



SOUTH AFRICAN AGENCY FOR SCIENCE AND TECHNOLOGY ADVANCEMENT
14th NATURAL SCIENCE OLYMPIAD 2025
GRADES 4 - 6
INSTRUCTIONS

Please read the instructions carefully before answering the questions

This is a multiple-choice paper. Please answer all the questions on the answer sheet provided. Each question is followed by answers marked A, B, C, and D. Only one answer is correct. Choose the correct answer and **shade** the corresponding circle on the answer sheet completely, using an **HB pencil**.

NB! The answer sheets are marked electronically – do not make any other dots or marks on the answer sheet. Select only one answer for each question or your answer will be discarded. **Ensure that you shade your selection clearly.**

Note that the question numbers on the answer sheet moves from **top to bottom** in several columns. Ensure that the number of your selection on the answer sheet corresponds with the number of the question in your examination paper. Should you make a mistake, please erase the incorrect answer completely

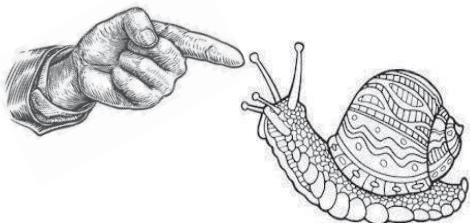
The use of non-programmable electronic calculators is permitted.

To avoid disqualification - You are required to complete **all** the information requested on the answer sheet. Please complete the information in script, as well as **shade the corresponding blocks**. If the corresponding blocks are not shaded appropriately, your results will be returned without a name, and you will be disqualified. Do not fold the answer sheets.

Two hours are allowed to answer the questions

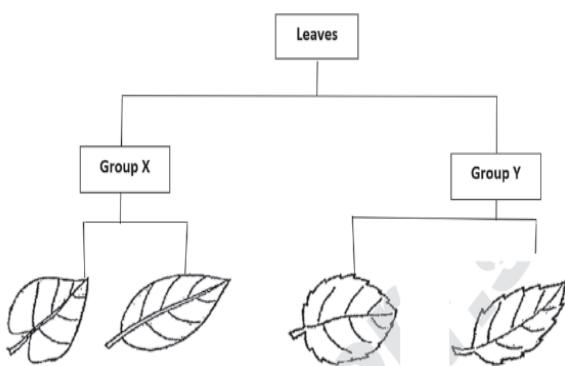
1. Sipho saw a snail crawling on the ground. He touched it gently and observed that the snail moved into its shell immediately.

What does this tell you about living things?



- A. Living things grow.
- B. Living things reproduce.
- C. Living things respond to changes.
- D. Living things need food, air and water.

2. Study the classification below:



Which one of the following best describes Group X?

- A. Oval-shaped
- B. Heart-shaped
- C. Smooth-edge
- D. Jagged -edge

3. The diagram below shows two leaves, X and Y.



Leaf X



Leaf Y

The two leaves differ in their ...

- 1. size
- 2. shape
- 3. vein pattern
- 4. type of edge

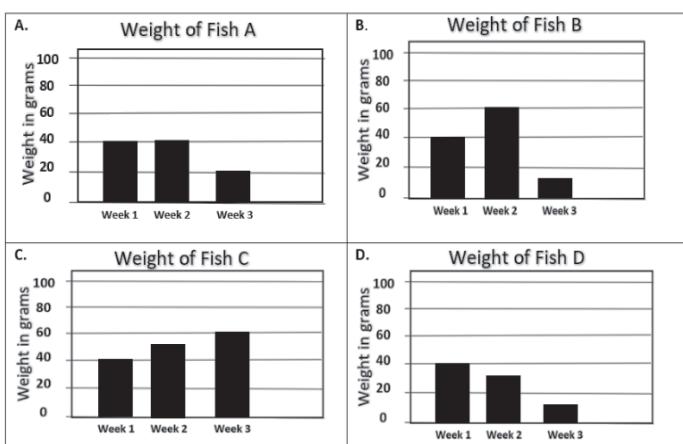
Which one of the following combinations best represents the differences between the two leaves?

