

Grade 6 Science Online Practice Test - 2000

(Adapted from the 2000 Grade 6 Science Achievement Test)

Grade 6 Science Online Practice Test - 2000
(Adapted from the 2000 Grade 6 Science Achievement Test)

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.

Copyright 2004, the Crown in Right of Alberta, as represented by the Minister of Learning, Alberta Learning, Learner Assessment Branch, 44 Capital Boulevard, 10044 108 Street NW, Edmonton, Alberta T5J 5E6, and its licensors. All rights reserved.

Special permission is granted to **Alberta educators only** to reproduce, for educational purposes and on a non-profit basis, parts of this examination that do **not** contain excerpted material **only after the administration of this examination**.

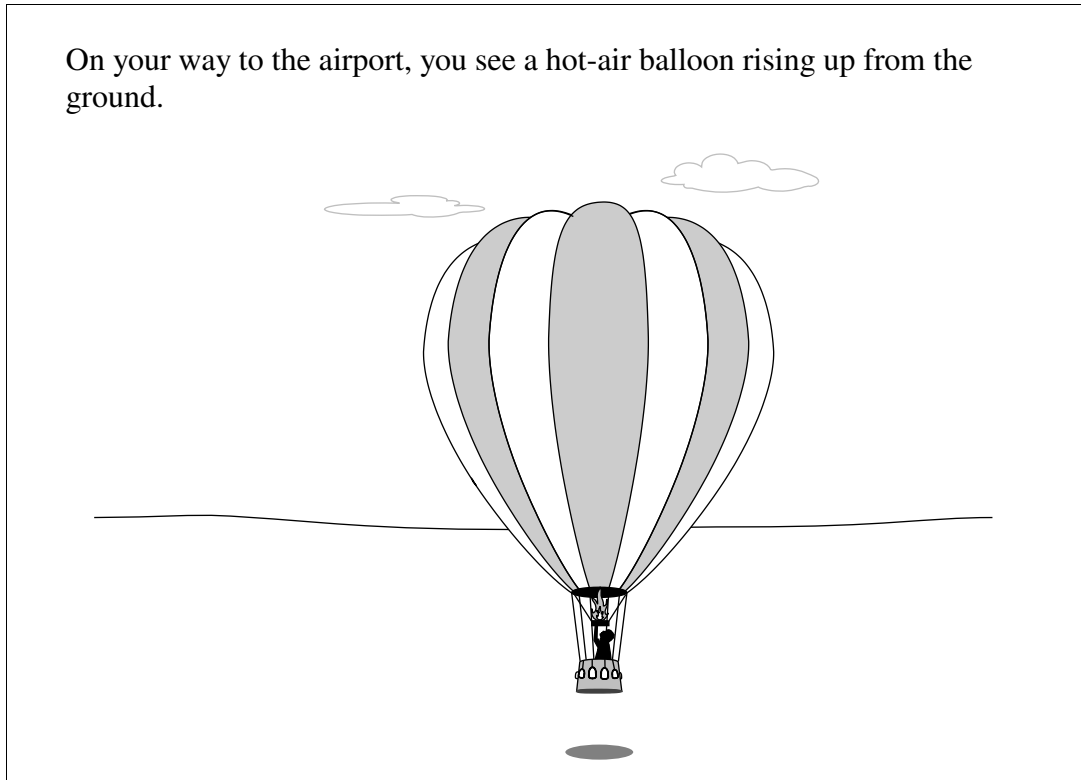
Excerpted material in this examination **shall not** be reproduced without the written permission of the original publisher (see credits page, where applicable).

You have won first place in an Alberta-wide science fair competition. Your prize is a two-week trip to Sandbar Camp, which is located in Northern Alberta. You will fly there in a small plane. There, you hope to have fun while participating in camp activities and learning more about science at the Sandbar Science Centre.

This graphic has been removed because copyright clearance was not granted.

Use the following information to answer question 1.

On your way to the airport, you see a hot-air balloon rising up from the ground.



- 1.** Hot-air balloons rise because the
 - A.** air outside the balloon is lighter than the air inside the balloon
 - B.** air inside the balloon takes up space and can be compressed
 - C.** lift on the balloon is greater than the force of gravity
 - D.** air inside the balloon is more dense than the air outside the balloon

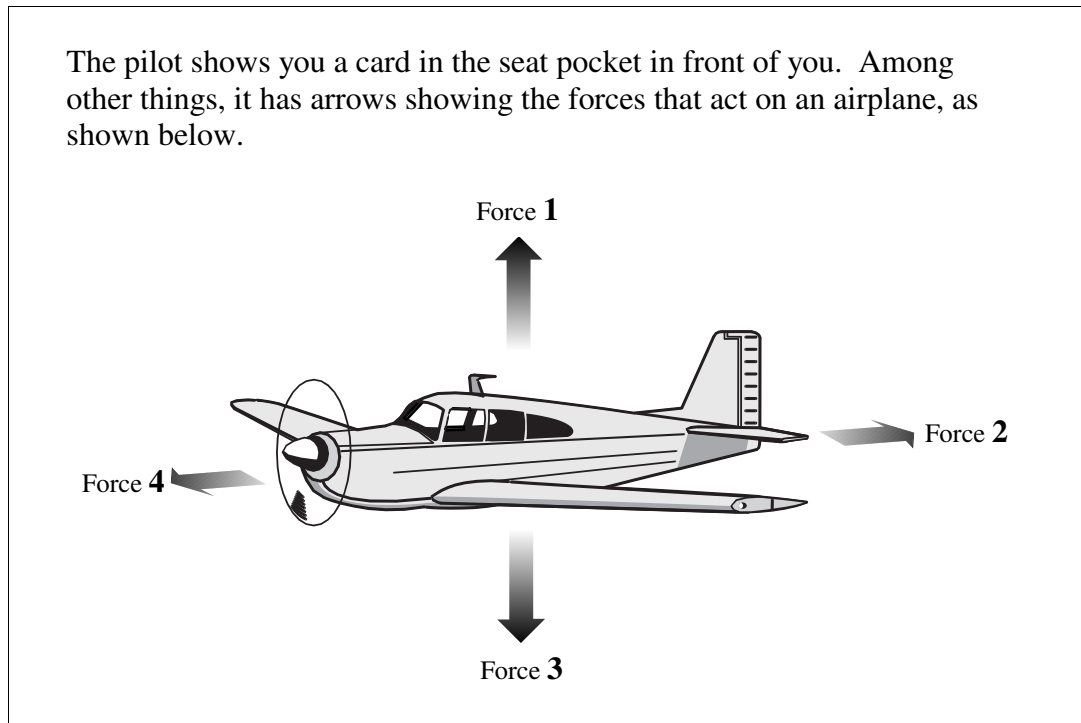
Use the following information to answer question 2.

Upon your arrival at the airport, you are introduced to the pilot and board the aircraft for your flight to the camp.

This graphic has been removed because copyright clearance was not granted.

2. As your airplane speeds down the runway, you recall that lift occurs when the
- A. force of drag is equal to the force of thrust
 - B. force of gravity is greater than the force of thrust
 - C. air above the wings is moving faster than the air below the wings
 - D. air above the wings is moving at the same speed as the air below the wings

Use the following information to answer question 3.



