

Grade 6 Science Online Practice Test - 1998

(Adapted from the 1998 Grade 6 Science Achievement Test)

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Description

- There are 50 multiple-choice questions on this test.

This test is designed to be completed in 60 minutes; however, you may have an additional 30 minutes to complete the test, if you need it.

Instructions

- Read each question carefully. Each question has four possible answers from which you are to choose the **correct** or **best** answer.
- Calculators may be used but are not necessary.

Multiple Choice

- Decide which of the choices **best** completes the statement or answers the question.
- Locate the circle next to the letter that corresponds to your choice and click on it with your mouse's left button. The circle will fill in. In order to change your answer, click on a different circle. Try the example below.

Example

This examination is for the subject of

- A. mathematics
- B. science
- C. language arts
- D. social studies

- Try to answer all the questions. If you cannot answer a question, go on to the next one. Click on the "Score Test!" button on the last page to get your score.

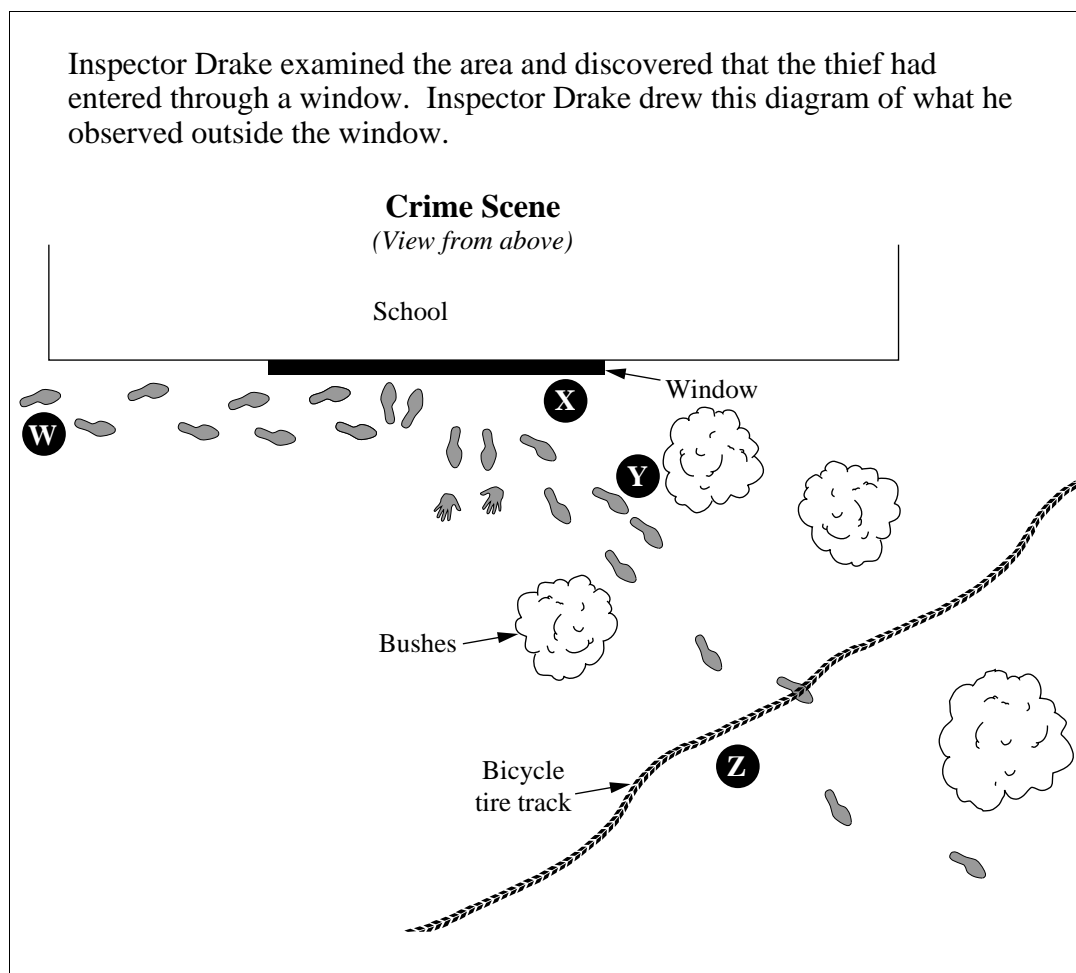
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One Monday morning, the principal of Central School discovered that the school mascot, a stuffed mallard duck, was missing from the display case. She immediately called the police to inform them of the theft. Inspector Drake soon arrived to carry out the investigation. Marc and Megan, two junior detectives, arrived a few minutes later. The first set of questions is about the investigation.

Use the following information to answer questions 1 and 2.



1. From the diagram, Marc inferred that the thief
 - A. walked from the bushes to the window
 - B. ran from the window to the bushes
 - C. jumped out of the window
 - D. walked away after leaving the bushes

2. Marc and Megan realized that the thief was running at location
- A. W
 - B. X
 - C. Y
 - D. Z

Use the following information to answer question 3.

A fabric sample was found at the crime scene. Inspector Drake took fabric samples from the clothing of four suspects. He placed the data in the chart below to help identify the sample taken from the crime scene.

Source of fabric	Mass per square cm	Length that a 10 cm sample stretches	Texture
Suspect W	4.0 g	3.0 cm	rough
Suspect X	3.0 g	1.0 cm	rough
Suspect Y	2.0 g	4.0 cm	smooth
Suspect Z	1.0 g	2.5 cm	smooth

Fabric sample taken from the crime scene:

mass—3.5 g per square cm
stretches—2.5 cm
texture—rough

3. From his data, Inspector Drake concluded that the fabric from the crime scene was **most likely** the fabric sample taken from
- A. suspect W
 - B. suspect X
 - C. suspect Y
 - D. suspect Z

Use the following information to answer question 4.

Megan and Marc observed two sets of footprints in the mud behind the school. The larger set of prints indicated a stride length of 80 cm and were 1.0 cm deep in the mud. The other set showed a stride length of 48 cm and were 0.25 cm deep in the mud. After 20 metres, the smaller footprints disappeared and the larger prints were 1.25 cm deep in the mud.

4. Megan and Marc inferred that
- A. the larger prints were made by a tall man
 - B. after 20 m the smaller person was carried
 - C. the smaller prints were made by a woman
 - D. after 20 m the smaller person went in the water

Use the following information to answer question 5.

The footprints stopped a short distance from the school. Megan looked closely on the ground and found a partial bike tire track in the mud.



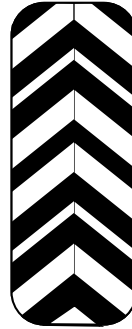
She visited a local bike shop and obtained samples of four different bike tire tracks.



AKKO



PYRON



DESCAN



FOSTIER

5. The partial bike tire track that Megan found in the mud matched the
- A. Akko tire
 - B. Pyron tire
 - C. Descan tire
 - D. Fostier tire

Use this additional information to answer question 6.

A ransom note was found in the display case.

*Don't be crazy I have your duck!
Cancel school on Friday if you
ever expect to see the duck again.*

Inspector Drake took handwriting samples from four suspects.

Suspect W *The quick brown fox jumps
over the lazy black dog.*

Suspect X *The quick brown fox jumps
over the lazy black dog.*

Suspect Y *The quick brown fox jumps
over the lazy black dog.*

Suspect Z *The quick brown fox jumps
over the lazy black dog.*

6. The ransom note was **most likely** written by
- A. suspect W
 - B. suspect X
 - C. suspect Y
 - D. suspect Z

Use this additional information to answer question 7.