- A. 1 and 2
- B. 3 and 4
- C. 1; 2 and 4
- D. 1; 2; 3; and 4

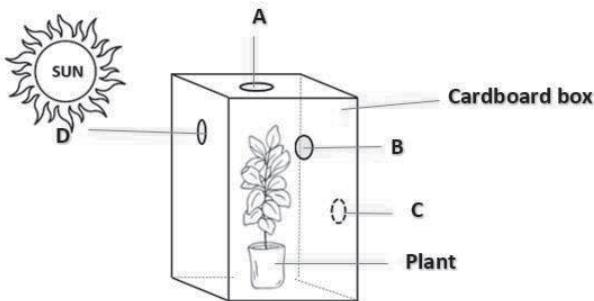
4. Thembi was in a very crowded park. She noticed that there were birds chirping nearby. **Which one of the following combinations of senses did Thembi use?**

- A. smell and sight
- B. sight and touch
- C. sight and hearing
- D. smell and hearing

5. Sipho had four tanks of water. He placed one fish in each tank. The fish were of the same type and similar size. The conditions in the tanks were the same. He fed the fish with different amounts of food. Over the next three weeks, Sipho recorded the weight of the fish in the graphs below. **Which one of the following graphs best represents the fish which has most likely been given the correct amount of food?**



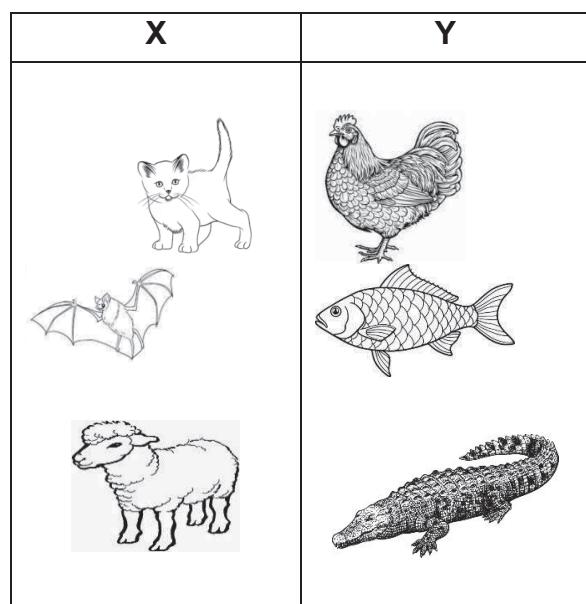
6. A young plant was placed in a thick cardboard box as shown below. Four holes A; B; C and D were made on the sides of the box for light to enter.



Which one of the holes would the plant most likely grow towards?

- A. Hole A
- B. Hole B
- C. Hole C
- D. Hole D

7. Study the diagram below carefully:



The animals have been grouped according to ...?

- A. the food they eat.
- B. the way they move.
- C. their body covering.
- D. how they reproduce.

8. Study the cut tree trunks below.

Trunk 1



Trunk 2



Trunk 3



Trunk 4



Which trunk represents the youngest tree?

- A. Trunk 1
- B. Trunk 2
- C. Trunk 3
- D. Trunk 4

9. The picture below was taken off the coast of South Africa, where orcas attack great white sharks and maiming them.



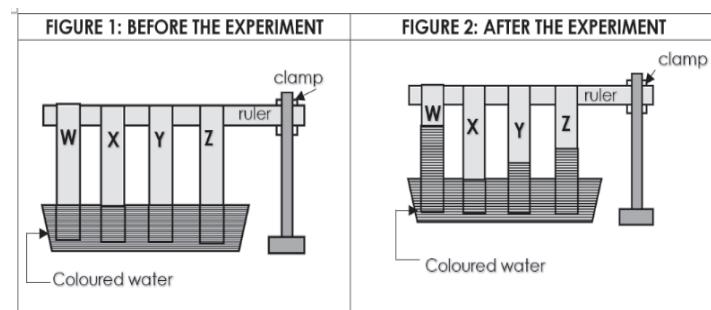
In the picture, the shark is portrayed as a ...?

- A. Carnivore
- B. Herbivore
- C. Prey
- D. Apex Predator

10. During photosynthesis, plants produce their own food using Carbon dioxide gas; sunlight, water and minerals. In your opinion, where would this process take place mostly?

- A. The desert
- B. An island
- C. The ocean
- D. The Savana

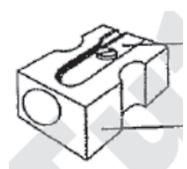
11. The set-up below is used to find out which material, W, X, Y or Z, absorbs water the fastest.



Based on the observations in figure 2, which one of the materials (W, X, Y, Z) is most suitable for making baby diapers?

- A. W
- B. X
- C. Y
- D. Z

12. The picture below shows a pencil sharpener.

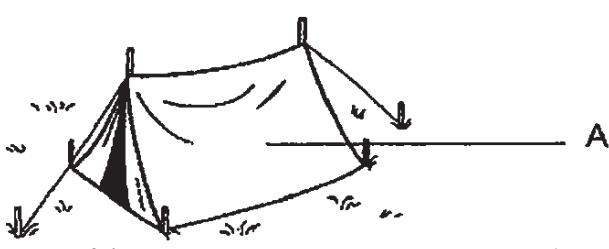


Which one of the following combinations would most likely represent the material that parts A and B are made of?

