



MARIS STELLA HIGH SCHOOL (PRIMARY)

SEMESTRAL ASSESSMENT 2

SCIENCE

2 NOVEMBER 2011

BOOKLET A

NAME: _____ ()

CLASS: Primary 4 ()

30 questions

60 marks

Total Time for Booklets A & B: 1 h 30 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

PART I (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 (OAS). (30 x 2 marks)

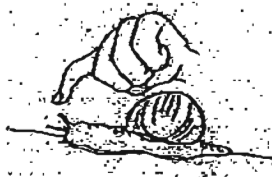
1. Adam classified two groups of animals, P and Q, in the table below.

GROUP P	GROUP Q
Hen	Whale
Frog	Guppy
Platypus	Dolphin

Which are the correct headings for groups P and Q?

	Group P	Group Q
(1)	Birds	Mammals
(2)	Lay eggs	Give birth to young
(3)	Eat plants only	Eat plants and animals
(4)	Live on land only	Live in water only

2. A snail hides itself in its shell when touched.



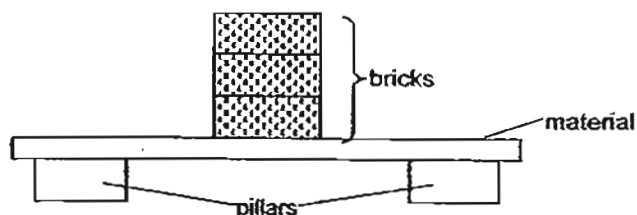
This shows that the snail is a living thing because it can _____.

- (1) grow
- (2) breathe
- (3) respond
- (4) reproduce

3. What is the main function of the large intestine?

- (1) It removes digested food from the body.
- (2) It allows water to be passed into the blood.
- (3) It removes undigested food out of the body.
- (4) It allows digested food to be passed into the blood.

4. Sean carried out an experiment as shown in the diagram below. A piece of material was placed on top of two pillars. Bricks were then stacked one at a time on that piece of material until it broke.



Sean repeated the experiment using a different material placed on top of the two pillars each time. Similarly, a brick was stacked each time until the material broke.

Which statement best describes the aim of Sean's experiment?

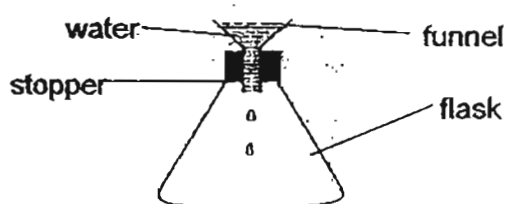
- (1) To find out the strength of different pillars.
 - (2) To find out which material is the strongest.
 - (3) To find out if the number of bricks affects the hardness of the material.
 - (4) To find out if the number of bricks affects the strength of the materials.
5. A clown fills a balloon with gas and twists them to form the shape as shown.



By twisting the balloons, he has changed the _____ of the gas in the balloons.

- (1) state
 - (2) mass
 - (3) colour
 - (4) volume
6. Which of the following properties is true for both air and a pencil?
- (1) They can be seen.
 - (2) They take up space.
 - (3) They have definite shapes.
 - (4) They have definite volumes.

7. Mrs Lim set up an experiment as shown. She poured some water into the funnel and observed that just a few drops of water flowed into the flask. Very soon after, she observed that no more water could enter the flask. Mrs Lim told her class to carry out the same experiment.



Sulin set up the same experiment using identical apparatus. However, when she poured the water into the funnel, she found that the water could flow into the flask easily.

Which of the following could explain why her result is different from Mrs Lim's?

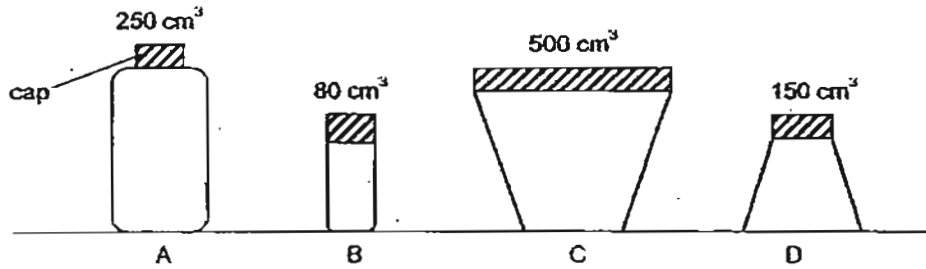
- (1) She used cold water.
 - (2) She used a bigger flask.
 - (3) The stopper was not tightly closed.
 - (4) She poured the water into the flask quickly.
8. Different amount of substance X was placed inside 6 identical 50 cm³ containers. The table below shows the mass and volume of substance X in each container.

Container	1	2	3	4	5	6
Mass (g)	10	15	20	25	30	35
Volume (cm ³)	50	50	50	50	50	50

What is Substance X likely to be?

- (1) Glue
 - (2) Juice
 - (3) Sugar
 - (4) Oxygen
9. Which of the following substances has a fixed shape?
- (1) oil
 - (2) milk
 - (3) stone
 - (4) oxygen

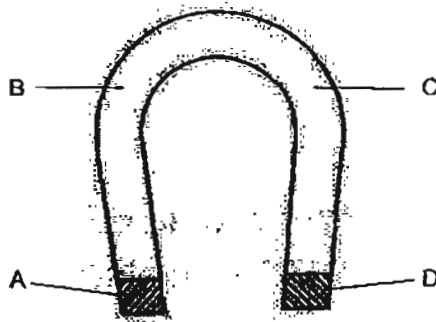
10. The diagram below shows 4 containers of different volume.



Which of the containers can be totally filled with 100 cm^3 of air?

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

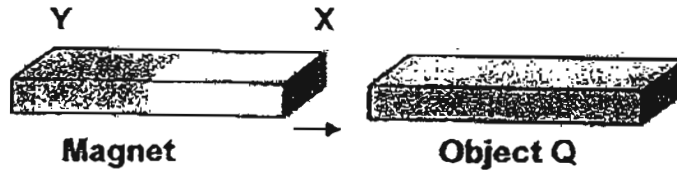
11. The diagram below shows a U-shaped magnet.