These fingerprints were taken from the windowsill, the ransom note, and the display case glass.

Windowsill:



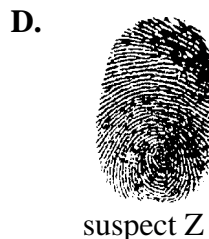
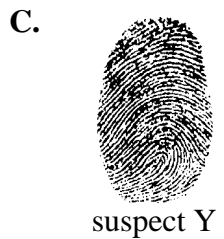
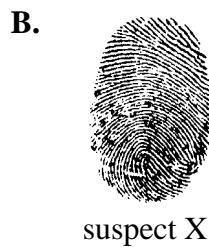
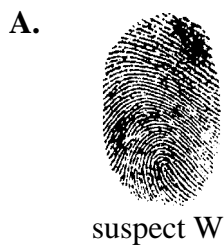
Ransom note:



Display case:



7. Inspector Drake compared the fingerprints with these samples of fingerprints taken from the four suspects. He inferred that the **most likely** suspect is

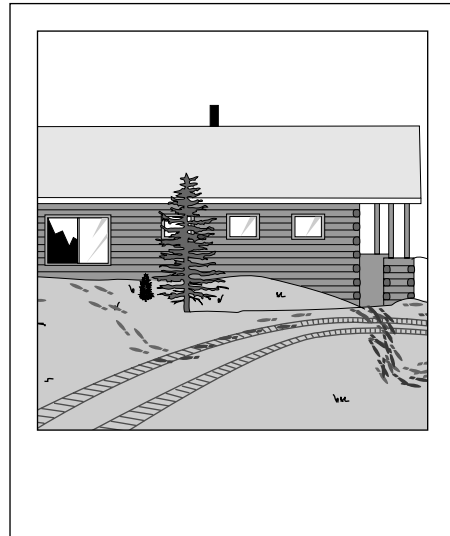


8. After gathering the evidence, Inspector Drake's next step in this investigation would be to
- A. arrest the suspect
 - B. interpret and evaluate evidence
 - C. gather and destroy old evidence
 - D. determine the identified and controlled variables

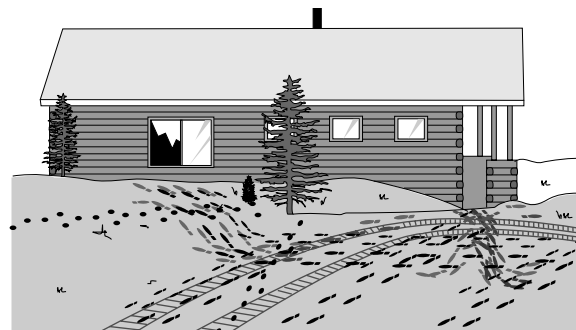
A police officer is investigating a break-in.

Use the following information to answer questions 9 and 10.

The police officer took a picture of the crime scene immediately after the break-in. However, the police officer was suddenly called away from the crime scene to assist with the investigation of a serious accident.



Later that day, the police officer returns to the scene to gather more evidence. On your way home from school, you meet the police officer. This is the scene that you and the officer see.



9. The police officer explains that footprints will be difficult to use as evidence because
- A. the original footprints have been disturbed too much
 - B. many of the footprints are not deep enough
 - C. there are too few footprints
 - D. the new footprints are not clear enough
10. As you look at the evidence, the police officer tells you that the tire tracks can be used to
- A. determine the number of people involved in the break-in
 - B. identify the tires of a suspect's vehicle
 - C. identify the make and model of the vehicle
 - D. pinpoint the exact time of the crime

Use the following information to answer question 11.

The police officer shows you the notebook he uses to record evidence for the investigation.

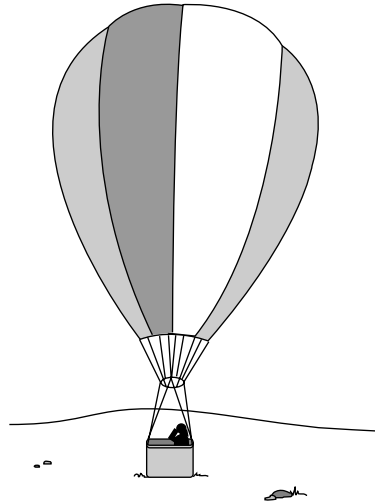
Date found	Time found	Type of evidence	Number of items	Tag identification number	

11. The officer tells you that he is going to label the final column with the words
- A. “Found by”
 - B. “Size of evidence”
 - C. “Location found”
 - D. “Age of evidence”

As a member of an environment club in southern Alberta, you have been chosen to accompany a pilot from the Alberta Environmental Protection Agency who is flying supplies into an environmental camp in the mountains. You are very excited about this because you will stay for several days, which will allow you the chance to earn several badges as a part of your club activities.

Use the following information to answer question 12.

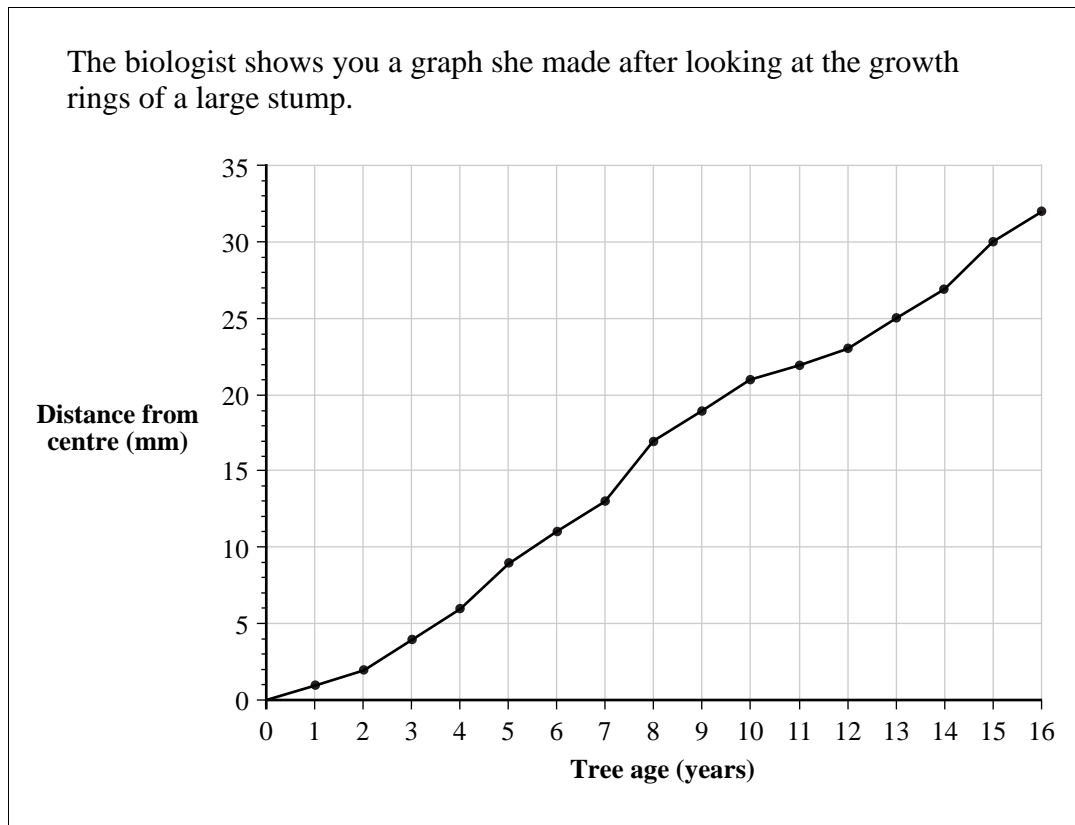
During takeoff, you see a hot air balloon ready to rise up into the air.



