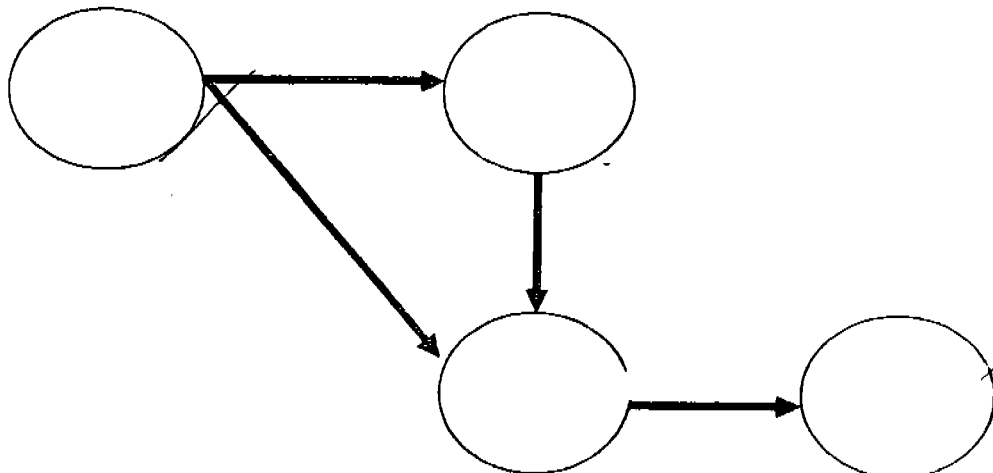


There were a few pieces of shattered mirror around the man. Without touching the man, explain how Detective James could make sure that the unconscious man was still breathing using the pieces of mirror.

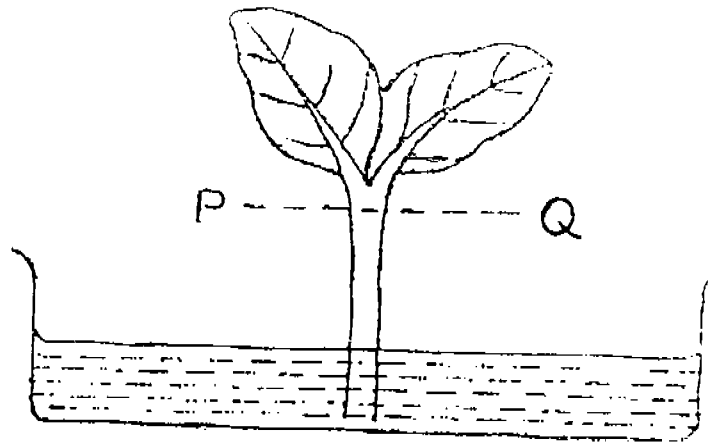
37. Information about four living things, W, X, Y and Z is shown below.

- W is an omnivore
- X contains chlorophyll
- Y is a herbivore
- Z eats W

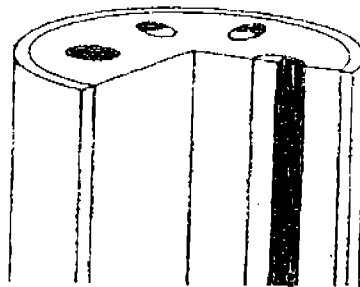
Using the information above, write W, X, Y and Z in each of the circles below to complete the food web. (2 marks)



38. Cindy placed a balsam plant in red coloured water for 2 hours as shown below.



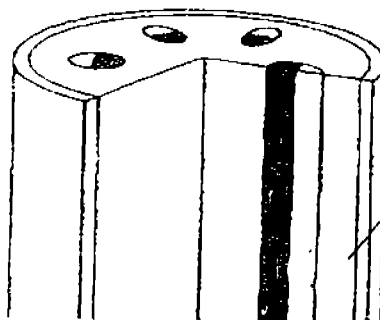
Before removing the stalk from the basin, Cindy predicted and drew what she would observe if she cut across the stalk at PQ. The diagram showing her prediction is shown below.



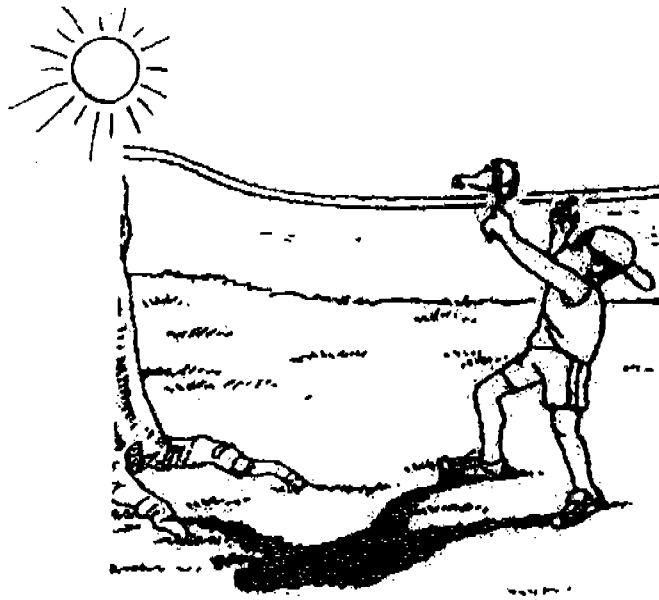
After removing the stalk and cutting it at PQ, Cindy realised that her prediction was wrong.