Bala placed the entire U-shaped magnet into a box of iron pins. When he lifted the magnet out of the box, at which two points will he count the most number of pins attracted to the magnet?

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

12. Aloysius has a bar magnet with ends labeled X and Y. He placed end X of the magnet to face the object Q. Then he did the same with end Y of the magnet. He repeated the experiment with objects R and S.



The table below shows his observations.

Objects	End X			End Y		
	Attract	Repel	No reaction	Attract	Repel	No reaction
Q		✓		✓		
R			✓			✓
S	✓			✓		

What could Q, R and S be?

	Q	R	S
(1)	Steel bar	Copper bar	Bar magnet
(2)	Bar magnet	Silver bar	Bar magnet
(3)	Bar magnet	Aluminium bar	Iron bar
(4)	Copper bar	Steel bar	Iron bar

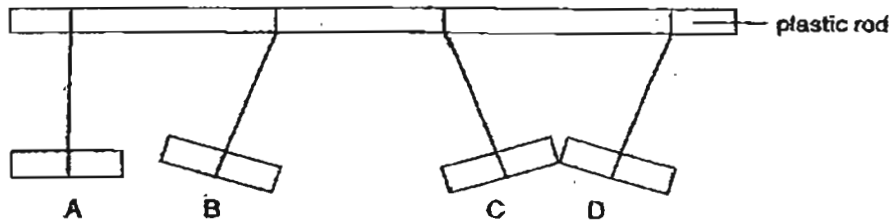
13. Alice placed a magnet near a metal rod as shown in the diagram below.



Which of the following pairs correctly describes her observation and the reason?

	Observation	Reason
(1)	The magnet moves towards the metal rod.	The rod is made of copper.
(2)	The metal rod moves towards the magnet.	The rod is made of iron.
(3)	The magnet moves away from the rod.	The rod is made of aluminium.
(4)	The rod moves away from the magnet.	The rod is made of glass.

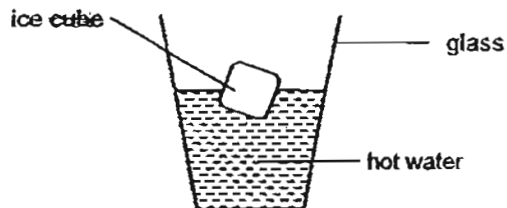
14. Three metal bars, together with a bar magnet, are hung from a plastic rod as shown below. A, B, C and D are equal distance apart from each other.



Which one of the following statements is definitely true?

- (1) Only Bar B is a magnet.
- (2) Only two of the metal bars are magnets.
- (3) None of the four metal bars are magnets.
- (4) Bar A is made of a non-magnetic material.

15. Eugene placed an ice cube into a glass of hot water.



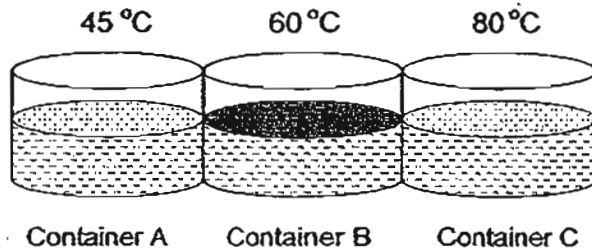
Which one of the following is correct?

- (1) The ice cube loses heat to the hot water.
- (2) The ice cube does not gain or lose heat.
- (3) The hot water loses heat to the ice cube.
- (4) The hot water gains heat from the ice cube.

16. Which one of the following is the best conductor of heat?

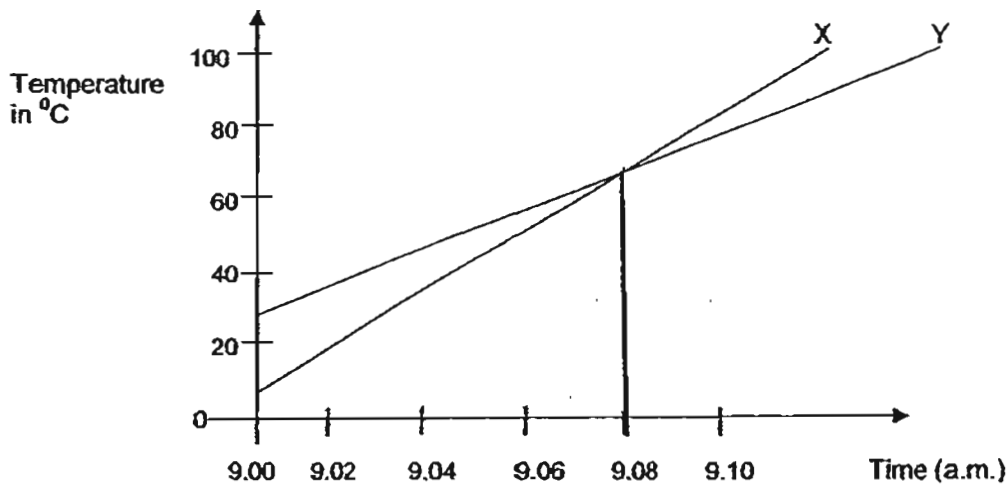
- (1) A metal plate
- (2) A paper plate
- (3) A plastic plate
- (4) A wooden plate

17. The diagram below shows three similar metal containers, A, B and C, each containing 100ml of water at different temperatures. These containers are placed side by side touching each other.



Which of the following statements is true of the above?

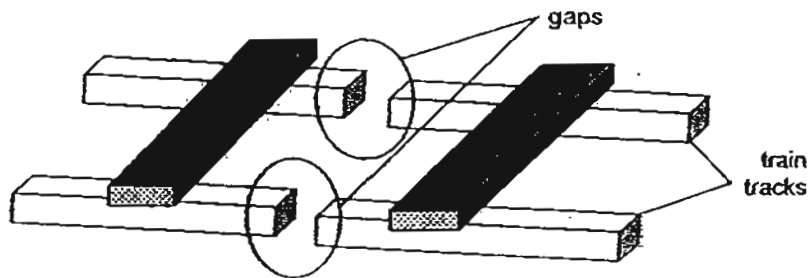
- (1) Heat does not flow throughout the three containers.
 - (2) Heat flows from A to B to C and to the surroundings.
 - (3) Heat flows from C to B to A and to the surroundings.
 - (4) Heat flows from B to A and C and to the surroundings.
18. Wendy heated two identical beakers marked X and Y, which were filled with equal amount of water, at 9 a.m. The graph below shows the changes in the temperature of water in beakers X and Y over a period of time.