	A	B
A	Wood	Rubber
B	Paper	Metal
C	Plastic	Metal
D	Rubber	Plastic

13. Sethu conducted an experiment using materials W, X, Y and Z. She recorded her results in the table below.

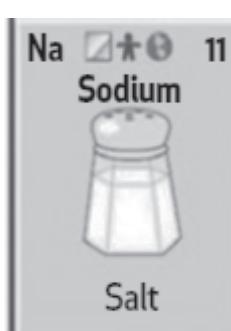
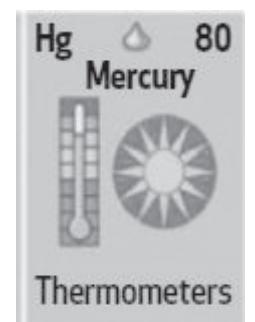
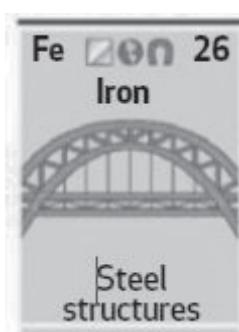
Materials \ Property	W	X	Y	Z
Strong	Yes	Yes	No	Yes
Flexible	No	Yes	No	Yes
Waterproof	Yes	Yes	Yes	No
Transparent	No	No	Yes	No



Which one of the materials is most suitable to make part A of the tent?

- A. W
- B. X
- C. Y
- D. Z

14. Study the elements of the periodic table and answer the questions that follow:



Which one of the elements readily dissolves in water?

- A. H
- B. Fe
- C. Hg
- D. Na

15. Which one of the following elements reacts with water and air and changes to a reddish substrate?

- A. H
- B. Fe
- C. Hg
- D. Na

16. Which metal is a liquid at room temperature?

- A. Al
- B. Fe
- C. Hg
- D. Na

17. The table below shows some properties of materials Q, R, S and T.

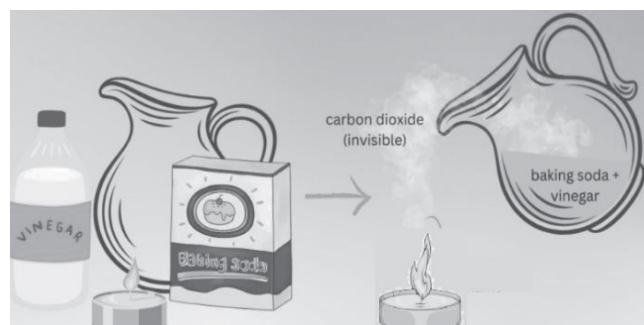
Material	Properties
Q	Allow light to pass through it.
R	Does not allow light to pass through.
S	Not waterproof.
T	Breaks easily.

Based on the above properties, which material is most suitable for making part X in the picture below?



- A. Q
- B. R
- C. S
- D. T

18. Sihle mixes bicarbonate of soda with vinegar in a glass. The mixture bubbles and creates foam. Sihle pours the gas that forms over a burning candle.



What do you expect to happen?

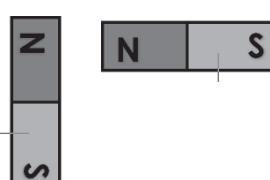
- A. The flame will grow bigger.
- B. The flame will dim.
- C. The flame will die.
- D. Nothing happens.

19. In which one of the following diagrams will the magnets push each other away?

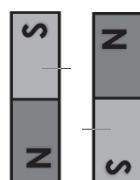
A



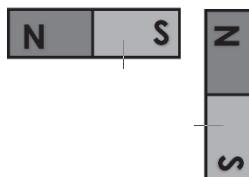
B



C

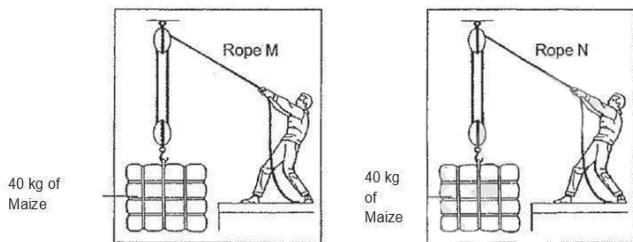


D.



20. Siphiwe conducted an experiment using two ropes, M and N, that were made from different materials. A total of 40 kg of maize was hung from the two ropes as shown in the diagrams below.