12. You know that hot air balloons rise because
- A. gravity is as strong as lift
 - B. air currents carry the balloon up
 - C. air inside the balloon is less dense than is air outside the balloon
 - D. the fabric of the balloon is less dense than is cold air
-
13. After takeoff, the pilot steadily increases the airplane's speed and altitude. For this increase to occur,
- A. thrust must equal drag and lift must equal gravity
 - B. thrust must be greater than drag and lift must be greater than gravity
 - C. thrust must equal drag and lift must be greater than gravity
 - D. thrust must be greater than drag and lift must equal gravity

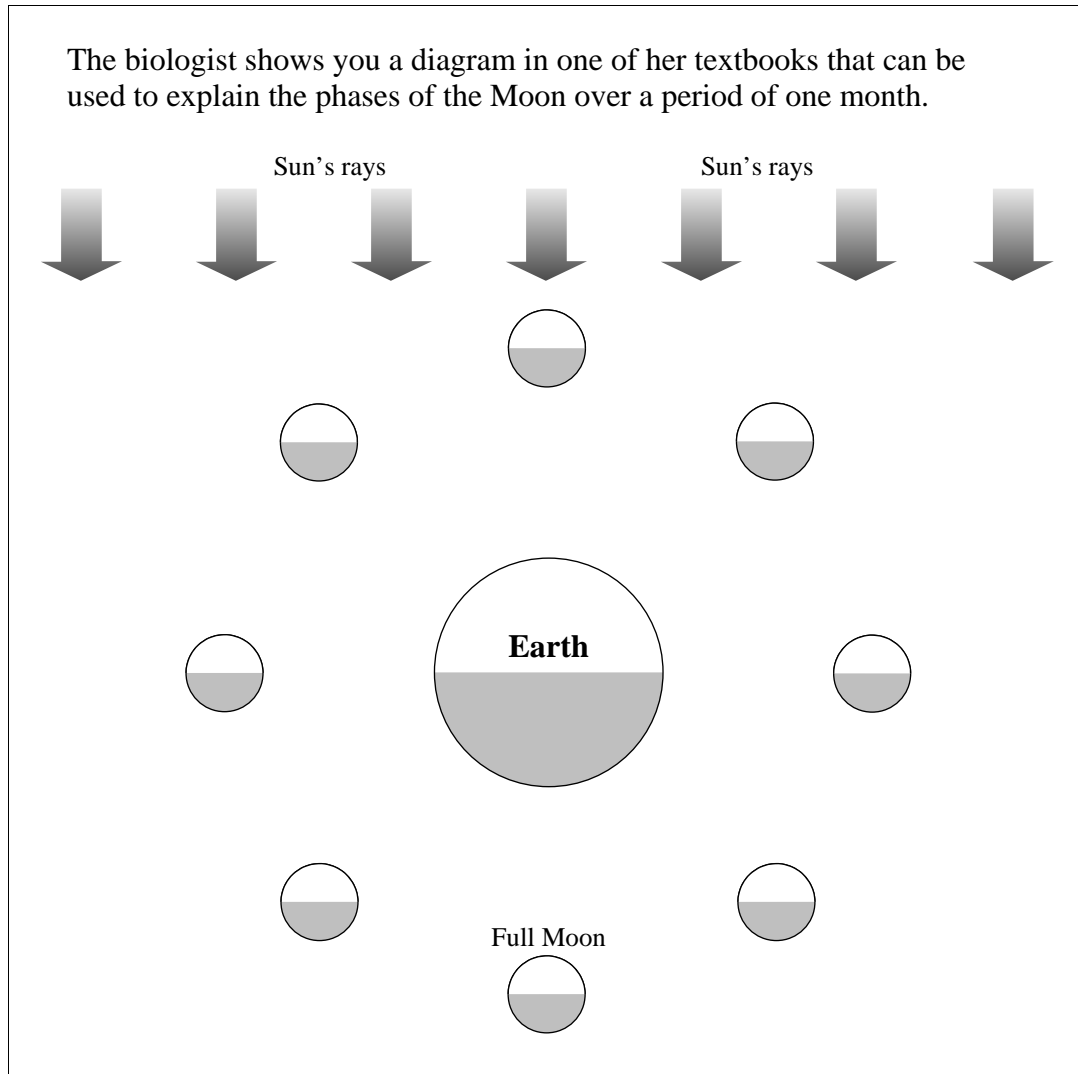
14. The pilot explains that the airplane is like a bird in that both are streamlined in order to reduce
- A. lift
 - B. weight
 - C. drag
 - D. thrust
15. The pilot explains how the airflow around a wing produces the force that holds the airplane up. The airflow is fastest
- A. behind the wing
 - B. in front of the wing
 - C. over top of the wing
 - D. underneath the wing
16. At the camp, you notice that the forest has trees of all sizes, as well as stumps from trees that have been cut. Some trees have been marked with an orange X. You infer that this means that the forest
- A. is a tree nursery
 - B. will become farmland
 - C. has already been clear cut
 - D. is being selectively cut
17. An environmental biologist working at the camp explains that forest fires are not completely bad for the environment. One way that forest fires help the environment is that they
- A. allow for the new growth of plants needed by some animals
 - B. produce a gas that reduces the greenhouse effect
 - C. make some plant species extinct, thereby allowing new ones to develop
 - D. force animals to move to other areas
18. After a forest fire, the types of animals that live in a regrowing forest are different from the types of animals that lived in the original forest. This change in the animal population **most likely** occurs because
- A. similar types of vegetation grow in the area at different times
 - B. different types of vegetation grow in the area at different times
 - C. only one type of tree grows in the area immediately after the fire
 - D. only one type of grass grows in the area long after the fire

Use the following information to answer question 19.



19. This graph shows that the tree grew most slowly between years
- A. 8 and 9
 - B. 10 and 11
 - C. 12 and 13
 - D. 14 and 15
-
20. While looking up at the night sky, you see a bright, full moon. The biologist explains that the Moon does not light up the sky as much as the Sun does because the Moon
- A. is much farther away from the Earth than from the Sun
 - B. only reflects some of the light produced by the Sun
 - C. is smaller than the Earth
 - D. only reflects light from the Earth

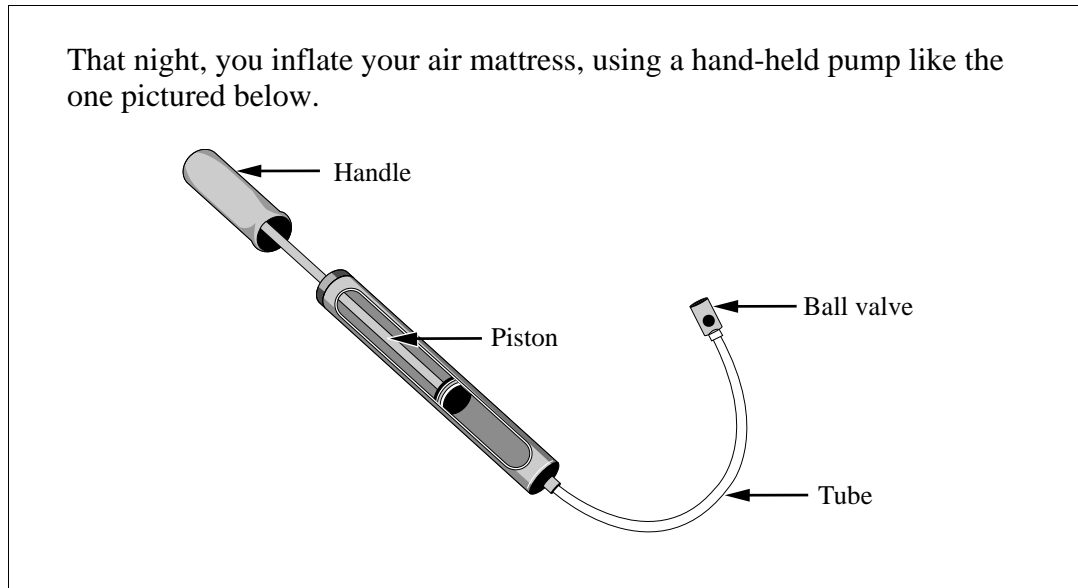
Use the following information to answer question 21.