Based on the graph above, which of the following statements is/are true?

- A: Beaker X received less heat than Beaker Y.
 B: Both beakers of water reached the same temperature at about 9.08 a.m.
 C: Wendy filled the beakers with water of the same temperature before heating.
- (1) A only
 - (2) B only
 - (3) A and B only
 - (4) B and C only

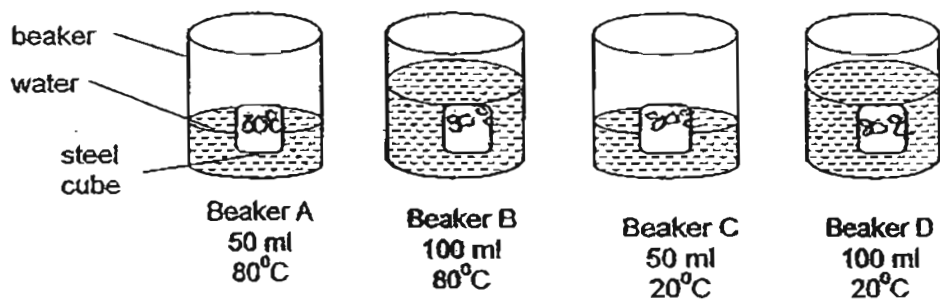
19. Jason works at the Mass Rapid Transit (MRT) station. At the station, he checks the gaps along the train track as shown below.



The gaps on the train track allow _____.

- (1) the expansion of the track on hot days
- (2) the expansion of the track on cold days
- (3) the contraction of the track on hot days
- (4) the contraction of the track on cold days

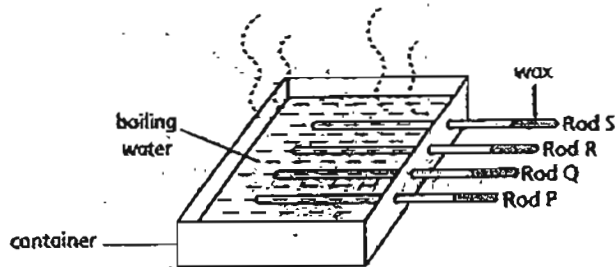
20. Four identical steel cubes were heated to 80°C and then placed into beakers containing different amounts of water at different temperatures as shown in the diagram below.



In which beaker would the greatest rise in temperature of the water occur after 3 minutes?

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

21. Alvis wants to investigate which material is the best conductor of heat. He sets up the experiment as shown below. Four metal rods were heated on one end to melt the drop of wax that was placed on the other end of each metal rod.



The time taken for the drop of wax to completely melt is recorded, as shown in the table below.

Rod	Time taken for the drop of wax to melt completely (s)
P	100
Q	60
R	170
S	220

Based on the results above, what conclusions can he draw from the experiment?

- A: Rod Q is the best conductor of heat.
- B: The four rods conduct heat at different rates.
- C: Rod R is a better conductor of heat than Rod P.
- D: Material for Rod S can be used to make a container to keep hot soup warm for a longer period of time.

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

22. Which one of the following is **NOT** a source of heat?

- (1) The Sun
- (2) A lighted bulb
- (3) A woollen cap
- (4) A candle flame

23. Desmond conducted an experiment to find out if water mixed with sugar solution boils faster than pure water. The table below shows the set-ups he used at the start of the experiment.

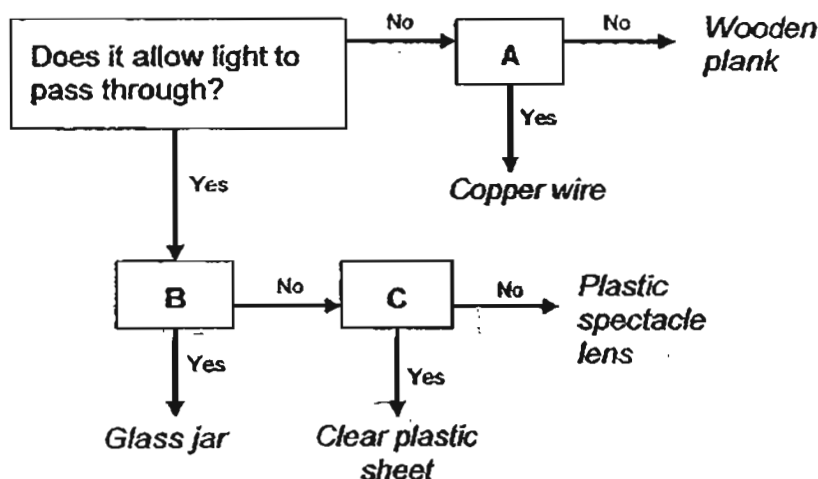
Set-up	Volume of water (cm ³)	Volume of sugar solution (cm ³)	Source of heat
1	100	0	Gas burner
2	90	5	Alcohol burner

His Science teacher commented that the experiment was not a fair one. What could Desmond do to ensure that he conducted a fair test?

- A: Use a gas burner in Set-up 2.
- B: Add 10 cm³ of water to Set-up 2.
- C: Add 5 cm³ of sugar solution to Set-up 1.
- D: Remove 5 cm³ of sugar solution from Set-up 2.

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

24. Study the flowchart below carefully.



Which of the following is the most suitable set of questions represented by A, B and C?

	A	B	C
(1)	Is it a good conductor of heat?	Is it waterproof?	Is it flexible?
(2)	Is it a good conductor of heat?	Does it break easily?	Is it flexible?
(3)	Is it a magnetic material?	Is it waterproof?	Does it break easily?
(4)	Is it a magnetic material?	Does it break easily?	Is it waterproof?

25. Nancy wanted to find out if the temperature difference between 2 beakers of water affects how fast heat is transferred between them.