- (a) Explain why Cindy's prediction was wrong. (2 marks)

- (b) Shade in the diagram below the actual observation made by Cindy. (1 mark)



39. A boy was playing badminton in a park on a sunny afternoon.



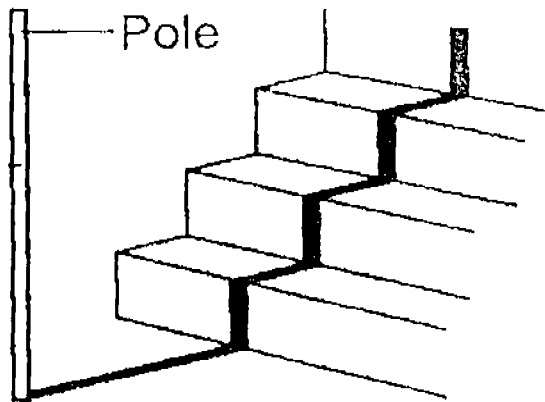
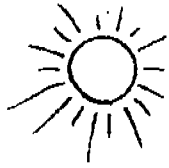
Using your knowledge of light, explain what is wrong with the picture. (2 marks)

10. Bala carried out the following experiment. He watered plant A with tap water, plant B with salt water and plant C with sugar water. He then measured their heights over a period of time.

(a) What is the aim of the experiment? (1 mark)

(b) Name one variable that he must keep the same to do a fair experiment. (1 mark)

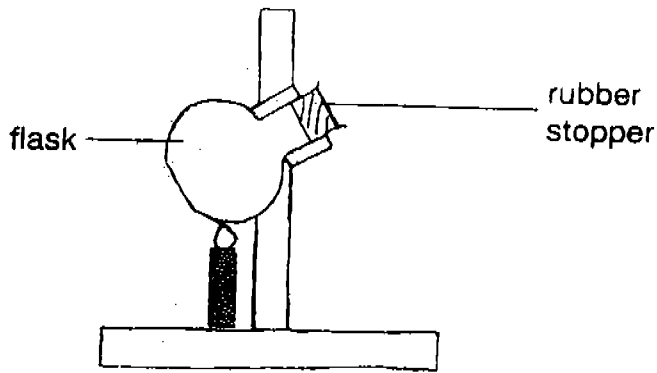
41. Ahmad placed a pole in front of a flight of steps as shown below.



For each statement, put a tick in the correct boxes to indicate if it is True, False or Not possible to tell. (2 marks)

	Statements	True	False	Not possible to tell
(a)	The pole is made of wood.			<input checked="" type="checkbox"/>
(b)	Ahmad carried out the experiment at 2 p.m.			
(c)	The length of the pole is the same as the length of the shadow.			
(d)	The shadow formed shows that light bends when it shines on steps.			

42. Study the experiment below.



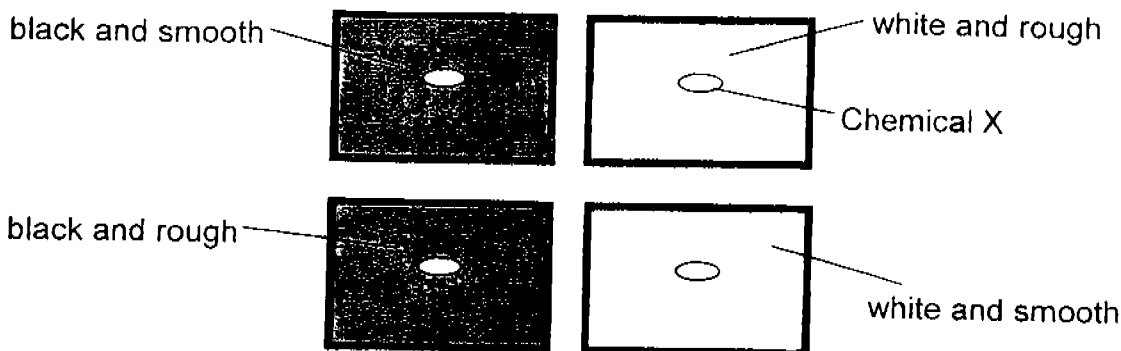
After heating the flask for some time, the rubber stopper was forced out of the flask.