3. In which of the following boxes are the forces acting on the airplane identified?

- A. Force 1—Thrust
Force 2—Gravity
Force 3—Lift
Force 4—Drag

- B. Force 1—Lift
Force 2—Thrust
Force 3—Gravity
Force 4—Drag

- C. Force 1—Drag
Force 2—Lift
Force 3—Thrust
Force 4—Gravity

- D. Force 1—Lift
Force 2—Drag
Force 3—Gravity
Force 4—Thrust

4. The pilot tells you that the principle used to explain how the shape of an airplane's wings creates lift is named after

- A. Orville Wright
B. Albert Einstein
C. Isaac Newton
D. Daniel Bernoulli

Use the following information to answer question 5.

The pilot states that many of the designs used in the construction of airplanes are similar to features of birds. As you think about what the pilot told you, you consider some features of birds of flight.

Features of Birds

- I** Streamlined design
- II** Tail feathers
- III** Long claws
- IV** Legs that fold up

5. The features of birds listed above that are similar to features in airplane designs are
- A. I, II, and III
 - B. I, II, and IV
 - C. I, III, and IV
 - D. II, III, and IV
-
6. The pilot points to a parachutist far below the airplane. Which of the following statements is a **correct** statement about parachutes?
- A. The three forces that act on a parachute are gravity, lift, and drag.
 - B. Parachutes create air resistance so that they fall slowly to Earth.
 - C. Round parachutes are easier to control than are rectangular parachutes.
 - D. The shorter the suspension lines, the slower the parachute will fall.

Use the following information to answer question 7.

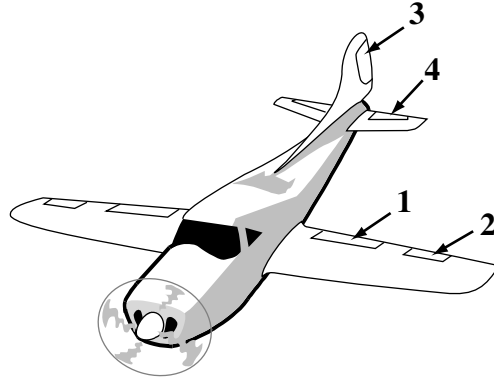
The pilot tells you that the design of a parachute affects how rapidly it descends. She explains that if you did an experiment with two parachutes that were the same size and shape but had different-sized holes, there would be a difference in how fast they fall.



7. In the experiment described by the pilot, the manipulated or independent variable would be
- A. size of the parachute
 - B. height from which the parachute falls
 - C. size of the hole at the top of the parachute
 - D. time it takes the parachute to reach the ground
-
8. Just before arriving at Sandbar Camp, you notice a ploughed field of dark soil. You know the warmed air over the field will rise because
- A. it is less dense than the surrounding air
 - B. it is more dense than the surrounding air
 - C. the high-altitude cold air is more stable than the lower air
 - D. the high-altitude warm air is less stable than the lower air

Use the following information to answer question 9.

As you approach the camp, the airplane begins its descent.



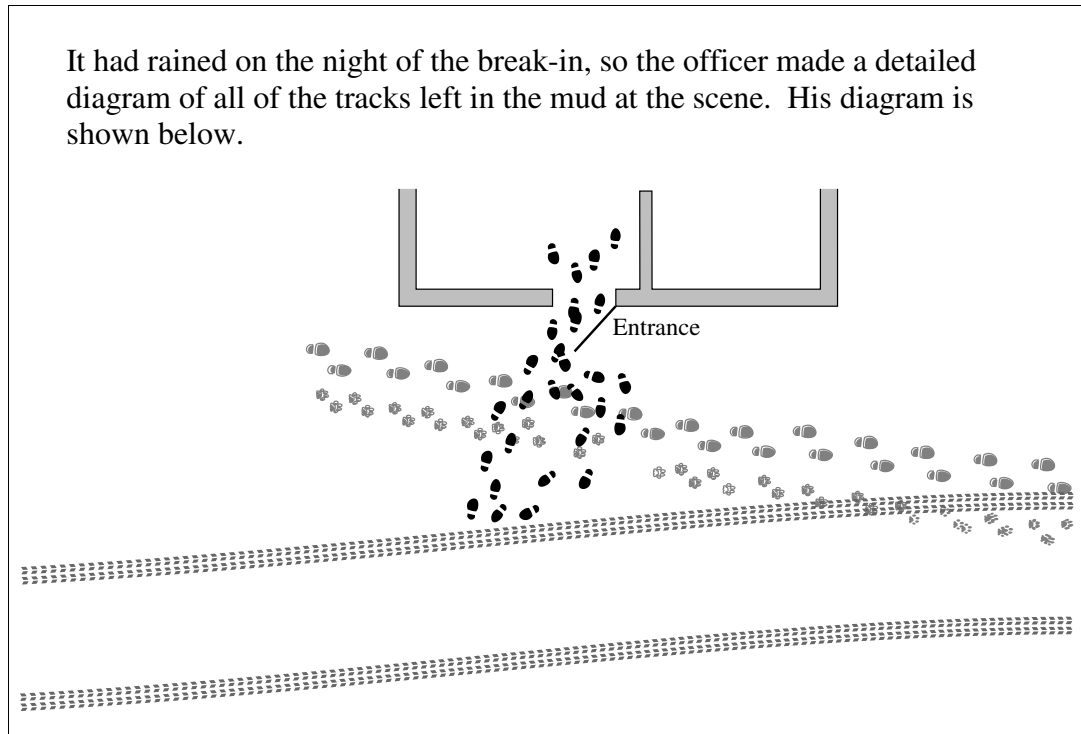
9. The part of the airplane that causes it to descend is labelled

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

When you arrive at Sandbar Camp, an RCMP officer is inspecting the camp office. He explains that there has been a break-in and that he is conducting an investigation.