She mixed the water in Beakers 1 and 2 in each set-up and recorded the final temperature after a fixed period of time. She repeated the experiment with different set-ups.

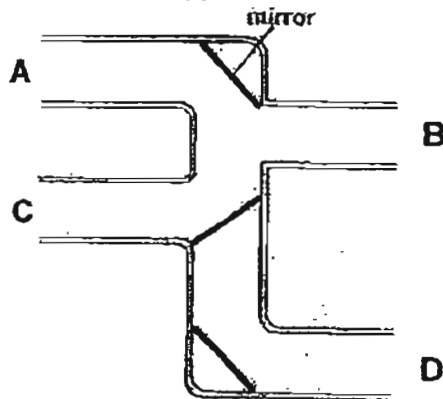
The table below shows the volume and temperature of water for Beakers 1 and 2 for each set-up before mixing.

Set-up	Volume of water before mixing (cm ³)		Temperature of water before mixing (°C)	
	Beaker 1	Beaker 2	Beaker 1	Beaker 2
A	90	90	60	35
B	90	90	100	35
C	40	40	100	35
D	40	40	35	100

Which two set-ups should she use to arrive at a conclusion for her experiment?

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

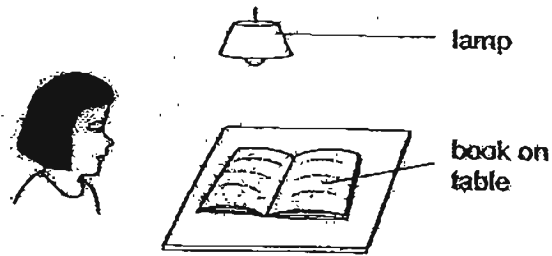
26. The diagram below shows 3 mirrors that were placed inside a connection pipe.



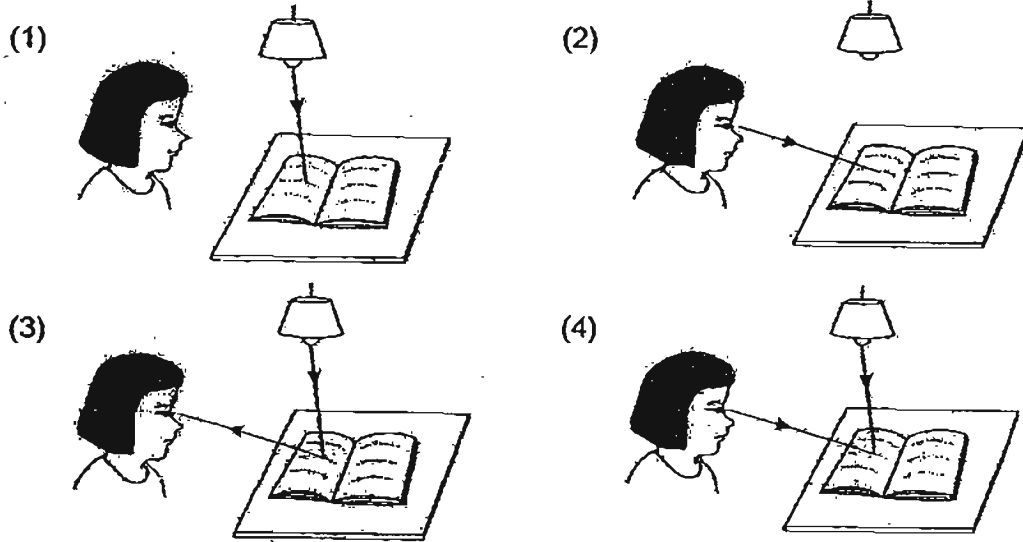
In order to see an object, where should the eye and the object be placed?

	Eye	Object
(1)	A	B
(2)	C	A
(3)	B	D
(4)	D	C

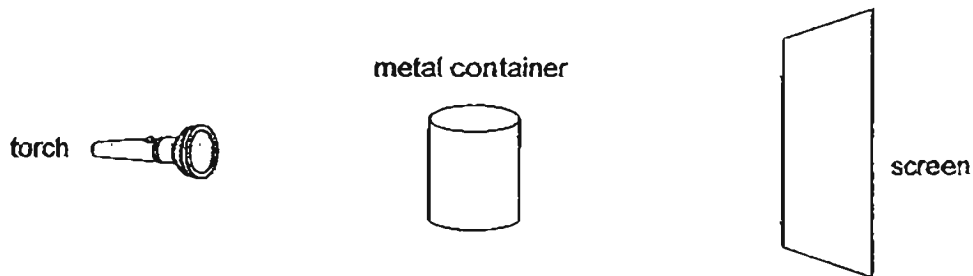
27. Look at the picture below.



Which of the following diagram shows why Sue can see the book on the table?



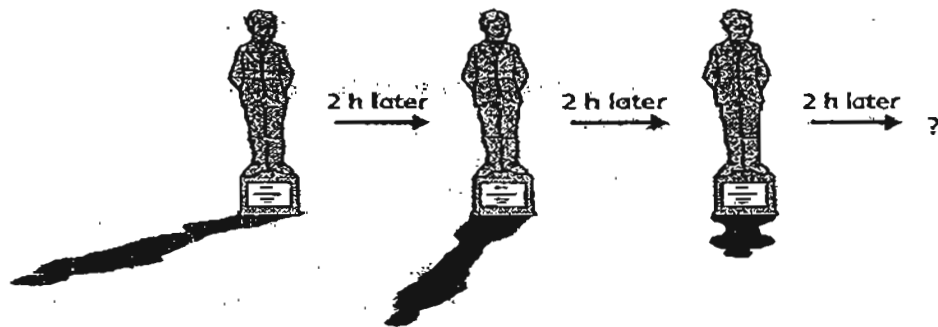
28. Peter shines a torch on the metal container as shown below.



Which of the following shows the shadow of the metal container on the screen?



29. The diagrams below show the shadows of a statue at different times of a clear and sunny day.



What will the shadow of the statue probably look like after another 2 hours?