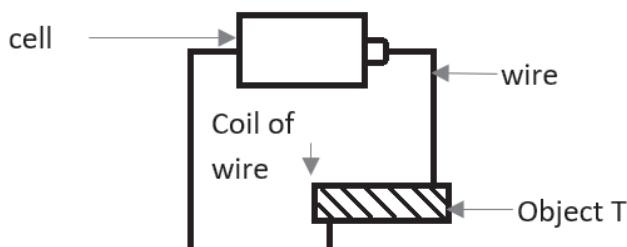
When Siphiwe tried to lift the maize, Rope N snapped while Rope M was still able to hold the bag of maize.



Based on the above experiment, which one of the following statements is correct?

- A. Rope M is longer than Rope N.
- B. Rope M is thinner than Rope N.
- C. Rope M is made of stronger material than Rope N.
- D. Rope M is more flexible than Rope N.

21. Sipho must create an electromagnet as a school project. He placed object-T in a coil of wire connected to a circuit consisting of one cell as shown in the diagram below. Object-T did not become an electromagnet.



The following are possible reasons why Object-T did not become an electromagnet.

- 1. Object-T was made of iron.
- 2. Object-T was made of aluminum.
- 3. The number of cells is not enough.
- 4. The number of turns the wire was coiled around Object-T was too much.

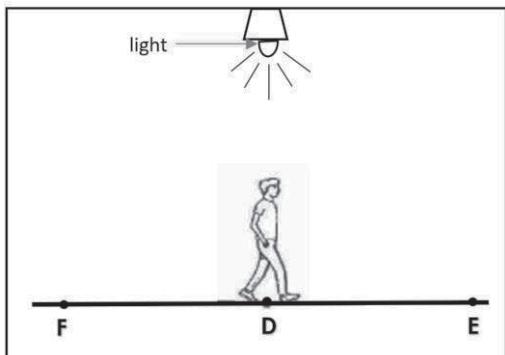
Select the one of the following combinations that best represent possible reasons for the failure of the above experiment.

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

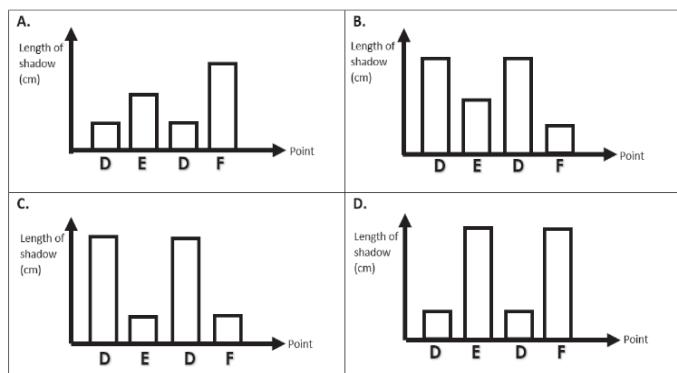
22. Which one of the following does not form part of fossil fuels?

- A. water
- B. gas
- C. coal
- D. petrol

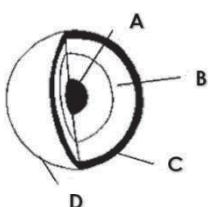
23. Oniwe walked in a straight line from point D to E, and back to F. The distance between points D and E is the same as the distance between D and F.



Based on the diagram above, which one of the following bar graphs shows how the length of his shadow would change during his walk?

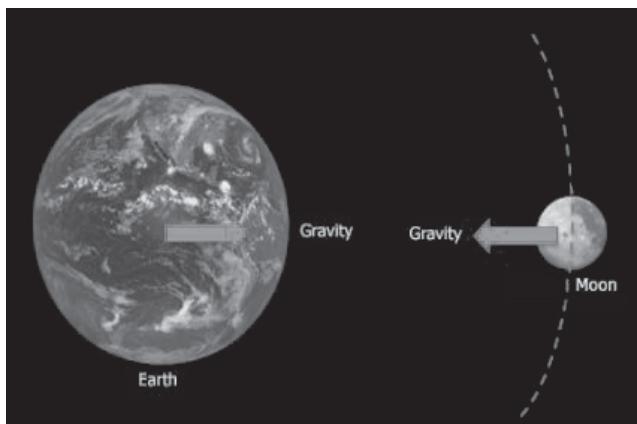


24. In the figure below, which area marks the crust of the earth?



- A. D
- B. C
- C. B
- D. A

25. Which event is caused by the gravitational pull of the Moon on Earth?



- A. Earthquakes
- B. Night and Day
- C. Tides
- D. Seasons

26. Which property of the planet, identified in question 25 above, has the greatest effect on the orbit of asteroids?

- A. The shape of the planet's orbit.
- B. The planet's distance from the sun.
- C. The mass of the planet.
- D. The size of the planet's orbit.