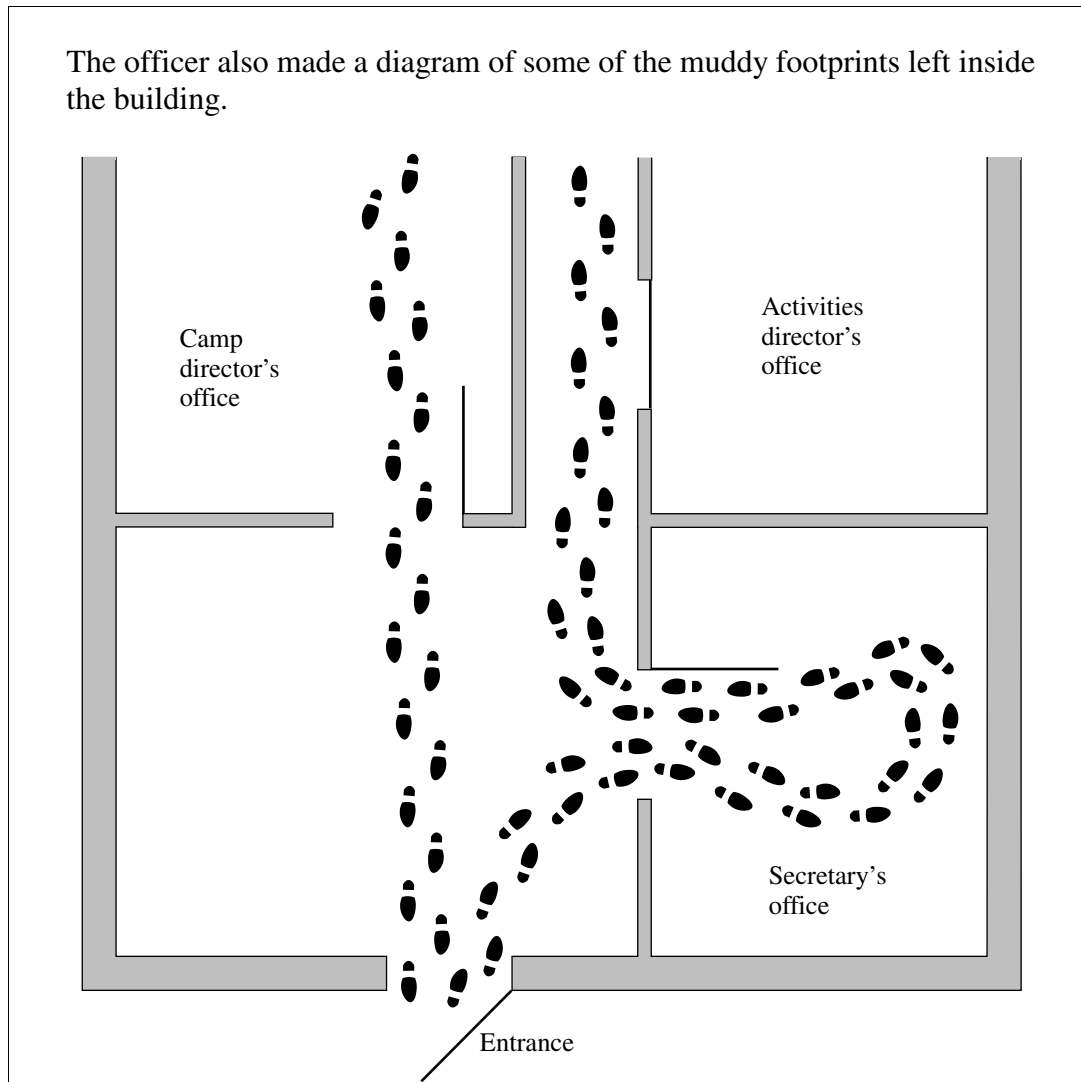
Use the following information to answer question 10.

It had rained on the night of the break-in, so the officer made a detailed diagram of all of the tracks left in the mud at the scene. His diagram is shown below.



10. Using the information above, the officer inferred that the thief
- A. was let in the building by a partner
 - B. committed the crime during the day
 - C. was seen by a person walking a dog
 - D. arrived after it had rained

Use the following information to answer question 11.



11. By looking at the officer's diagram, you infer that the thief
- A. stayed in the building only a few seconds
 - B. triggered an alarm in the secretary's office
 - C. ran out of the building carrying something heavy
 - D. found a second door leading to the camp director's office

Later that evening, the officer informs you that he has identified and arrested the person who he believes broke into the camp office.

The next morning you and some of the other campers go on a nature walk with the camp naturalist.



The following information may help you to answer question 12.

Before you leave, the camp naturalist shows you the poster below and explains that all living things play an important role in the environment.

This graphic has been removed because copyright clearance was not granted.

12. The **most important** role of decomposers in the nutrient cycle is to
- A. clean the forest floor
 - B. break down dead organisms
 - C. produce food for consumers
 - D. allow air to enter the soil

13. You spray your bare arms with insect repellent. The fluid in the can sprays out when you press the nozzle because the fluid is
- A. flammable
 - B. under pressure
 - C. warmer than the air
 - D. mixed with water vapour
14. The naturalist explains that for plants to produce their own food through the process of photosynthesis, they require
- A. chlorophyll and release oxygen
 - B. chlorophyll and release nitrogen
 - C. water vapour and release carbon dioxide
 - D. nitrogen and release water vapour

Use the following information to answer question 15.

The naturalist asks a member of your group to record the length of her shadow throughout the day. A chart was then made that shows how the length of the shadow of the naturalist changed over a period of a few hours on a sunny day.

Shadow Length During the Day

Time of day	Length of shadow (mm)
11:00 A.M.	177
11:20 A.M.	164
11:40 A.M.	154
12:00 noon	146
12:20 P.M.	141
12:40 P.M.	138
1:00 P.M.	137
1:20 P.M.	138
1:40 P.M.	140
2:00 P.M.	145
2:20 P.M.	152
2:40 P.M.	161

15. You infer from the chart that the sun is at the highest point in the sky at
- A. 11:00 A.M.
 - B. 12:00 noon
 - C. 1:00 P.M.
 - D. 2:40 P.M.

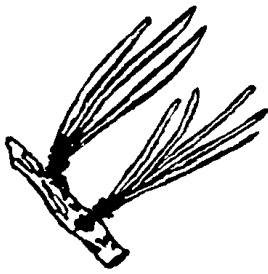
Use the following information to answer questions 16 and 17.

<p>The naturalist asks everyone to collect some leaves. She gives each person a chart with which to identify the type of trees that the leaves came from.</p> <p style="text-align: center;">Tree Identification Chart</p>		
Tree	Leaf Description	Tree Description
Balsam poplar	—egg-shaped with a sharp point	—long, narrow shape with large, thick, short branches
Red willow	—pointed tip —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 tip —serrated edge	—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 —spiralled or twisted	—small, hard cones —tall, straight tree —older trees in groups normally have no living branches near the bottom

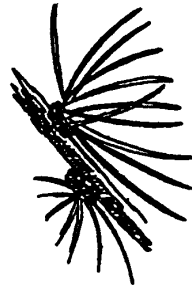
16. The deciduous trees listed in the chart are
- A. trembling aspen, balsam poplar, red willow, and red alder
 - B. balsam poplar, white spruce, red alder, and lodgepole pine
 - C. white spruce and lodgepole pine
 - D. white spruce and balsam poplar

17. According to the chart, which of the following leaf diagrams is a lodgepole pine?

A.



B.



C.



D.



Use the following information to answer question 18.