(1)



(2)



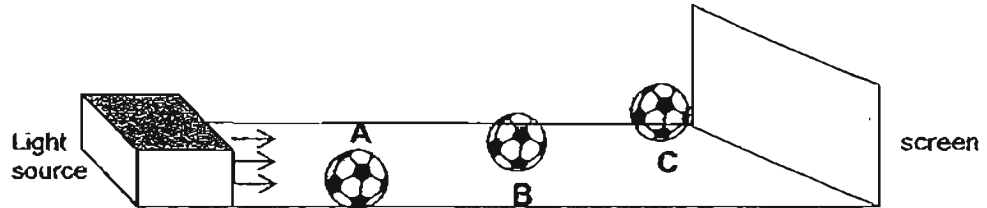
(3)



(4)

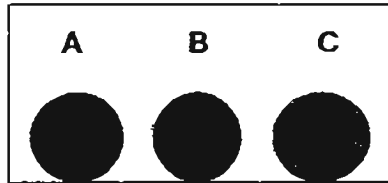


30. The diagram below shows three similar soccer balls, A, B and C, placed at different distances in front of a screen. An even light source was switched on and the shadows of A, B and C were cast on the screen.

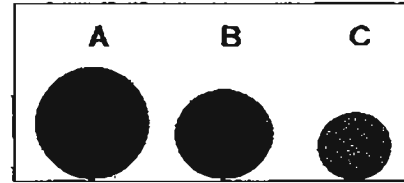


Assuming the soccer balls do not block one another, which one of the following diagrams correctly shows the shadows of the soccer balls A, B and C on the screen?

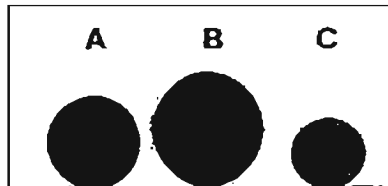
(1)



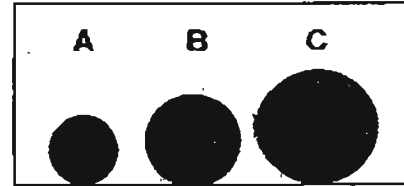
(2)



(3)



(4)



End of Booklet A



MARIS STELLA HIGH SCHOOL (PRIMARY)

SEMESTRAL ASSESSMENT 2

SCIENCE

2 NOVEMBER 2011

BOOKLET B

NAME: _____ ()

CLASS: Primary 4 ()

14 questions

40 marks

Total Time for Booklets A & B: 1 h 30 min

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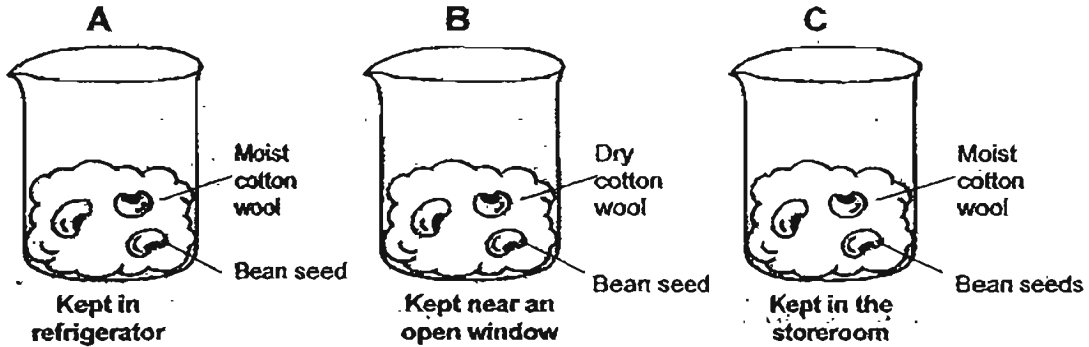
Practical Test: _____ / 40 [20%]
Booklet A: _____ / 60
Booklet B: _____ / 40
Total: _____ / 100 [80%]
GRAND TOTAL: _____ / 100 [100%]

Parent's Signature: _____

PART II

For questions 31 to 44, write your answers in this booklet. The number of mark available is shown in brackets [] at the end of each question or part question. (40 marks)

31. Some seeds were placed in three identical beakers under various conditions as shown.

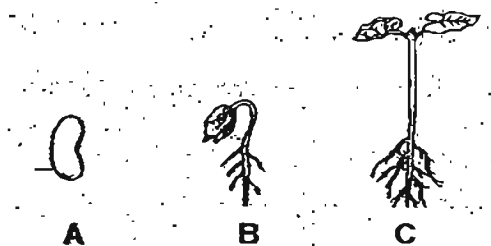


It was observed that only the beans in one of the beakers germinated.

(a) In which beaker did the beans germinate? _____ [1]

(b) State the conditions needed for germination. [1]

(c) The diagram below shows the stages in the life cycle of a plant.



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

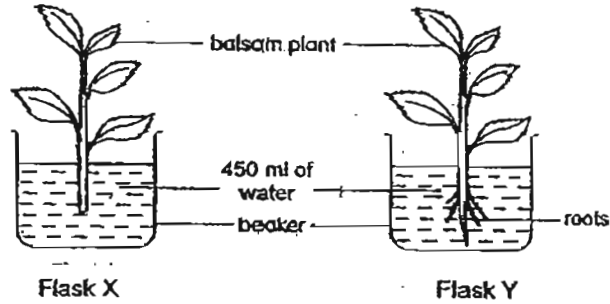
egg	seed	young plant	adult plant
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Name the stages A and B in the life cycle of the plant. [2]

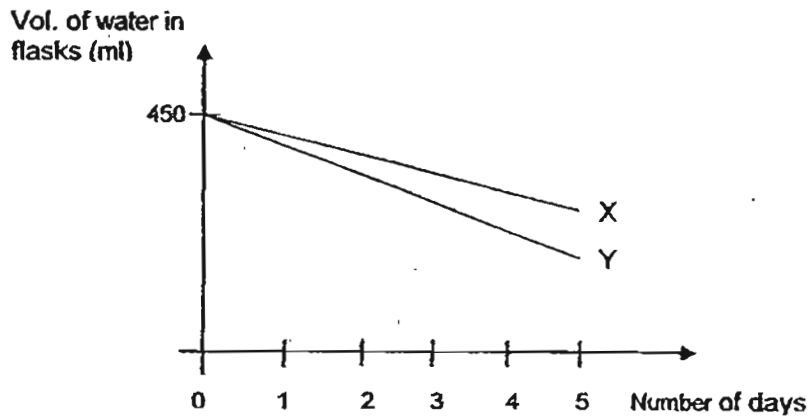
(i) A: _____ (ii) B: _____

	4
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32. Siti set up an experiment as shown below.