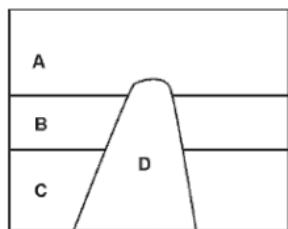
27. Where is our solar system situated in space?

- A. Beetlejuice
- B. The Milky Way Galaxy
- C. Alpha Centauri
- D. Proxima Centauri

28. What type of fossil is a mosquito trapped in tree-sap?

- A. Mold fossil
- B. Amber fossil
- C. Trace Fossil
- D. Cast Fossil

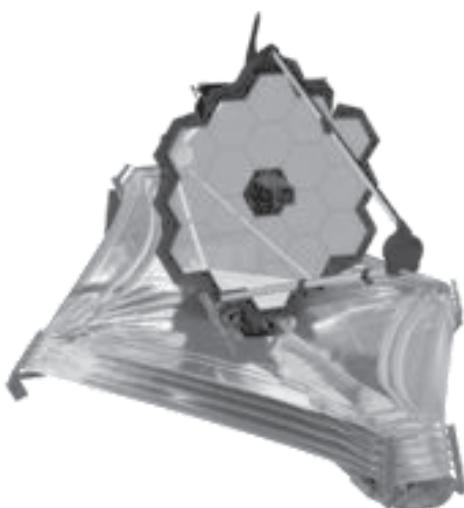
29. Rocks A, B and C are layers of sedimentary rocks. Rock D is a rock intrusion. **Use the diagram to deduce which one of the following statements is a true representation of the age of the rocks.**



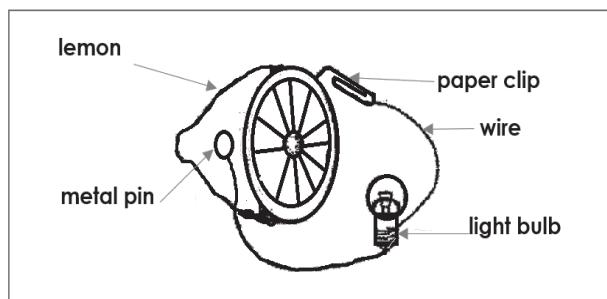
- A. C is the oldest; D is the youngest.
- B. D is the oldest; A is the youngest.
- C. B is the oldest; D is the youngest.
- D. A is the oldest; C is the youngest.

30. **What is currently the largest telescope in space that examines the formation of galaxies, stars and planets in our solar system?**

- A. The Hubble Space Telescope
- B. The James Web Space Telescope
- C. Broad Band X-ray Telescope / Astro 1
- D. Extreme Ultraviolet Explorer (EUVE)



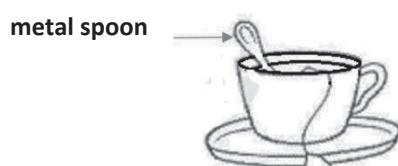
31. The diagram below shows an electrical system made of different objects.



Which one of the following is the energy source of the electrical system above?

- A. lemon
- B. metal pin
- C. light bulb
- D. paper clip

32. Sipho places a metal spoon into a cup of hot coffee.



Cup with hot coffee.

The spoon becomes hot after a while. **Which one of the following explains this phenomenon?**

- A. The cup loses heat to the hot coffee.
- B. The spoon loses heat to the hot coffee.
- C. The spoon gains heat from the hot coffee.
- D. The hot coffee gains heat from the spoon.

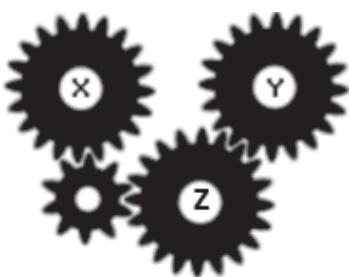
33. The accompanying diagram shows a wind turbine.

Which one of the following is true about the wind turbine?

- A. Wind energy is non-renewable.
- B. Electricity can be produced without wind.
- C. More electricity is produced when the wind is stronger.
- D. Potential energy in the wind is converted to kinetic energy in the blades.