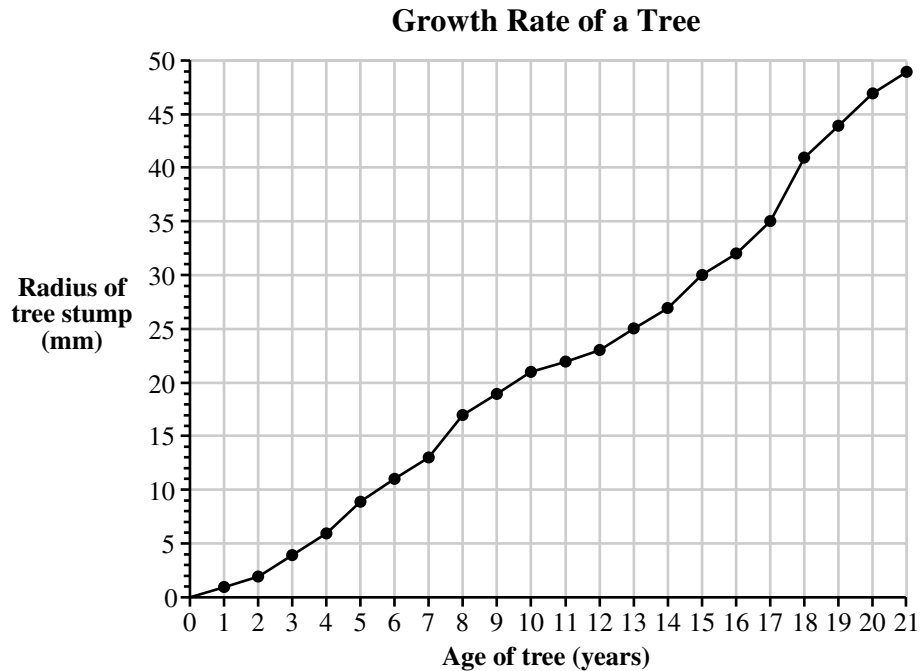
The naturalist points out a tree stump left when a tree was cut down. A diagram of the end of the stump is shown below.



18. Based on the illustration above, the tree **most likely**
- A. was cut from a mature forest
 - B. was a Douglas fir
 - C. lived through a drought
 - D. grew close to another tree

Use the following information to answer question 19.

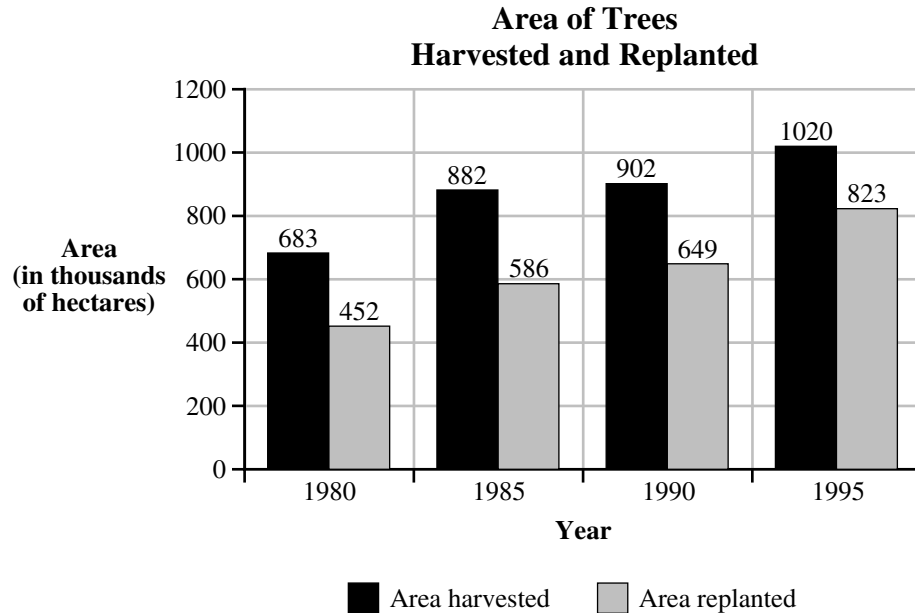
The naturalist takes out his field guide and shows you a graph. The graph was made by taking measurements from the centre of a tree stump to the outer ring for each year of the tree's growth.



19. Between the 6th year and 10th year, the tree grew approximately
- A. 1.5 mm
 - B. 5.5 mm
 - C. 10 mm
 - D. 21 mm
-
20. You ask the naturalist what changes to the ecosystem occur when a forest is clear-cut. The naturalist replies that an immediate change to the ecosystem is the
- A. loss of habitat for animals
 - B. loss of nutrients in the soil
 - C. increased danger of forest fires
 - D. increased underbrush growth

Use the following information to answer question 21.

The naturalist shows you a graph of the area of forest harvested and the area of forest replanted during a particular period in a forest near Sandbar Camp.



21. According to the information in the graph, between 1980 and 1995,
- A. the area of trees replanted decreased
 - B. the area of trees harvested decreased
 - C. a greater area of trees was harvested than was replanted
 - D. a greater area of trees was replanted than was harvested

Use the following information to answer question 22.

While on the walk, you see a tree that looks like the following diagram.



22. An observation that can be made about the tree is that it
- A. has a broken trunk
 - B. has been hit by lightning
 - C. was blown over by wind
 - D. was destroyed in the spring
-

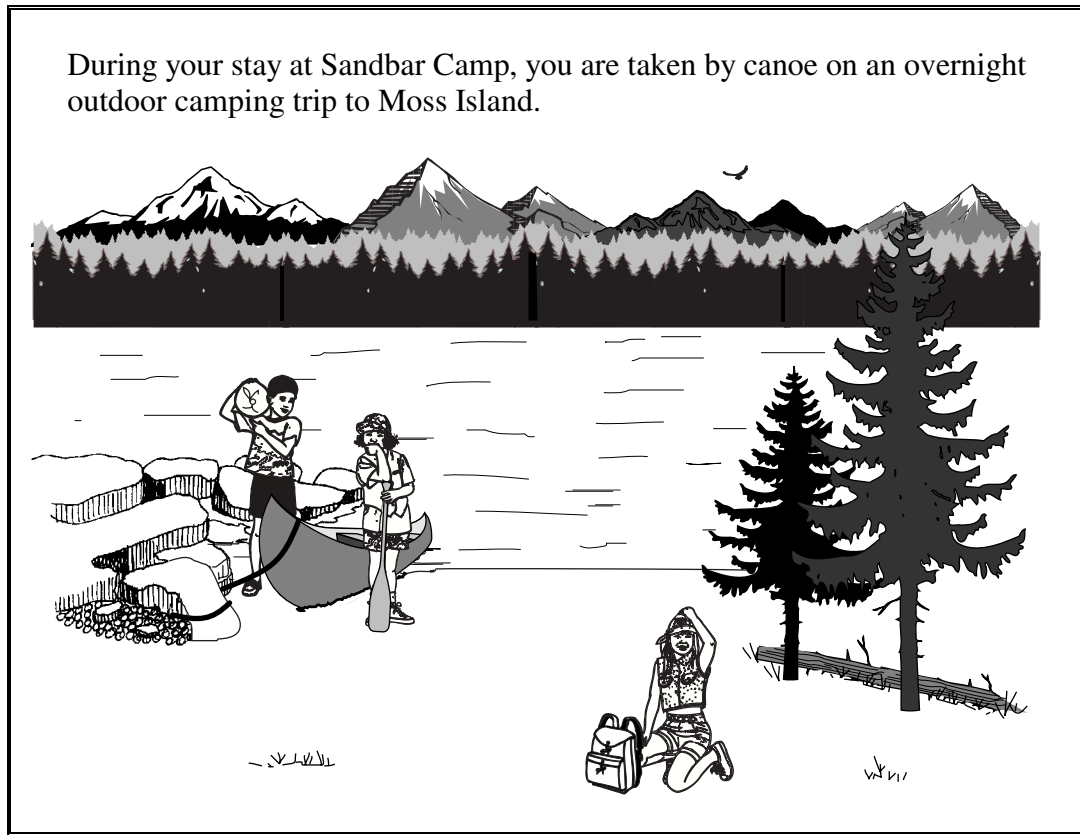
Use the following information to answer question 23.