Flasks X and Y were left in the open at the same location and the volume of water in each flask was measured at the end of each day. The graph below shows the change in the volume of water in both flasks over a period of 5 days.

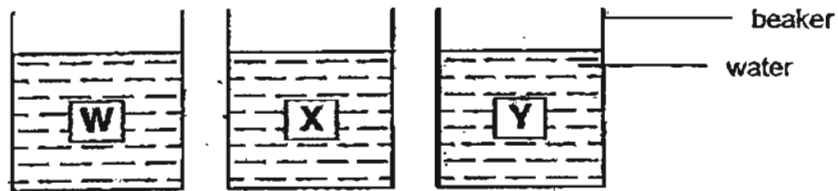


(a) Based on the experimental set-up, what was Siti trying to find out? [1]

(b) From the graph, which flask lost more water? Give a reason why more water was lost. [1]

(c) Siti kept the location and the volume of water in each flask the same at the start of the experiment. Identify another variable she must keep constant in order to have a fair test. [1]

33. Three thin sheets of materials, W, X and Y of similar sizes, were weighed individually before they were put into 3 beakers containing equal amounts of water. After 15 minutes, each sheet was taken out and weighed again.



Their masses were then recorded in the table below.

Material	Mass at the beginning (grams)	Mass after 15 minutes (grams)
W	12	12
X	13	15
Y	7	12

(a) Arrange the Materials W, X and Y beginning with the most absorbent to the least absorbent.

[1]

(b) Which material (W, X or Y) would be most suitable for a bath towel? Give a reason for your choice.

[1]

34. The following are some activities that take place in the human digestive system.

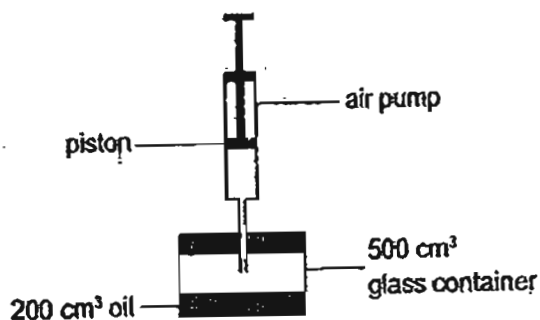
- A: Digested food pass into the bloodstream.
- B: The stomach mixes the food.
- C: Food moves down the gullet.
- D: Saliva mixes with food.
- E: Food is rolled into small balls.

Write the correct sequence in the boxes below.

[2]



35. Study the diagram below.



A 500 cm³ glass container is filled with 200 cm³ of oil.

It is observed that each time the piston is pushed down, 400 cm³ of air is forced into the glass container.

(a) What will the volume of air in the glass container be if the piston is pushed down once?

[1]

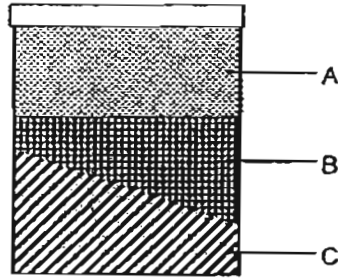
_____ cm³

(b) Explain your answer in part (a).

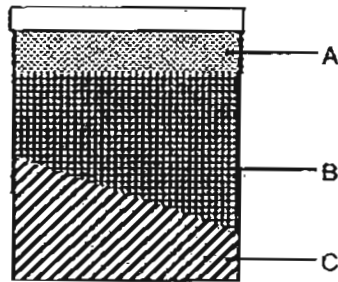
[2]

	5
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36. The container shown below contains three substances A, B and C.



When more of substance B is added into the container, the levels of substances A, B and C change, as shown below.



(a) Identify the states of substances A and C.

[2]

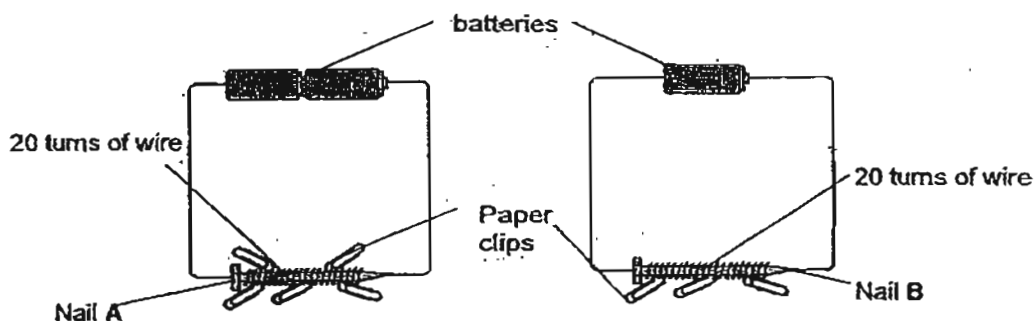
(i) A: _____

(ii) C: _____

(b) Explain your answer in part (a).

[2]

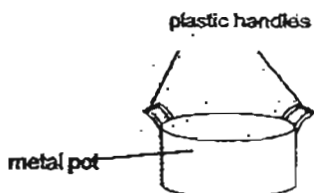
37. Nigel set up the circuits below to magnetise 2 identical iron nails A and B. He brought both nails near an equal number of paper clips and made the following observation.