- (a) Without changing the above setup and still keeping the rubber stopper there, what should be done to the rubber stopper to prevent it from being forced out? (1 mark)

- (b) Explain your answer in (a). (2 marks)

43. State one difference between respiration and digestion in mammals. (2 marks)

44. The diagram below shows four tiles of the same size with different surfaces. A drop of Chemical X was placed on each tile before they were placed under the Sun.



Chemical X is white at room temperature and its colour would change when there is a change in temperature. The table below shows the colour changes of Chemical X.

Temperature	Colour of Chemical X
40°C to 50°C	yellow
51°C to 70°C	orange
71°C to 80°C	red

After the tiles were placed under the Sun for 5 minutes, the observations were recorded in the table below.

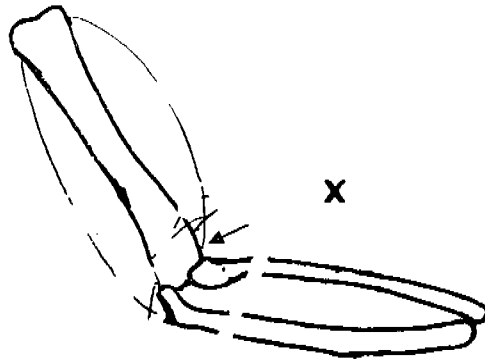
Tile	Colour of Chemical X after 5 min
black and smooth	orange
black and rough	red
white and smooth	yellow
white and rough	orange

- (a) Which tile should be used on a roof so that the house would not be very warm during the day? (1 mark)

- (b) Explain your answer in (a). (2 marks)

- (c) Explain how we can find out whether the black and smooth tile or the white and rough tile can absorb heat better. (1 mark)

45. The diagram below shows the bones of the human arm.



(a) Name the joint at point X. (1 mark)

(b) **Draw and label on the diagram above** to show the position of the biceps and triceps. (1 mark)

46. Describe how the biceps and triceps allow our lower arm to move upwards. (2 marks)

----- END OF PAPER -----

Setters: Mr Joseph Poon
Ms Tan Si Ming

Nanyang Primary School
Primary 4 Science SA2 Exams (2005)

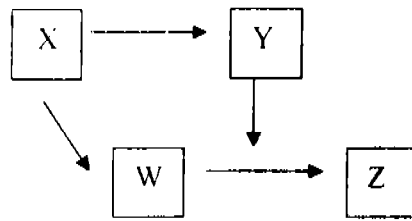
Examination

Answer Sheets

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	4	3	1	1	4	2	3	4	4
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	3	2	2	3	3	2	4	4	3
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	2	1	1	2	2	2	2	3	2

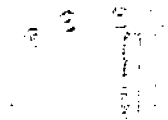
- 31a. It is container A.
- 31b. Container A had smaller area of exposed surface than Container B, so it takes a longer time to expose.
- 31c. The rate of evaporation increases with time.
- 31d. The exposed surfaces are increases as time increases.
- 32.
- | | |
|------------|--------|
| Non-matter | Matter |
| | |
- 33a. M
- 33b. It contributed the most amounts of pollutants.
- 34a. The process is photosynthesis.
- 35a. The balloon will remain the same size.
- 35b. Water has taken of the space in the lungs and the windpipe. Therefore no air can enter into the person lungs.
36. Place a piece of mirror near the nose/mouth of the unconscious man. If the man is breathing, mist should be formed on the mirror.

37.



38. X stem tubes taken in water for the balsam plant, so only the xylem tube should be stained red. However, for Cindy's prediction, phloem was stained too.

38b.



39. The shadow of the boy should be on the right of the picture, because the light source is on the left and turned on the opposite side.

40a. It is to see whether plants grow faster or slower with different types of water.

40b. It is the type of plant.

41a. Not possible to tell

41b. Not possible to tell

41c. False

41d. False

42a. You should poke a hole in the rubber stopper.

42b. When the candle heats up in the air inside the flask, the air will expand. If there is a hole in the rubber stopper, air can escape through it, therefore the rubber stopper will not be forced out.

43. Respiration is the process where oxygen is used to break down the digested food to produce energy. However, digestion is only a process when food is broken down into simple substance.

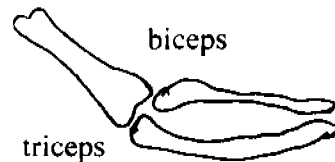
44a. The tile should be white and smooth.

44b. The white and smooth tile with chemical X turning yellow. This mean that it absorbs the least heat, among the four tiles, as it was the less temperature.

44c. We put the tube tiles in the sun with a drop of chemical X. After five minutes, we use a thermometer to ensure the accuracy.

45a. The joint is hinge joint.

45b.



46. The biceps pull the bone upwards while the triceps relax.