As you walk back to the camp, you notice an animal's footprint in some mud.



23. From this footprint, you infer that the animal
- A. can climb trees
 - B. is a plant-eater
 - C. can run fast
 - D. hibernates in winter

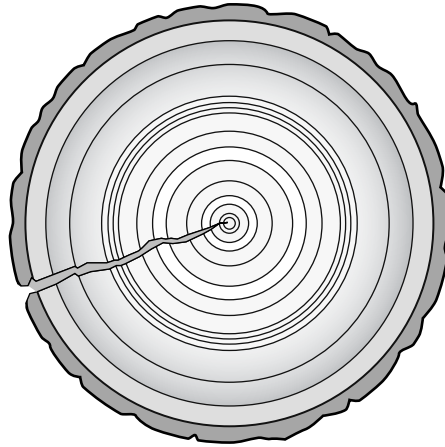
During your stay at Sandbar Camp, you are taken by canoe on an overnight outdoor camping trip to Moss Island.



24. At your campsite on the beach, one of your friends sees a decaying tree. As the tree decays, it will
- A. add nutrients to the soil
 - B. add oxygen to the soil
 - C. remove nitrogen from the air
 - D. remove water from the air

Use the following information to answer question 25.

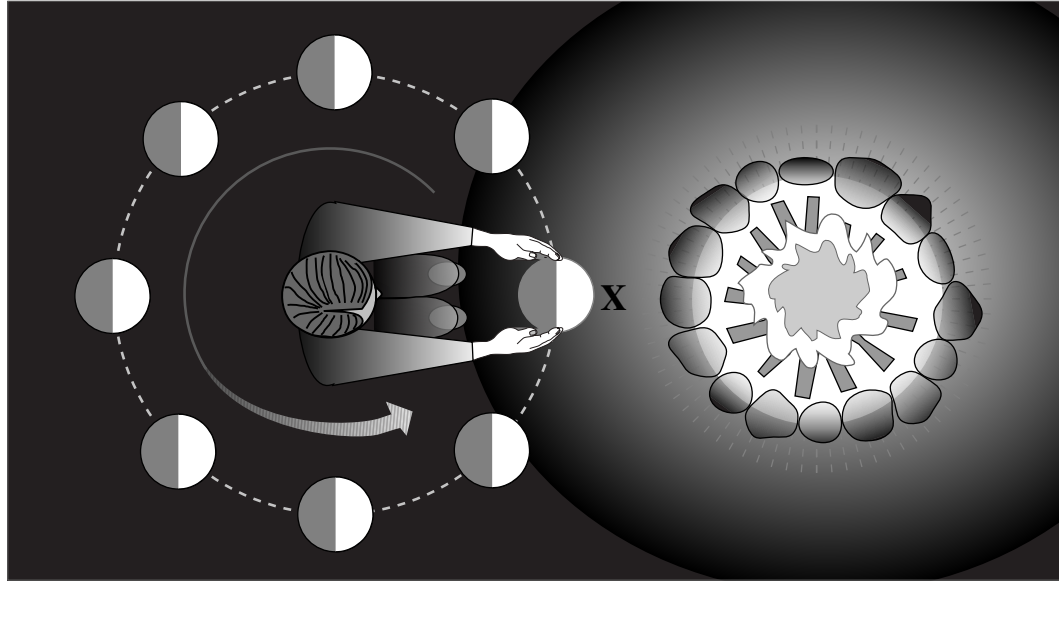
In the afternoon, you collect wood for the evening fire. You notice the end of a large log that looks like the following drawing.



25. Upon examining the log more closely, you observe that some rings are very close together. From this, you infer that for a few years, the tree
- A. produced seedlings, which slowed its growth rate
 - B. produced fruit, which increased its growth rate
 - C. grew quickly as a result of increased rainfall
 - D. grew slowly as a result of drought conditions
-
26. While collecting wood, a blue jay glides above you without moving its wings. You know that all birds of flight can do this because their
- A. tails are long and straight
 - B. feathers are long and narrow
 - C. wing structure gives them lift
 - D. beaks are straight and pointed

Use the following information to answer question 27.

Later that evening, while sitting at the fire, you notice the moon shining brightly. To demonstrate the phases of the moon to some younger campers, you sit in front of the fire with a ball directly in front of you, as shown below. Your position represents Earth. You then turn around on the spot in a counter-clockwise direction. The campfire is used to represent the sun.



27. When you hold the ball in position X, it is like the phase of the moon called the
- A. first quarter
 - B. new moon
 - C. full moon
 - D. last quarter
-
28. While looking up at the night sky, you remember that an object that emits its own light is called
- A. a moon
 - B. a star
 - C. a planet
 - D. an asteroid

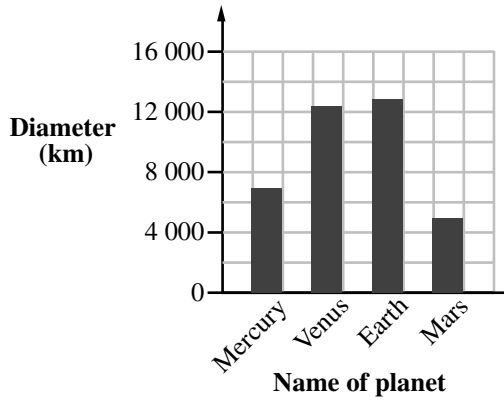
Use the following information to answer question 29.

One of the campers knows a lot about astronomy. He tells you the diameter of four of the planets.

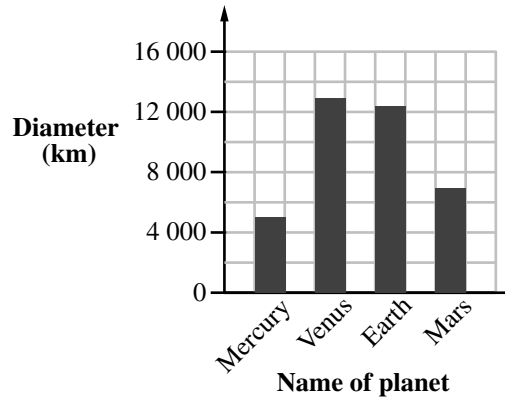
Planet	Diameter (km)
Mercury	4 880
Venus	12 100
Earth	12 756
Mars	6 787

29. Which of the following bar graphs represents the diameter of these four planets?

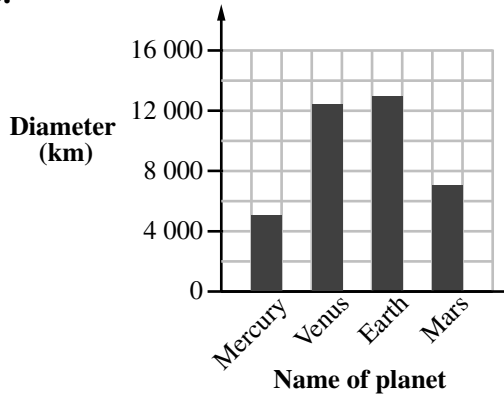
A.