(a) Based on his observation, which nail (A or B) has become a temporary magnet with a stronger magnetic force? Explain your answer. [2]

(b) What will happen to the paper clips when no electricity is flowing through the circuit? Give a reason for your answer. [2]

38. Hashim boiled some water in the pot shown below.

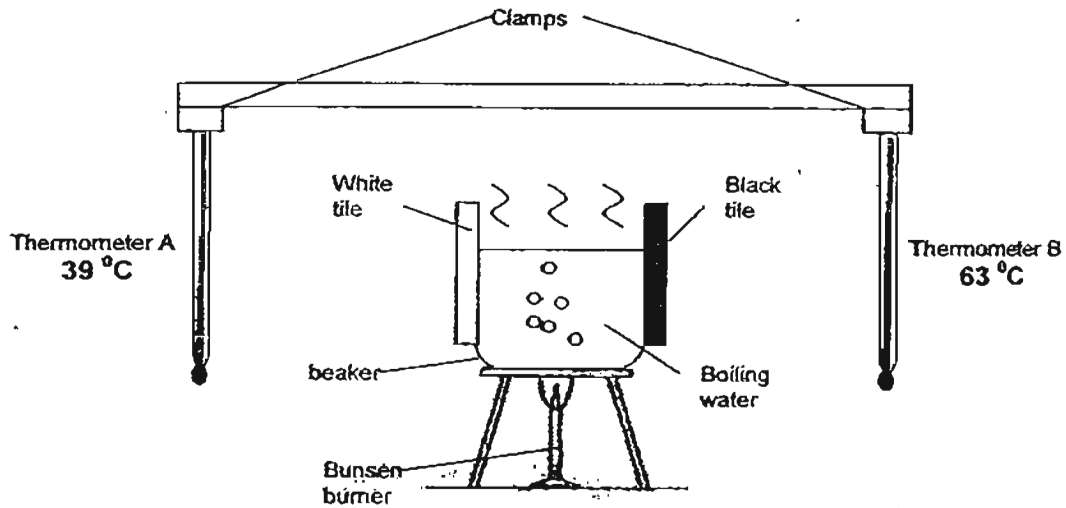


(a) The handles are made of plastic because it is a _____ conductor of heat. [1]

(b) The pot is made of metal because it is a _____ conductor of heat. [1]

	6
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39. Jenny conducted a fair experiment as shown below. Both thermometers are placed at equal distances from the container of boiling water. The temperatures recorded by the thermometers 10 minutes after the start of the experiment are shown below.



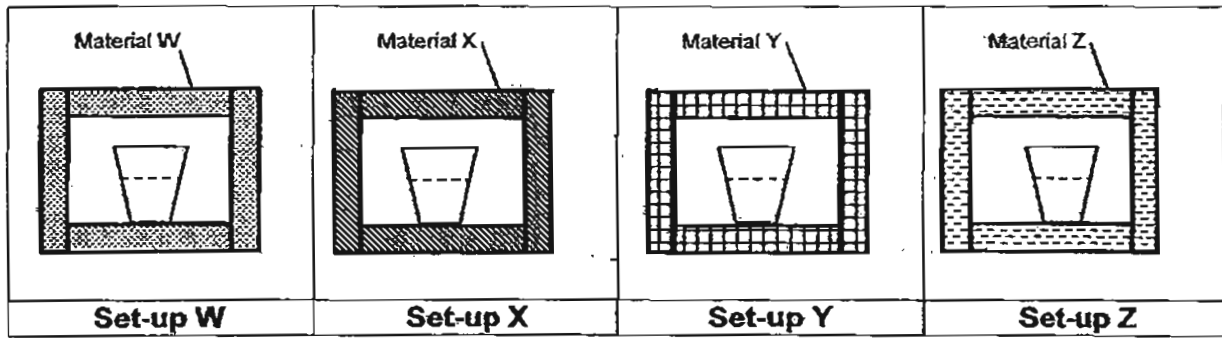
(a) Based on the diagram above, identify the following in the experiment. [2]

(i) Changed variable : _____

(ii) Responding variable : _____

(b) What can Jenny conclude about the transfer of heat based on this experiment? [1]

40. Linda conducted an experiment using four containers made of different materials W, X, Y and Z as shown below.



She placed four identical cups containing cold water at 4°C in the containers. After 10 minutes, she recorded the temperature of the water in each cup. The results are given below.

Material	Temperature of Water ($^{\circ}\text{C}$)	
	At start of experiment	At the end of experiment
W	4.0	20.0
X	4.0	5.5
Y	4.0	15.0
Z	4.0	8.0

(a) State two important variables that Linda must keep constant in order for the experiment to be a fair one. [2]

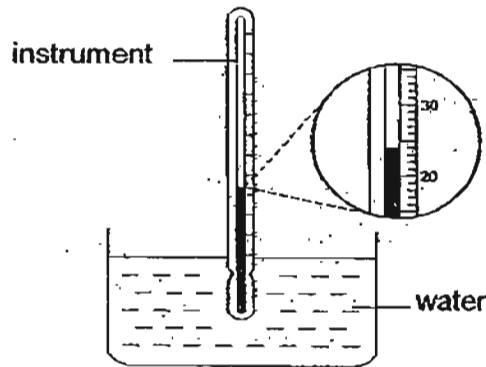
(i) _____

(ii) _____

(b) What is the aim of Linda's experiment? [1]

(c) Linda wants to hold a cup filled with hot coffee in her hand. Which one of the materials W, X, Y or Z should the cup be made of? Give a reason for your choice. [1]

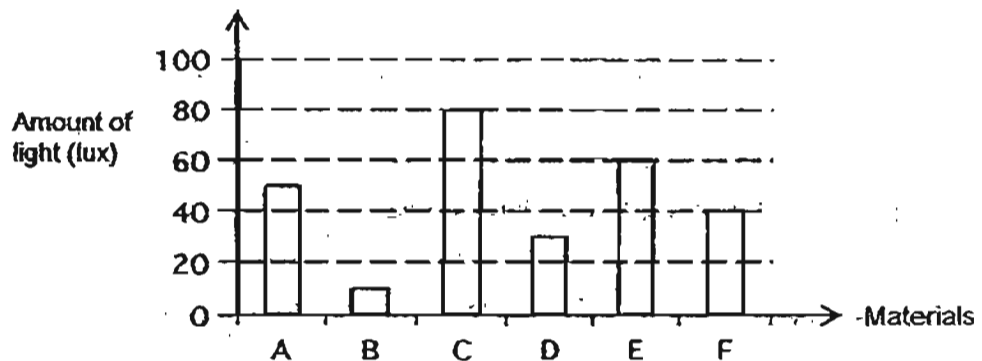
41. Jane used an instrument to measure the temperature of water in a glass.