21. She explains that beginning at the new moon phase, as the Moon revolves around the Earth, the portion of the Moon that we see
- A. increases then decreases
 - B. decreases then increases
 - C. remains the same
 - D. disappears

Use the following information to answer questions 22 and 23.

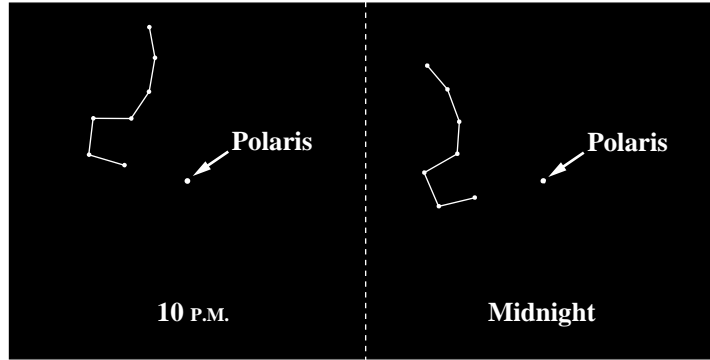
That night, you inflate your air mattress, using a hand-held pump like the one pictured below.



22. You know that the pump is designed to
- A. pump air only into bicycle tires
 - B. compress air and then allow it to flow out through the valve
 - C. heat air and then allow it to expand to fill the mattress
 - D. reduce the volume of air in the mattress so that air will fill the mattress
23. As the mattress inflates, it becomes harder to push the handle on the pump. This happens because
- A. friction is causing the metal to expand and the pump to seize up
 - B. the cylinder is drying out and needs to be lubricated
 - C. chemicals inside the mattress are blocking the valve opening
 - D. pressure inside the mattress has increased

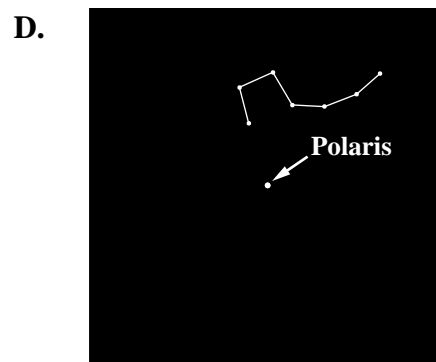
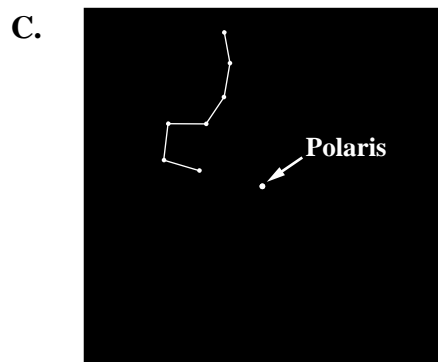
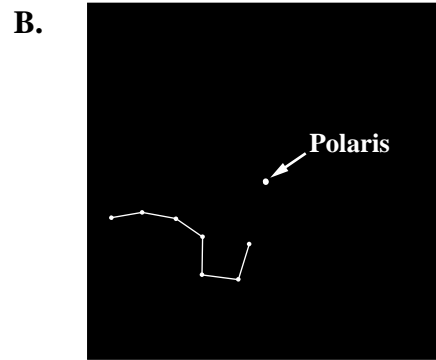
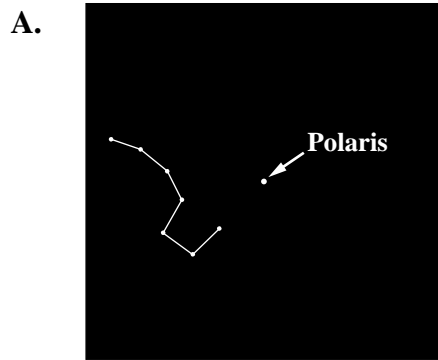
Use the following information to answer questions 24 and 25.

At 10:00 P.M., you notice the constellation of the Big Dipper and the star Polaris. When you wake up at midnight, you notice that the Big Dipper appears to have moved.



24. The reason that the Big Dipper appears to have moved is that the
- A. stars randomly change their positions
 - B. Moon's gravity causes the stars to change their positions
 - C. Earth tilts closer to the Sun as it rotates during the night
 - D. Earth rotates on its axis as it revolves around the Sun

25. At 2 A.M., the position of the Big Dipper would be



In the morning, you collect some leaves as part of a project to earn an environmental badge. The biologist lends you the chart below so that you can identify the leaves.

Use the following information to answer questions 26 to 28.

Tree Identification Chart

Tree	Leaf Description	Tree Description
Balsam poplar	—egg-shaped with a sharp point	—long, narrow shape with large, thick, short branches
Red willow	—pointed tips —attached in alternating pattern —long and skinny	—smooth, slim twigs —straight, unbranched trunk —can be found near water
Red alder	—6 to 12 cm long with pointed tips —serrated edges	—can be shrub-like —grows on stream banks and marshes —produces catkins (cone-like structures)
Trembling aspen	—stem of leaf is longer than leaf —nearly circular with abrupt, short, sharp tip	—long trunk and short, roundish crown
White spruce	—single needle joins twig —needles are four-sided and have tiny, brown stem	—cones found only at the top
Lodgepole pine	—two needles per bunch	—small, hard cones —tall, straight tree —older trees in groups normally have no living branches near the bottom

26. The biologist shows you some pictures of trees. After reading the chart, you realize that a trembling aspen is shown in

A.



B.



C.



D.

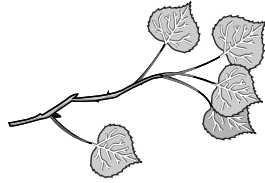


27. Near the river, the biologist shows you many trees with long, slender leaves that have been nibbled by deer. You use the chart to identify the trees as

- A. red willows
- B. balsam poplars
- C. red alders
- D. trembling aspens

Use the additional information to answer question 28.

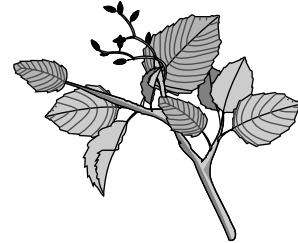
You show the biologist your leaf collection.



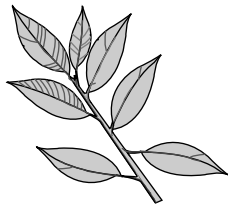
Trembling Aspen



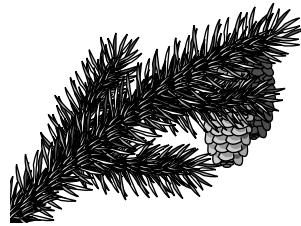
Balsam Poplar



Red Alder



Red Willow



Lodgepole Pine



White Spruce

28. The biologist says that you have labelled two leaves incorrectly. She identifies the leaves that have been **incorrectly** labelled as the
- A. white spruce and lodgepole pine
 - B. red alder and balsam poplar
 - C. red willow and red alder
 - D. trembling aspen and balsam poplar
-
29. You and the biologist discuss how leaves produce food for trees by the process of
- A. transpiration
 - B. respiration
 - C. digestion
 - D. photosynthesis

The next six questions are about a science fair held by a Grade 6 class.