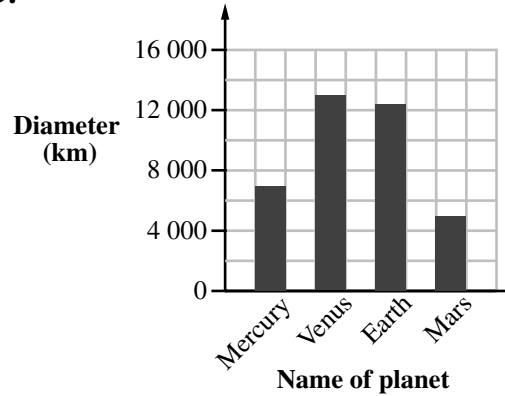
B.



C.



D.



30. The next morning, you observe the sun rising in the
- A. north
 - B. east
 - C. south
 - D. west

Use the following information to answer question 31.

You and a friend decide to go fishing. You take a chart to help identify the fish you hope to catch.

Fish Identification Chart

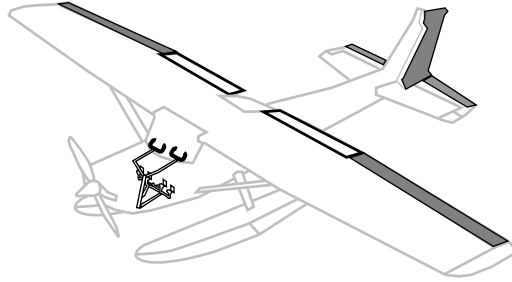
Name	Cisco	Goldeye	Rainbow Trout	Whitefish
Colour	Black Silver	Light blue Silver Gold	Red Silver Green	Silver Green White
Size	25–40 cm	20–35 cm	15–20 cm	30–45 cm
Dorsal Fin	Short Soft	Short Soft	Short Soft	Long Soft

31. Your friend catches a fish that is partly silver, is approximately 40 cm long, and has a short, soft dorsal fin. Using the chart, you identify the fish as a
- A. cisco
 - B. goldeye
 - C. rainbow trout
 - D. whitefish
-

32. Days are longer during the summer than they are during the winter because
- A. the sun is closer to Earth
 - B. the sun travels more slowly across the sky
 - C. Earth's axis is tilted more toward the sun
 - D. Earth is rotating on its axis at a slower speed

Use the following information to answer question 33.

While hiking on the island, you and your friends hear an airplane. When you look up, you see an RCMP floatplane. All of you wave to the floatplane. The pilot makes the floatplane roll from side to side to let you know that he sees you.



- 33.** In order to roll the airplane from side to side, the pilot would move the
- A.** rudder from side to side
 - B.** elevators from side to side
 - C.** ailerons up and down
 - D.** flaps up and down

The floatplane turns and lands on the water near your campsite. You and your friends quickly return to the campsite.

Use the following information to answer question 34.

The floatplane comes to shore near your campsite and you see that the pilot is an RCMP officer. The officer tells you that he is returning to the island to complete an investigation related to a poaching crime. Since the poachers have been caught already, the officer lets you and your friends hike to the poachers' campsite with him. When you arrive at the campsite, this is what you see.



34. The RCMP officer tells you that when he first came to the crime scene, the deer carcass and the fire were still warm. The officer used this evidence to determine the
- A. motive for the crime
 - B. time of the crime
 - C. suspects
 - D. witness

Use the following information to answer questions 35 and 36.

The RCMP officer opens a notebook and shows you a chart that has information about four people who were found in the area and were suspected of poaching. The last column on the chart shows evidence from the campsite.

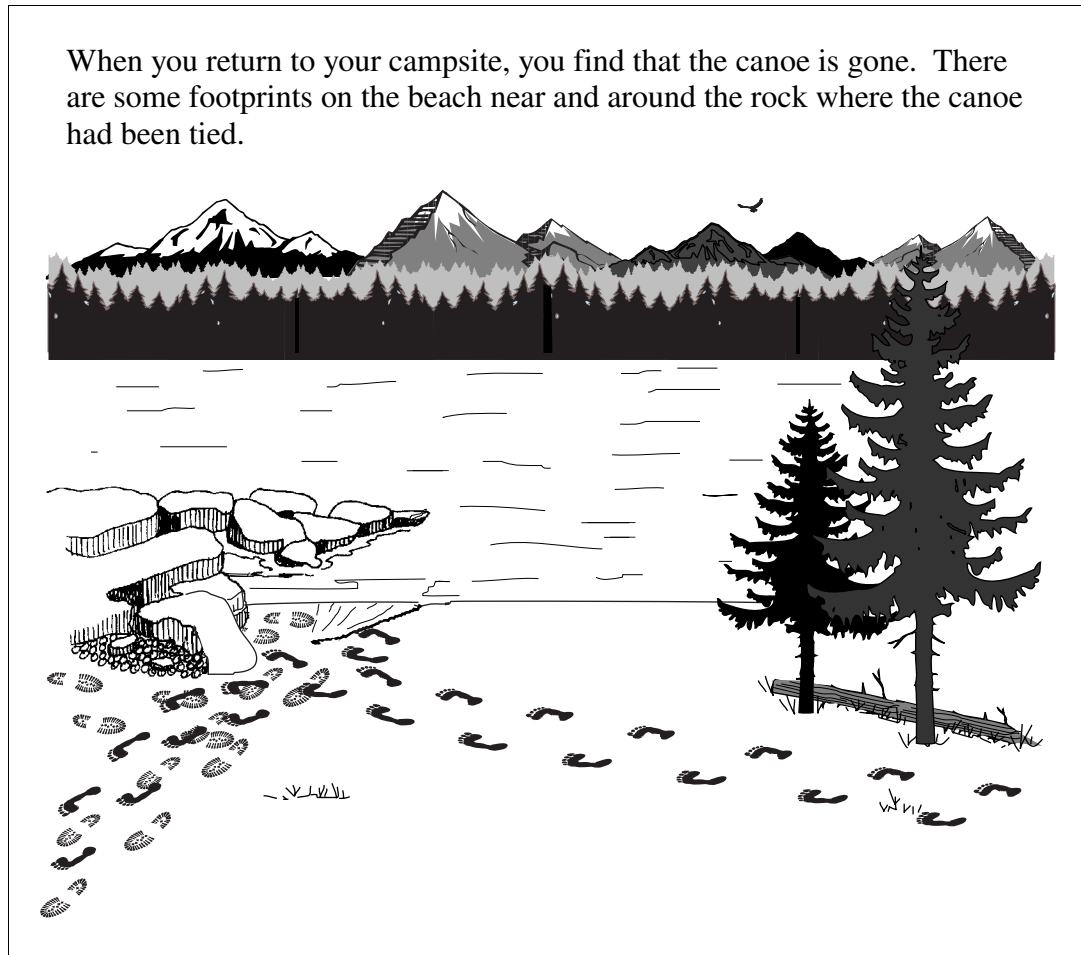
Chart Analysis

Type of Evidence	Suspect 1	Suspect 2	Suspect 3	Suspect 4	Evidence at campsite
fingerprint	loops	loops	arches	whorls	<i>loops</i>
shoe print	size 10 w	size 10 n	size 9 w	size 10 w	<i>size 10 w</i>
ink	black ink pen	red ink pen	black ink pen	blue ink pen	<i>black ink on envelope</i>
cloth	white cotton shirt	white nylon shirt	white polyester shirt	white cotton shirt	<i>white cotton on bush</i>