34. In which direction do gears X and Z turn when gear Y turns in a clockwise direction?



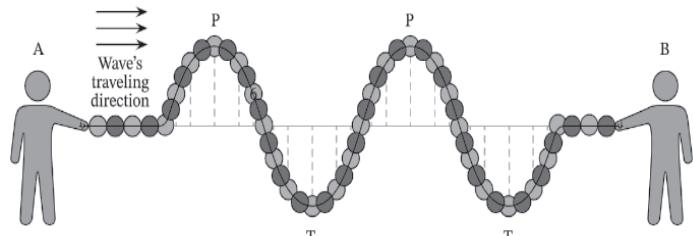
- A. X turns clockwise and Z turns anti-clockwise.
- B. Both X and Z turns clockwise.
- C. X turns anti-clockwise and Z turns clockwise.
- D. Both X and Z turns anti-clockwise.

35. Thembi was cooking eggs for breakfast. She left the kitchen for a minute and returned to a pan in flames. **What should she do to ensure safety is maintained?**



- A. Put the lid on the pan to deprive the fire from oxygen.
- B. Throw water in the pan, to get rid of the flames.
- C. Add more oil, to stop the burning.
- D. Throw sand on the flames to stop the burning.

36. What is the term that is used to describe the rate of the vibration of sound traveling through the air?



- A. wavelength
- B. amplitude
- C. sound wave
- D. frequency

37. Which one of the following is true about the energy from the sun?

- A. It arrives as mechanical energy in a wide range of wavelengths.
- B. It arrives as radiation in a wide variety of wavelengths.
- C. It arrives as sound energy made up of only sound waves.
- D. It arrives as radiation made up of only visible light.

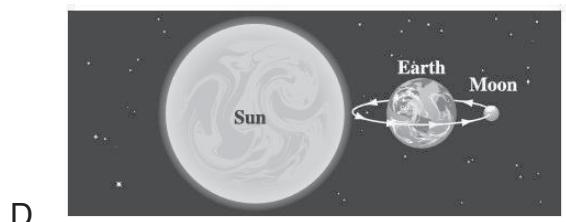
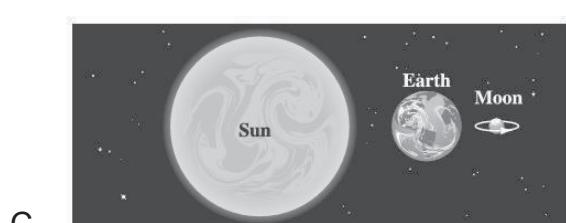
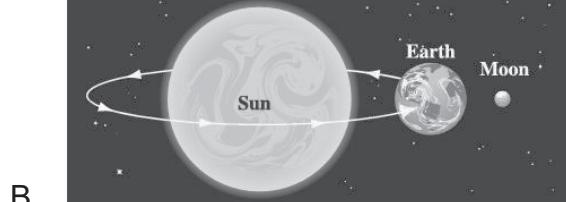
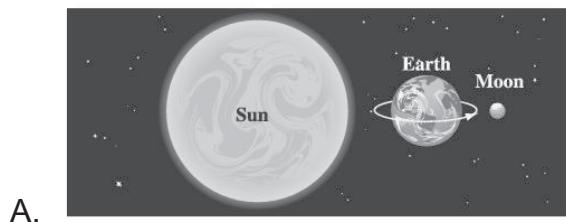
38. Neil Armstrong was the first person to set foot on the moon. Part of his mission was to take as many photos as he could during his brief stay on the moon. For how long did he explore the moon by means of walking on the surface of the moon?

- A. 30 days and 3 hours
- B. 10 days and 5 hours
- C. 5 hours and 20 minutes
- D. 2 hours and 36 minutes

39. Which one of the following statements describes the current model of the solar system?

- A. The Sun orbits planets and the Moon orbits Earth.
- B. The Sun orbits planets and Earth orbits the Moon.
- C. Planets orbit the Sun and the Moon orbits Earth.
- D. Planets orbit the Sun and Earth orbits the Moon.

40. Which one of the following diagrams represents one year on Earth?



41. What is the correct order for the levels of classification of animals?

- A. class, kingdom, order, phylum, genus, species, family
- B. kingdom, phylum, class, order, family, genus, species
- C. kingdom, phylum, species, family, genus, order, class
- D. class, order, family, kingdom, genus, species, phylum

42. Why is watering plants and grass in the early morning a way to conserve water?

- A. Water used in the morning can be recycled.
- B. It costs less to use water in the morning.
- C. There is always more water available in the morning.
- D. Smaller amounts of water evaporate in the cool morning.

43. How long does it take the leaves of “the sensitive” plant shown in the figure below to fold up after the leaves have been touched?