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

(b) What is the temperature of the water in the glass? _____ °C [1]

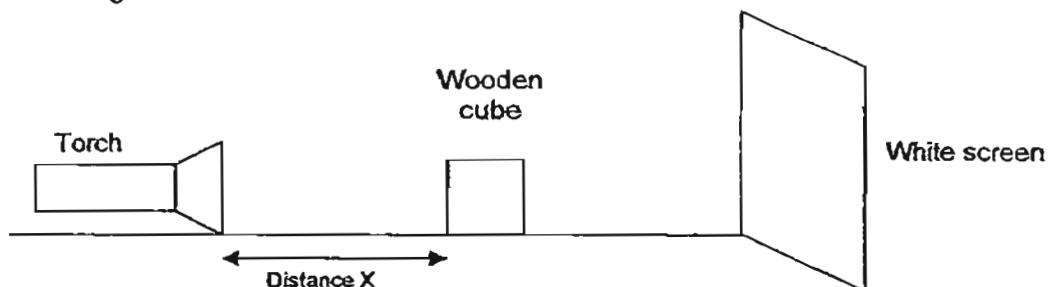
42. Jun Jie connected a light sensor to a data logger and carried out an experiment to measure the amount of light that can pass through six different materials. He plotted the results on the bar chart as shown below.



Based on the results in the given bar chart, read the statements in the table below and tick (✓) in the appropriate boxes. [3]

Statements	True	False	Not possible to tell
(a) Material C is opaque.			
(b) Material D is a mirror.			
(c) Material F is able to block light partially.			
(d) Material C forms a lighter shadow than Material F.			
(e) Material B is darker in colour than Material D.			
(f) Material A allows more light to pass through than Material E.			

43. Rozi conducted an experiment using a torch, a wooden cube and a white screen. Her set-up is shown in the diagram below.



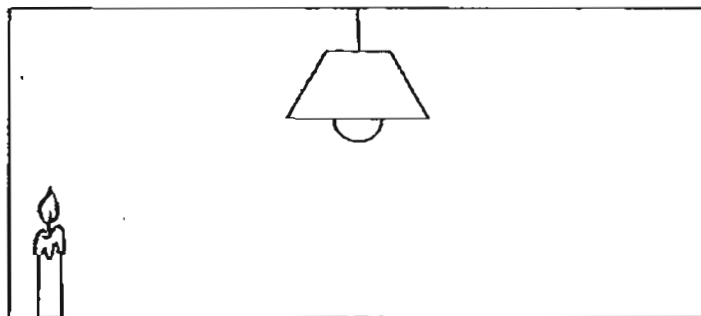
She then changed the distance between the torch and the wooden cube to find out its effects on the shadow formed on the screen. Her findings are then recorded in the table shown below.

Distance X (cm)	Height of the shadow formed on the screen (cm)
10	30
20	24
30	18
40	12

(a) Based on the table given, what is the relationship between Distance X and the height of the shadow formed on the screen? [1]

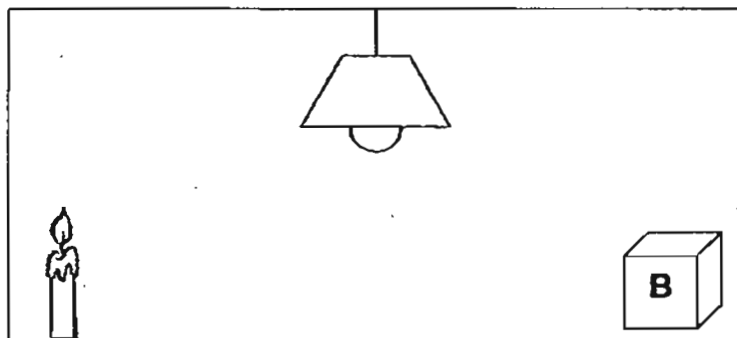
(b) Estimate the distance between the torch and the wooden cube when the height of the shadow is 15cm. [1]

44. Raju sees **only** a candle flame at a corner when he enters a completely dark room.



(a) Raju can see the candle flame because it _____ light. [1]

When he switches on the light in the room, he sees **both** the candle flame and object B.



(b) Raju can see object B because it _____ light from the lamp. [1]



ANSWER SHEET

EXAM PAPER 2011

**SCHOOL : MARIS STELLA
SUBJECT : PRIMARY 4 SCIENCE**

TERM. : SA2



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

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

31)a)C.

- b)Air , warmth and water.
- c)i)seed ii)young plant

32)a)She try to find whether plants with roots affects the amount of water.

- b)Flask Y .lost more water. Flask Y have a plant which have roots and it will absorb more water than the plant in Flask X.
- c)The type of plant.

33)a)Y, X, W

- b)Material Y. It is able to absorb the most amount of water.

34)D→E→C→B→A

35)a)300cm³

- b)Oil has a definite volume. Since it has taken up 200cm³ of fixed space the air that is forced down from the piston takes up the remaining volume of 300cm³ because air does not have a definite volume.

36)a)i)Gaseous ii)solid

- b)When substance B is added into the container, it occupy the space that was previously occupied by A. Since A does not have a definite is in gaseous state. Substance C is a solid as it has a definite volume.

37)a)It attracts more paper clips than Nail B as it has more batteries.

- b)The paperclips will drop off without electricity the iron nails lose magnetism and cannot attract the paperclips.

38)a)poor.

- b)good.

39)a)i)The colour of the tiles.

ii)Temperature reading of the thermometers.

b)The black tile is a good conductor of heat and absorb heat faster than the white tile.

40)a)i)The amount of water.

ii)The size of container.

b)It is to compare the rate at which each material conducts heat.

c)The cup should be made of material X. Material X conduct heat most slowly compared with the other materials.

41)a)thermometer.

b)24°C

42)a)F b)F c)T d)T e)Not f)F

43)a)As Distance X increases, the height of the shadow formed on the screen decreases.

b)The distance between the torch and the wooden cube is 35cm.

44)a)gives off

b)reflect