35. Which of the suspects **could** have left the shoe prints at the campsite?
- A. Suspect 1 or suspect 2
 - B. Suspect 1 or suspect 4
 - C. Suspect 2 or suspect 3
 - D. Suspect 3 or suspect 4
36. Based on the information in this chart, which of the suspects was **most likely** at the campsite?
- A. Suspect 1
 - B. Suspect 2
 - C. Suspect 3
 - D. Suspect 4

37. The RCMP officer explains that a chromatography test was used to help compare the ink found on an envelope with the ink from each suspect's pen. Which of the following steps is **not** important when carrying out a chromatography test?
- A. Watch the action of the water as it reaches the coloured line on the test paper.
 - B. Empty the water from the cup into a storage container.
 - C. Draw a line with a pen on a strip of test paper.
 - D. Hang the strip of test paper so it touches the water in the bottom of a cup.

Use the following information to answer question 38.



38. The RCMP officer infers that the canoe was **most likely** taken by someone who
- A. walked to the canoe in shoes, took off his or her shoes, and met a friend
 - B. walked to the canoe in barefeet, untied the canoe, and hid the canoe
 - C. met another person and they both carried the canoe away
 - D. met another person and they both dragged the canoe away

The officer says that because the canoe appears to have been stolen, it is best for him to fly all of you back to the summer camp.

Use the following information to answer question 39.

On the dashboard of the RCMP's airplane, you see the following chart.

AIR SPEEDS—Muskrat 131

Taxi	5 km/h
Take off	70 km/h
Cruise Flight—with floats	110 km/h
Cruise Flight—with wheels	130 km/h

- 39.** From the chart, you infer that the airplane flies more slowly with floats than with wheels because the floats
- A.** increase thrust
 - B.** decrease thrust
 - C.** increase drag
 - D.** decrease drag

The RCMP officer assures you that when the canoe is found, it will be returned to the summer camp.

You spend the next day at the Sandbar Science Centre. You and the other campers are given the task of completing a science demonstration or experiment for the last day at camp. The next set of questions deals with some of these projects.

Use the following information to answer question 40.

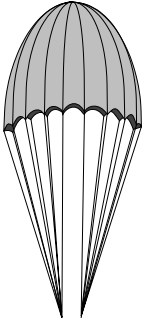
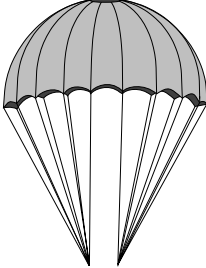
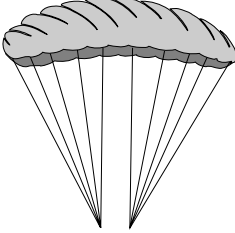
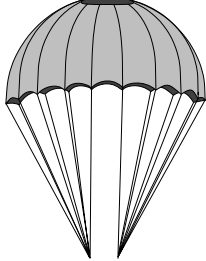
To demonstrate Bernoulli's Principle, Kerry blows over the top of a strip of paper.



40. This demonstration is designed to show that fast moving air
- A. creates a low pressure area
 - B. creates a high pressure area
 - C. forces a curved strip of paper to curve more
 - D. forces a curved strip of paper to curve less

Use the following information to answer question 41.

Shauna makes a display that shows some different types of parachutes.

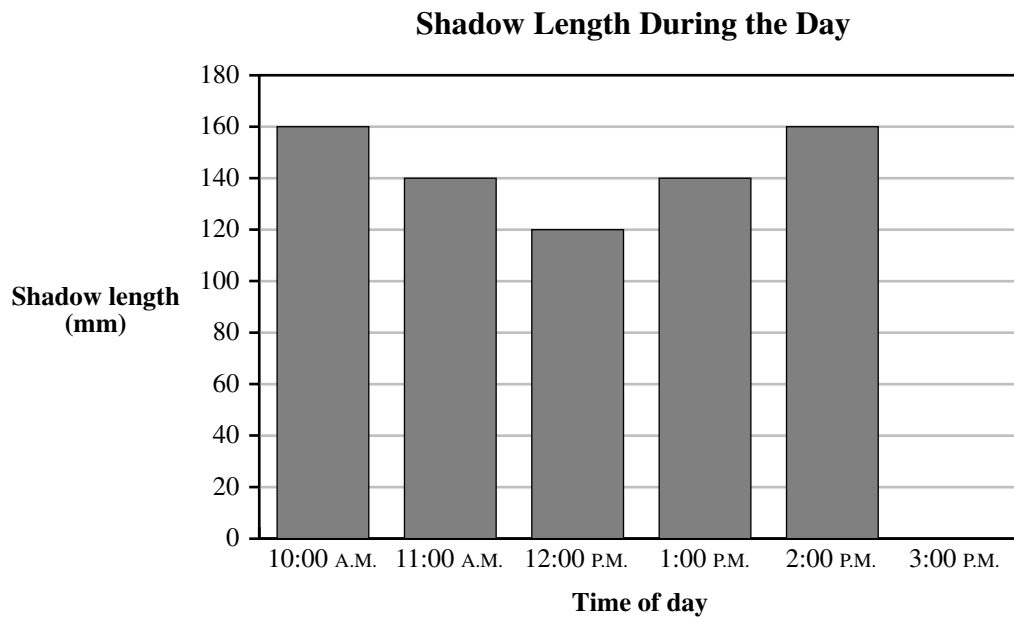
Shape	Name	Drop Speed (metres per second)	Hole diameter (centimetres)
	Swallow	100 m/s	none
	Hawk	40 m/s	20 cm
	Eagle	50 m/s	none
	Falcon	45 m/s	40 cm

41. The best parachute for a slow, controlled descent is the

- A. Swallow
- B. Hawk
- C. Eagle
- D. Falcon

Use the following information to answer question 42.

Natalie has a graph that she constructed to show how the length of a shadow changes throughout a sunny day.

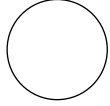



42. Natalie predicted that the length of the shadow at 3:00 P.M. would be
- A. 140 mm
 - B. 160 mm
 - C. 170 mm
 - D. 180 mm

Use the following information to answer questions 43 and 44.

Jean-Paul's display has a chart with information about each planet in our solar system.

Our Solar System

Planet	Relative size	Maximum distance from sun (millions)	Diameter	Average surface temperature	Day length (Earth units)	Year length (Earth units)	Number of moons
Mercury	◦	69.7 km	4 880 km	350°C day, -170°C night	58.0 days	88 days	0
Venus	○	109.0 km	12 100 km	480°C	243.0 days	225 days	0
Earth	○	152.1 km	12 756 km	22°C	1.0 day	365 days	1
Mars	◦	249.1 km	6 787 km	-23°C	1.0 day	687 days	2
Jupiter		815.7 km	142 800 km	-150°C	10.0 h	12 years	16
Saturn		1 507.0 km	120 000 km	-180°C	10.0 h	30 years	17
Uranus	○	3 004.0 km	51 800 km	-210°C	16.0 h	84 years	5
Neptune	○	4 537.0 km	49 500 km	-220°C	18.0 h	165 years	2
Pluto	◦	7 375.0 km	3 000 km	-230°C	6.4 days	248 years	1

43. According to Jean-Paul's chart, the planet that has the same number of natural satellites as Earth is
- A. Venus
 - B. Mars
 - C. Neptune
 - D. Pluto
44. While making his display, Jean-Paul realized that the planet that rotates most slowly on its axis is
- A. Venus
 - B. Mars
 - C. Neptune
 - D. Pluto

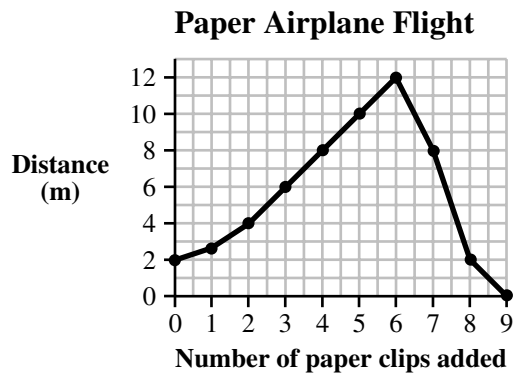
Use the following information to answer questions 45.

Peter's project shows how different-sized craters can be made by dropping rocks of different sizes from the same height into a pan containing 10 cm of flour.

45. Two variables that are kept constant in this investigation are the
- A. size of the pan and the size of the craters created
 - B. height from which the rocks are dropped and the size of the rocks
 - C. depth of flour in the pan and the height from which the rocks are dropped
 - D. amount of flour used and the size of the rocks

Use the following information to answer question 46.

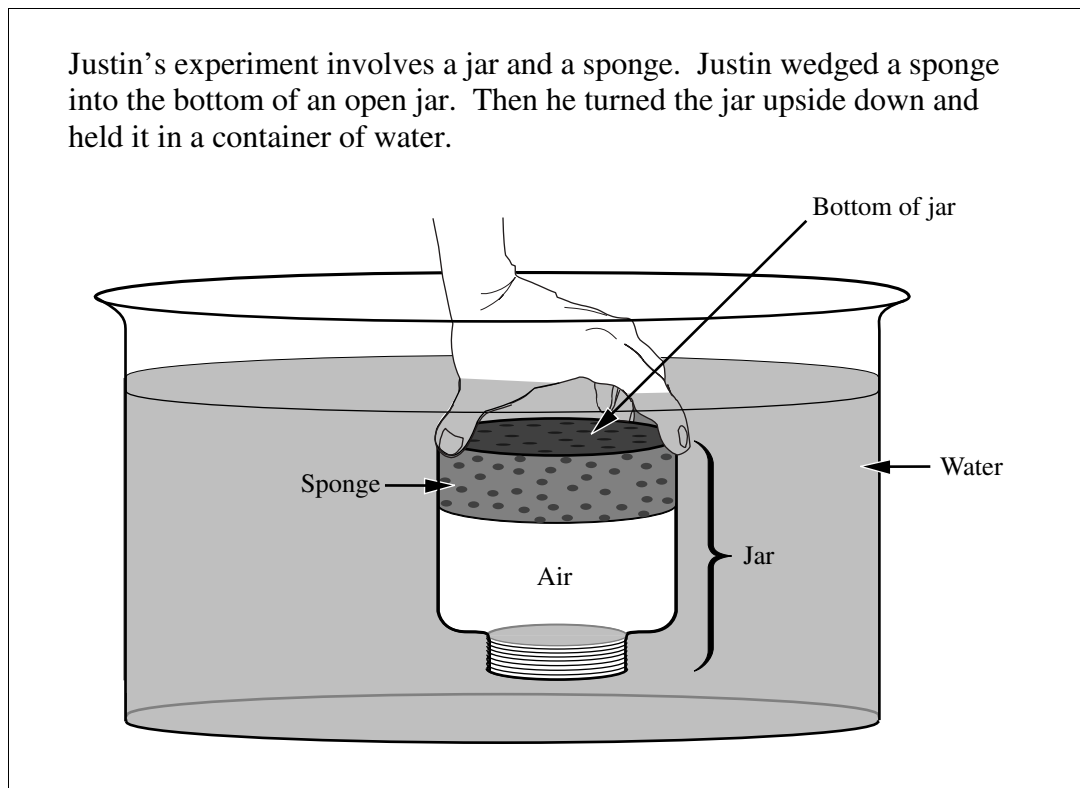
In Allison's project, she experiments to see if adding mass to a paper airplane will affect how far it flies. A graph of her results is shown below.



46. An inference that can be made from Allison's graph is that
- A. an airplane requires at least one paper clip to fly
 - B. an airplane that flies 8 m has only 4 paper clips
 - C. an increase in mass affects the distance an airplane flies
 - D. after 5 paper clips are added, an airplane will fly 12 m

47. Another display shows a working model of a hot-air balloon. The model rises slightly above the display table and then hovers at the same position. When the top flap of the balloon is opened, the balloon
- A. continues to rise because the amount of air inside the balloon remains the same
 - B. stays at the same position because cold air inside the balloon is less dense than the air outside the balloon
 - C. descends because hot air is released from the balloon
 - D. descends because cold air pushes the balloon down

Use the following information to answer question 48.



48. Which of the following statements explains why the sponge did not get wet?
- A. The air in the jar exerts pressure on the water.
 - B. The sponge is lighter than the air.
 - C. The sponge does not absorb water.
 - D. The air is more dense than the sponge.

Use the following information to answer question 49.

Nicole explained that she studied an ant colony just outside her cabin. Over a five-day period, she observed and recorded the activity level of the ants.

Activity Level of Ants

Day	Temperature (°C)	Rainfall (mm)	Activity Level
1	17	10	high
2	20	0	high
3	27	5	medium
4	30	20	low
5	25	35	low

49. The activity level of the ants appears to decrease when

- A. rainfall is low and the temperature is high
- B. rainfall is high and the temperature is low
- C. rainfall is low and the temperature is low
- D. rainfall is high and the temperature is high

Use the following information to answer question 50.

Henri's investigation shows how the length of a shadow cast by a sundial changes throughout 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	?

50. Henri explained that the length of a shadow changes throughout the day because of the
- A. movement of the sun
 - B. rotation of Earth on its axis
 - C. revolution of Earth around the sun
 - D. tilt of Earth on its axis

*You have now completed the test.
If you have time, you may wish to check your answers.*