The Sensitive Plant

- A. About an hour
- B. 4 - 5 seconds
- C. About 24 hours
- D. About 48 hours

44. The average human tongue has approximately ... taste buds.

- A. 100
- B. 1 000
- C. 10 000
- D. 100 000

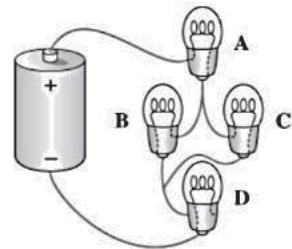
45. At what age do we usually start to get permanent teeth?

- A. Eleven years
- B. Sixteen years
- C. Two years
- D. Six years

46. Choose the correct statement:

- A. Sound produced by a drum is always the same as the sound produced by a whistle.
- B. Sound produced by a whistle is always louder than the sound produced by a drum.
- C. Sound produced by a drum has a higher amplitude than the sound produced by a whistle.
- D. Sound produced by a drum has a lower amplitude than the sound produced by a whistle.

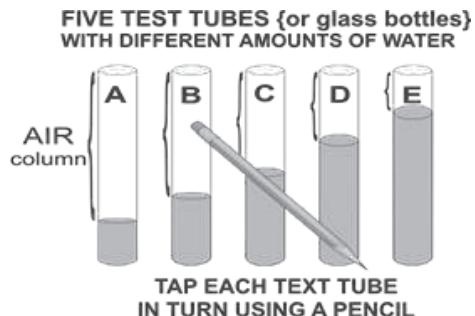
47. Four similar bulbs are connected in an electrical circuit as indicated in the diagram.



Which one of the following statements is TRUE when considering the brightness of bulbs, A, B, C and D?

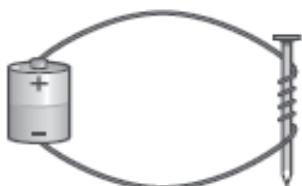
- A. Bulbs A, B, C and D burn with the same brightness.
- B. Bulb A burns brighter than bulb B, bulb B burns with the same brightness as bulb C and bulb C burns brighter than bulb D.
- C. Bulb A and D burn with the same brightness, but burn more brightly than bulbs B and C.
- D. Bulb A burns brighter than bulb B, C and D.

48. Which of the test tubes will have the highest pitched sound and which will have the lowest pitched sound when tapped with the pencil?



A. A will be highest and E will be lowest.
 B. A will be lowest and E will be highest.
 C. B will be highest, and D will be lowest.
 D. They will all sound the same as C.

49. Students made an electromagnet by wrapping a piece of insulated wire in loops around an iron nail and attached the wire to a cell as shown in the figure below.



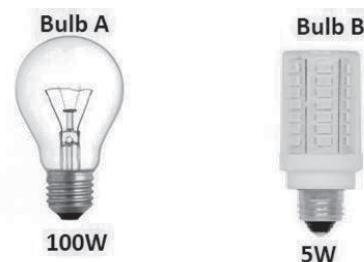
The students then conducted an experiment to learn how the number of wire loops affected the number of paper clips that can be picked up by the electromagnet. The table below shows the results of the experiment.

No of wire loops	No of paper clips picked up by the electromagnet
5	1
15	3
25	5
40	9

Based on the results in the table, which one of the following statements is the best conclusion that can be made from the student's experiment?

- A. Adding more wire loops makes an electromagnet weaker.
- B. Adding more wire loops makes an electromagnet stronger.
- C. Adding more wire loops makes an electromagnet use more electricity.
- D. Adding more wire loops makes an electromagnet pick up less paper clips.

50. Compare the monthly cost of using bulb A with that of using bulb B. Both bulbs will be used for a period of 120 hours per month at a cost of R2,00 per kWh.

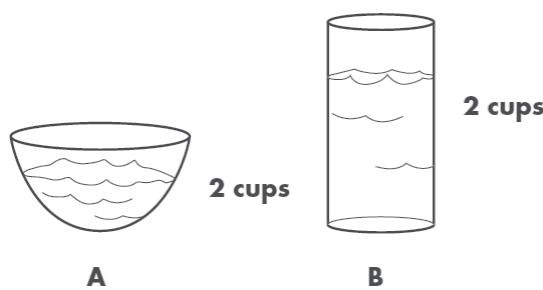


- A. Monthly cost of using bulb A is R2400.00 and that of bulb B is R1200.00
- B. Monthly cost of using bulb A is R240.00 and that of bulb B is R12.00
- C. Monthly cost of using bulb A is R24.00 and that of bulb B is R1.20
- D. Monthly cost of using bulb A and B is the same

51. Which combination of terms is correct when considering a mixture of sugar and distilled water?

- A. Sugar is the solvent, water is the solute, and the mixture of sugar and water is the solution.
- B. Sugar is the solute, water is the solution, and the mixture of sugar and water is the solvent.
- C. Sugar is the solvent, water is the solution, and the mixture of sugar and water is the solute.
- D. Sugar is the solute, water is the solvent, and the mixture of sugar and water is the solution.