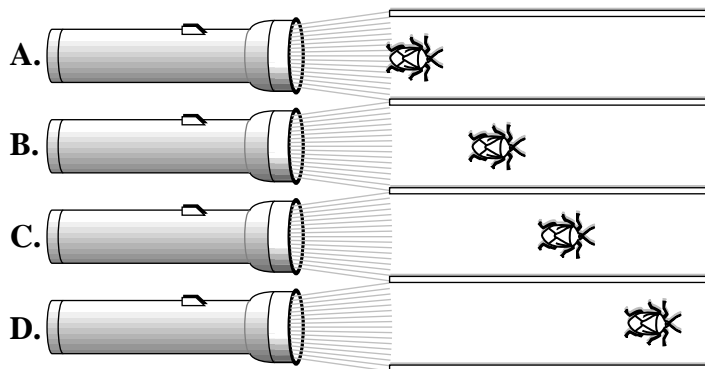


Use the following information to answer question 30.

Mae placed a specific type of insect at four different distances from a light. She then measured the rate of movement at which the insect moved away from the light. Mae made the following chart of her findings.

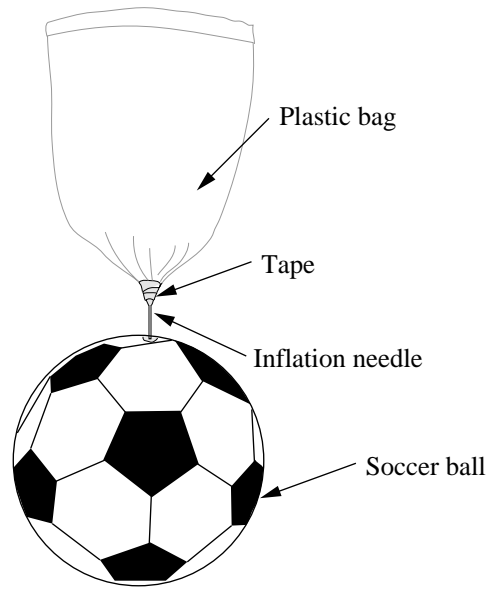
Distance from light	Rate of movement
5 cm	10 cm/s
10 cm	8 cm/s
15 cm	6 cm/s
20 cm	4 cm/s

30. Based on the information in her table, Mae knew that the insect would move away from the light at the fastest rate if it were placed in the position shown in



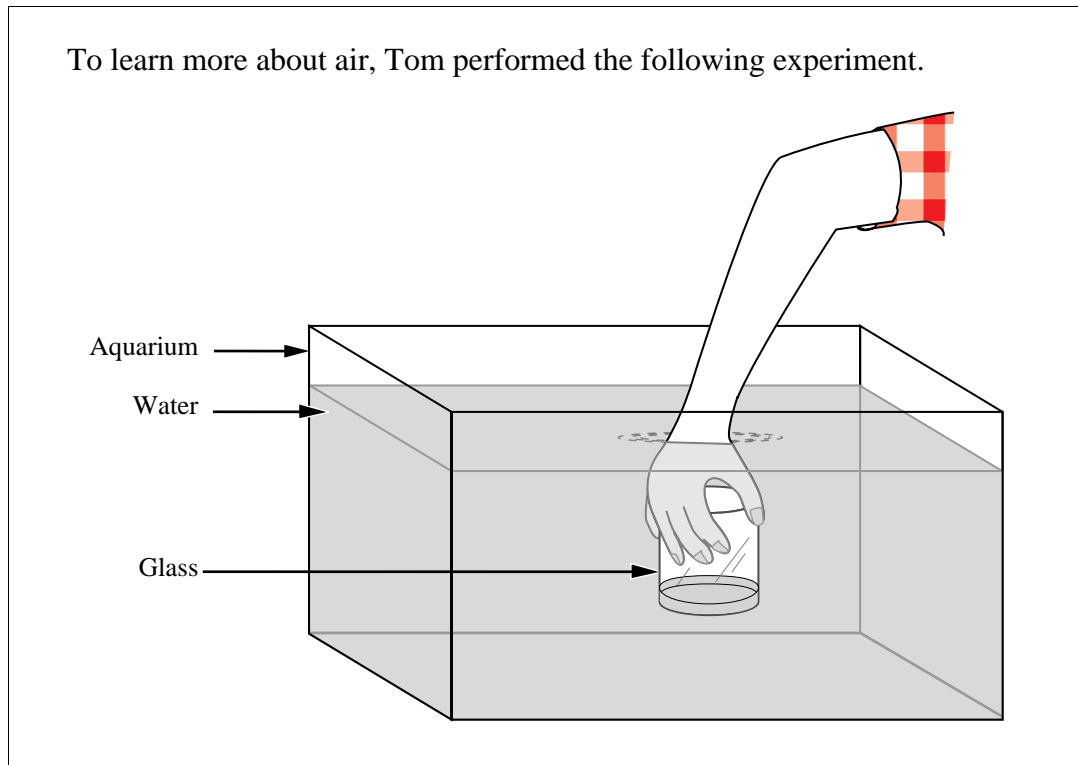
Use the following information to answer question 31.

Jose performed a demonstration related to air pressure. He inserted an inflation needle into a soccer ball and let air move into an empty plastic bag, as shown in the diagram.



31. Jose explained that as the air moves into the bag, the volume of air in the bag will
- A. keep increasing due to low air pressure in the ball
 - B. start decreasing due to high air pressure in the ball
 - C. stay the same because the air pressure in the ball and bag is equal
 - D. increase until the air pressure is equal in the ball and the bag

Use the following information to answer question 32.



32. The glass will **not** fill with water because
- A. water is heavier than air
 - B. air is lighter than water
 - C. air takes up space
 - D. gravity pulls down on the water

Use the following information to answer question 33.

Sam wanted to find out if salt affects the time it takes for water to boil. He knew that before heating, each solution must be at the same temperature. He also identified the following variables.

1. Amount of salt used
2. Amount of water used
3. Type of container used
4. Time taken to heat the water to boiling point

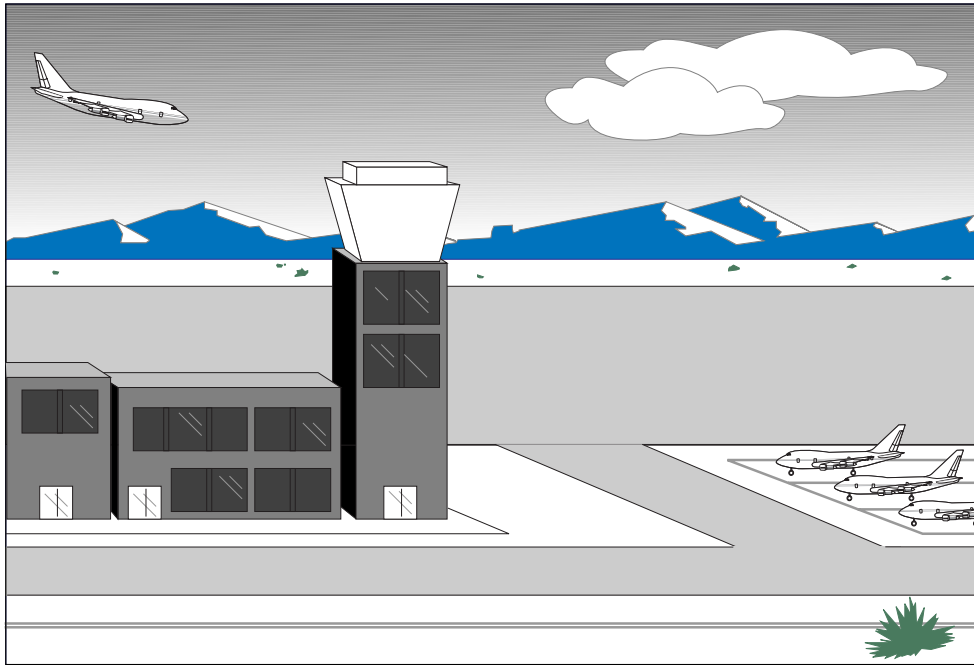
33. To conduct a fair test, the variables that Sam kept **the same** were
- A. 1 and 2
 - B. 1 and 4
 - C. 2 and 3
 - D. 2 and 4
-
34. Peggy was designing a device to show how humans breathe. She knew that for her device to show how a human breathes, it would have to
- A. use nitrogen and give off oxygen
 - B. use carbon dioxide and give off oxygen
 - C. use oxygen and give off nitrogen
 - D. use oxygen and give off carbon dioxide

Use the following information to answer question 35.

Henri made the following chart and explained that the length of a shadow cast by a sundial changes during the day.

Time of Day	Length of the Sundial's Shadow
09:00	80 cm
10:00	70 cm
11:00	50 cm
12:00	40 cm
13:00	50 cm
14:00	?
15:00	?

35. Henri predicted that the length of the shadow cast by the sundial at 15:00 would be
- A. 50 cm
 - B. 60 cm
 - C. 70 cm
 - D. 80 cm



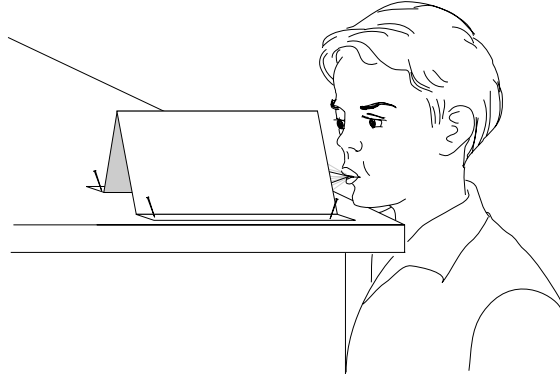
Natalie and Peter were excited about the trip that was planned for their spring vacation. They were going to fly to Vancouver Island to visit their Uncle Jake. At the airport, they would have an opportunity to talk to the pilot of the plane before their flight.

Because Uncle Jake was always teaching them about the outdoors, Natalie and Peter took some science books with them.

The next set of questions is about their trip.

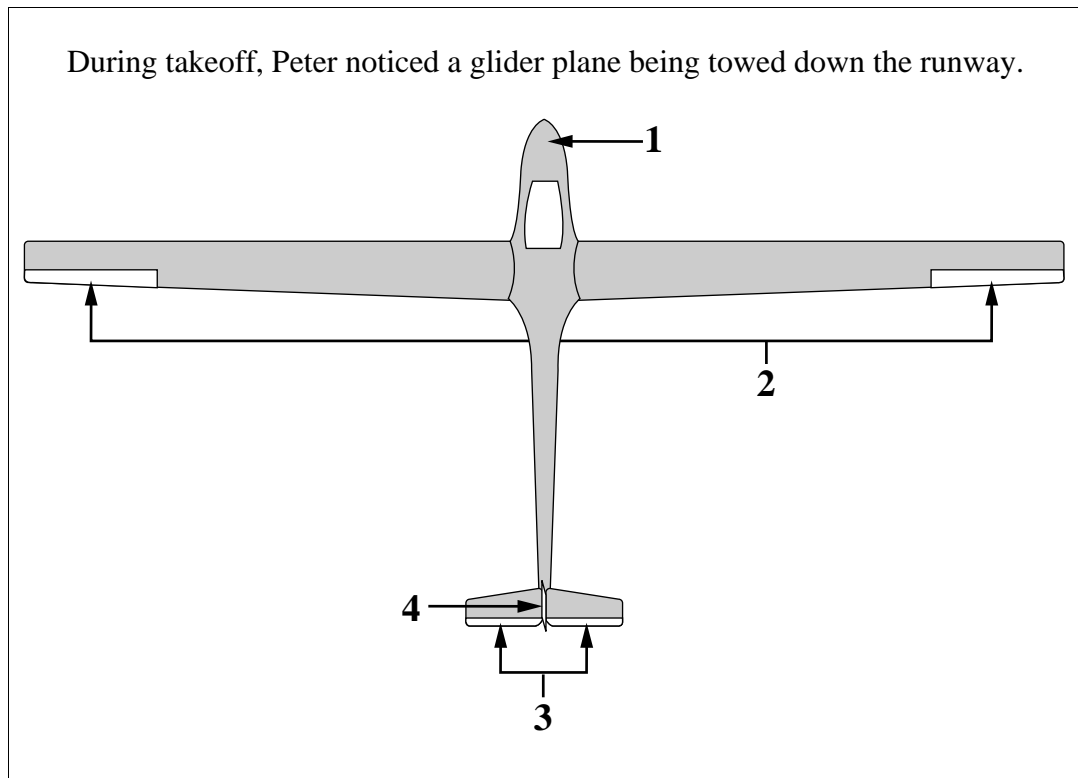
Use the following information to answer question 36.

To demonstrate the effects of air movement, the pilot asked Peter to blow air through a paper tent.



36. Peter **correctly** predicted that if he blew air through this paper tent,
- A. both sides would bend inward
 - B. both sides would bend outward
 - C. neither side would bend
 - D. one side would bend inward and the other would bend outward
-
37. The pilot stated that many of the designs used in the construction of airplanes have been adapted from features of birds. Which of the following examples does **not** illustrate this statement?
- A. Radar to help low visibility flights
 - B. Strong, lightweight, flexible materials
 - C. Extra-long wings on gliders
 - D. Landing gear that folds up

Use the following information to answer question 38.

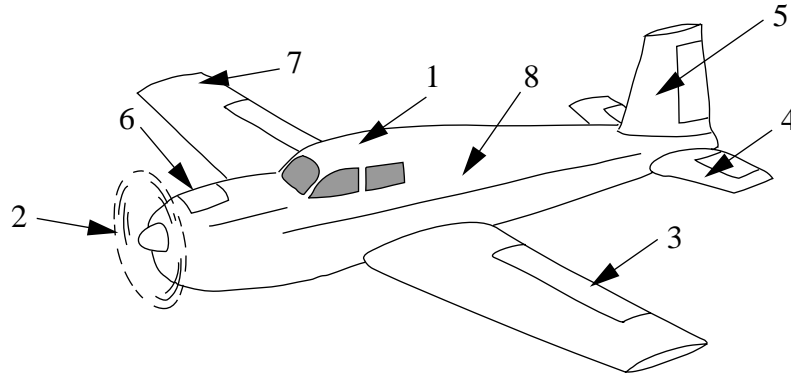


38. In order for the glider to be lifted off the ground, the position of one of its parts must be changed. This part is labelled

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

Use the following information to answer question 39.

As they flew, the pilot showed Natalie this diagram of an airplane.



39. Natalie correctly identified vertical and horizontal stabilizers as numbers
- A. 5 and 4
 - B. 3 and 7
 - C. 5 and 3
 - D. 4 and 7

After they landed at the airport, Natalie and Mike were met by Uncle Jake. They grabbed their luggage and headed off to Uncle Jake's cabin in the country.

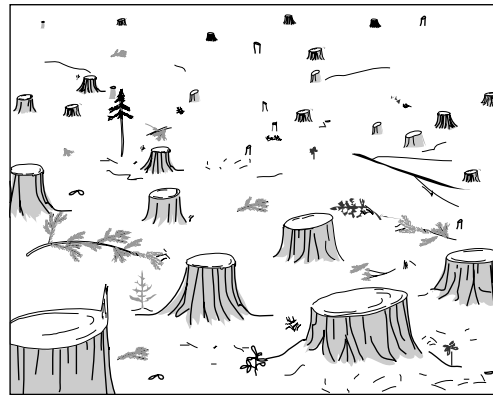
After a few days, Uncle Jake took them on a hike to a forested area owned by a neighbour.

Use the following information to answer question 40.

Peter saw an area of forest that had been clear-cut. Uncle Jake described what the area looked like before clear-cutting had occurred.



Before clear-cutting



After clear-cutting

40. Uncle Jake looked at the area that had been clear-cut. He explained to Peter that the lumber industry values the forests **mostly** as
- A. a habitat for a variety of living things
 - B. an important recreation area for humans
 - C. a source for raw materials
 - D. a life-supporting environment

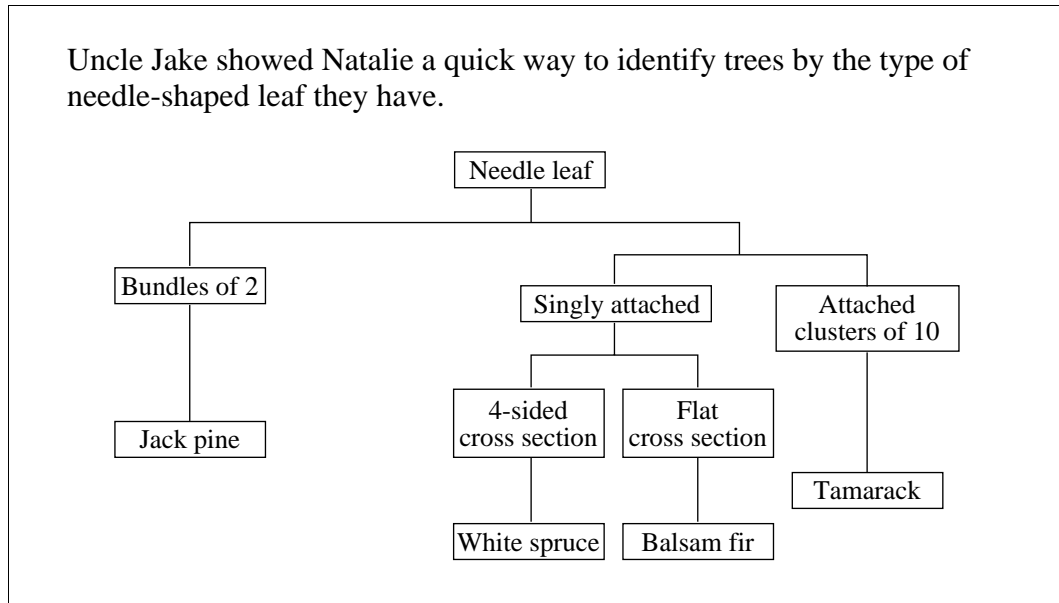
Use the following information to answer question 41.

They stopped for a rest near a wooded area where the owner had selectively cut trees. This means that the owner has taller trees cut down on a regular basis.



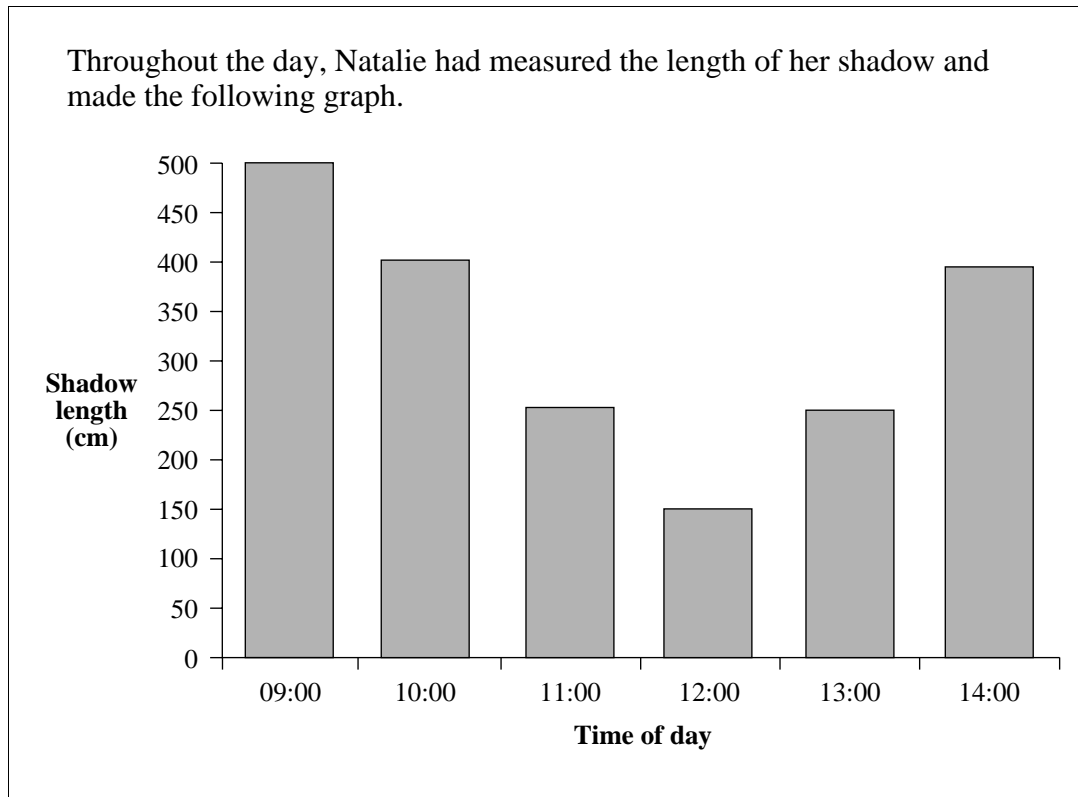
41. A **likely** result of selectively cutting trees is that the
- A. soil will wash away due to erosion
 - B. animals that live on the ground will lose their habitats
 - C. shorter trees in the area will get more light
 - D. actions of the decomposers will decrease
-
42. As they walked, Uncle Jake explained that although trees provide shelter, food, fuel, and tools for humans, they are **most** important for giving off
- A. oxygen
 - B. carbon dioxide
 - C. nitrogen
 - D. hydrogen
43. While on their hike, they passed a sawmill where trees are cut into rough planks. Every five seconds, a blast of compressed air blows the sawdust away from the blade. An inference that can be made is that compressed air particles are
- A. composed mainly of carbon dioxide gas
 - B. closer together than uncompressed air particles
 - C. colder than uncompressed air particles
 - D. lighter than uncompressed air particles

Use the following information to answer question 44.



44. Natalie found a twig with needles that were 2 cm long, square, pointed, and singly attached to the branch. Natalie identified the tree that the twig came from as a
- A. jack pine
 - B. white spruce
 - C. balsam fir
 - D. tamarack

Use the following information to answer question 45.



45. Natalie observed that she cast the shortest shadow at noon. She concluded that the reason for this was that the
- A. season is winter
 - B. sun is low in the sky
 - C. sun is high in the sky
 - D. sky is cloudy

The following day, they camped overnight near a river.

Use the following information to answer question 46.

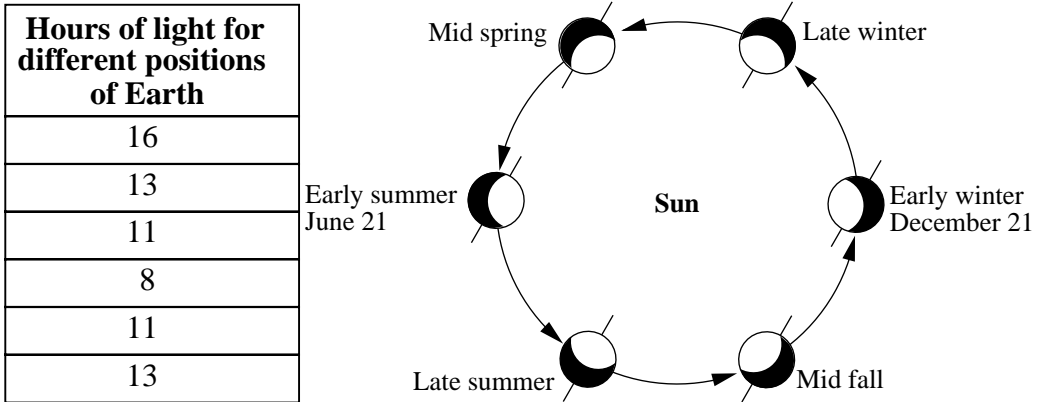
That night, while looking at the stars, Natalie decided to consult her science book. She found the following table, which shows the distance of some planets from the Sun and the time required for each to circle the Sun.

Planet	Distance from the Sun (million kilometres)	Time for planet to circle the Sun
Mercury	58	88 days
Venus	108	225 days
Earth	150	1 year
Jupiter	780	12 years
Uranus	2 870	84 years
Neptune	4 500	165 years

46. From this information, Natalie hypothesized that the planet Saturn, 1 430 million kilometres from the Sun, would circle the Sun about once every
- A. 100 days
 - B. 10 years
 - C. 30 years
 - D. 100 years
-
47. While consulting the science book, Peter and Natalie found that compared with planets far away, the four planets **closest** to the Sun have **more**
- A. surface area than do the planets farther away
 - B. gravity than do the planets farther away
 - C. atmosphere than do the planets farther away
 - D. intense sunlight than do the planets farther away

Use the following information to answer question 48.

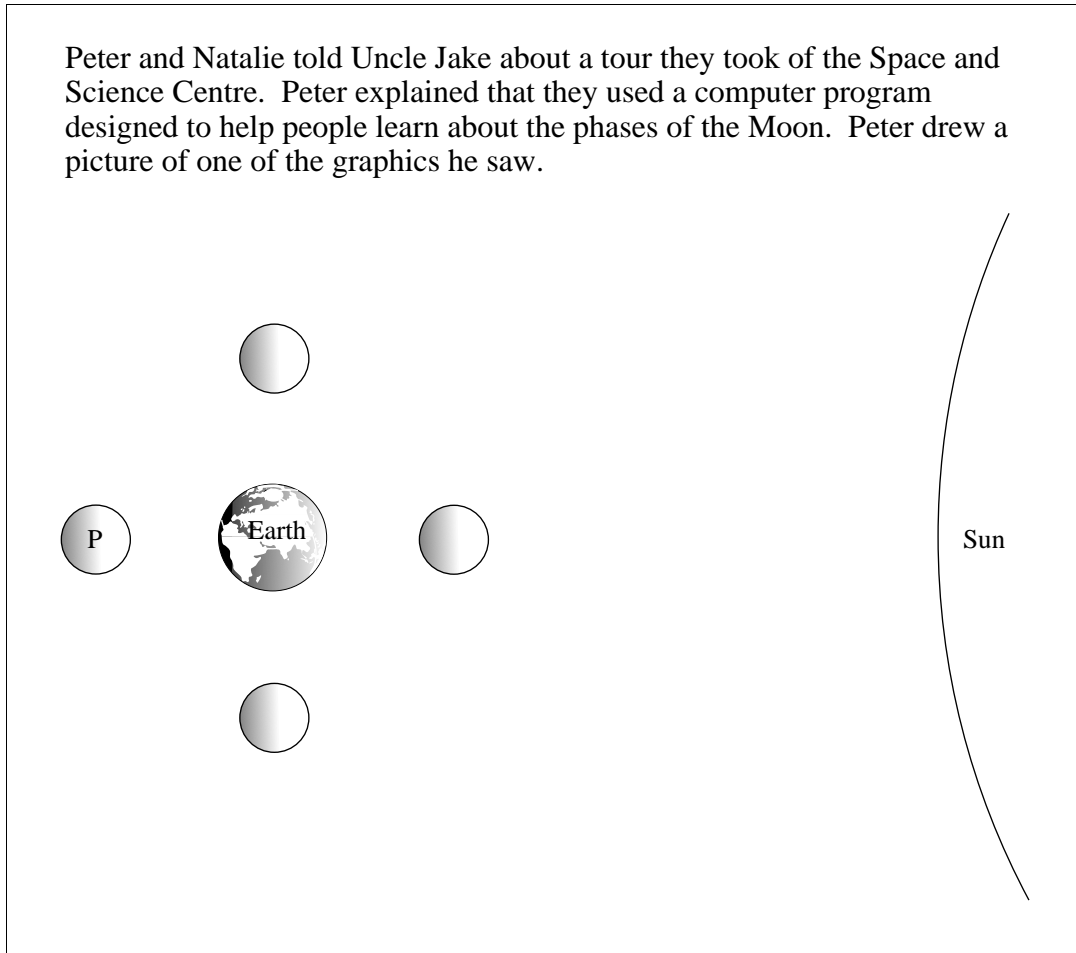
Natalie used information from her *Sky Science* book to make a chart and a drawing that would help her explain to Peter how the length of the day changes from season to season.



48. She explained that if the longest day of summer has 16 hours of light, then the amount of light in early spring would be
- A. 16 hours
 - B. 14 hours
 - C. 12 hours
 - D. 10 hours

Use the following information to answer question 49.

Peter and Natalie told Uncle Jake about a tour they took of the Space and Science Centre. Peter explained that they used a computer program designed to help people learn about the phases of the Moon. Peter drew a picture of one of the graphics he saw.



49. Peter correctly explained that when viewed from Earth, the Moon in position P would appear to be a
- A. full moon
 - B. quarter moon
 - C. half moon
 - D. new moon

The remainder of their visit with Uncle Jake was as exciting as they had expected. Uncle Jake took the children back to the airport where they boarded the plane for the trip back home.

Use the following information to answer question 50.

While flying over the Rocky Mountains, they noticed that all the trees had been removed from many mountain slopes and valleys. Natalie remembered that clear-cut logging could result in wind and water erosion.

- 50.** Natalie inferred that in forested areas trees
- A.** decrease wildlife
 - B.** increase wind currents
 - C.** decrease rainfall
 - D.** increase soil stability

Peter and Natalie agreed that they had such a wonderful time at Uncle Jake's that they would plan to visit him again someday.