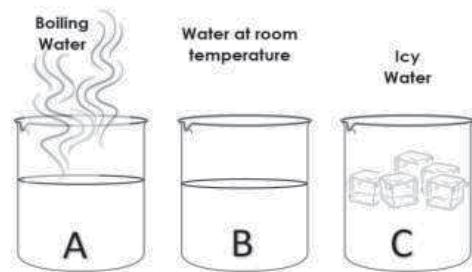
52. Each of the open containers shown in the figure below contain two cups of water.



Predict what will happen to the amount of water after two days have passed.

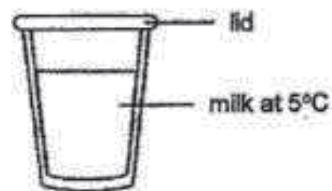
- A. The same amount of water will be left in both cups.
- B. B will contain more water.
- C. A will contain more water.
- D. Both cups will still contain two cups of water.

53. In which beaker will the most solute dissolve to form a saturated solution?

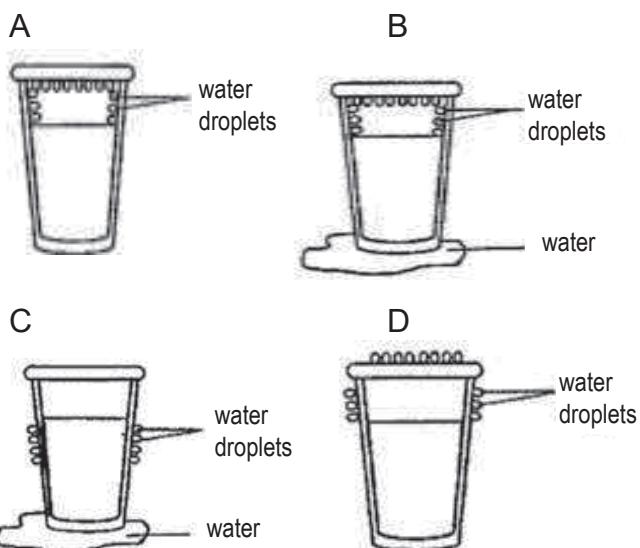


- A. A
- B. B
- C. C
- D. All the above

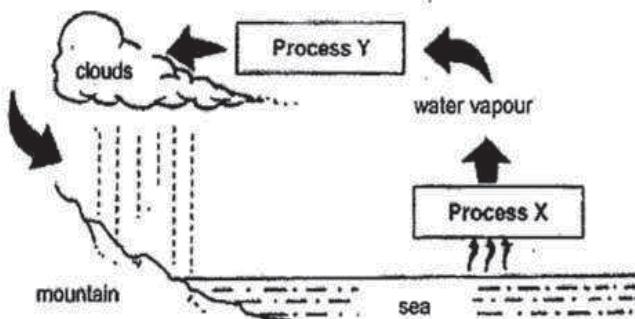
54. Lizo placed a glass of cold milk with a lid on a table in the kitchen at room temperature.



Which one of the following would he observe in the next 20 minutes?



55. The diagram below represents part of the water cycle.



Which of the following processes correctly represents X and Y?

	PROCESS X	PROCESS Y
A	evaporation	heat gain
B	evaporation	heat loss
C	condensation	heat gain
D	condensation	heat loss

56. Which one of the following statements is NOT true about the Sun?

- A. The Sun is a star.
- B. The Sun is made up of very hot, molten rock.
- C. The Sun is the closest star to the Earth.
- D. The Sun provides heat and light to living things on Earth.

57. Why do astronauts have to wear spacesuits when walking on the Moon?

- A. To protect them from Lunar dust.
- B. To protect them from the Sun's rays.
- C. To keep them cool and provide them with air.
- D. This is not true – they do not need spacesuits at all.

58. Which one of the following planets has seasons that last for about 40 years?

- A. Jupiter
- B. Neptune
- C. Uranus
- D. Earth

59. What would happen if the Earth suddenly started to move faster in its orbit around the Sun?

- A. A year on Earth will become longer.
- B. Earth's distance from the Sun would decrease.
- C. A year on Earth will become shorter.
- D. Earth's gravity would decrease.

60. Our Sun consists mainly of ...

- A. Hydrogen and Oxygen.
- B. Oxygen and Helium.
- C. Hydrogen and Helium.
- D. Hydrogen, Helium, and Sulphur.

NOTES: