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# QUESTION PAPER

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## ICATS SCIENCE CONTEST JUNIORS (GRADE 5 & 6)

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TIME ALLOWED: 90 MINUTES

MAXIMUM MARKS: 90

TOTAL QUESTIONS: 30 MCQS

### INSTRUCTIONS

1. DON'T OPEN THIS BOOKLET UNTIL INSTRUCTED.
2. WRITE YOUR NAME, FATHER NAME, SCHOOL ETC AT THE BUBBLE SHEET ONLY.
3. RECORD ALL ANSWERS ON THE BUBBLE SHEET ONLY.
4. SELECT BEST ANSWER FROM THE FOUR GIVEN OPTIONS AND MARK ONLY ONE OPTION IN EACH QUESTION.
5. USE BLUE / BLACK INK TO FILL UP THE CIRCLES FOR YOUR ANSWERS ON THE BUBBLE SHEET.
6. USE OF ANY HELPING MATERIAL INCLUDING CELL PHONES AND ELECTRONIC DEVICES IS STRICTLY PROHIBITED.
7. EVERY CORRECT ANSWER EARNS THREE POINTS.
8. ONE POINT WOULD BE DEDUCTED FOR EVERY INCORRECT ANSWER.



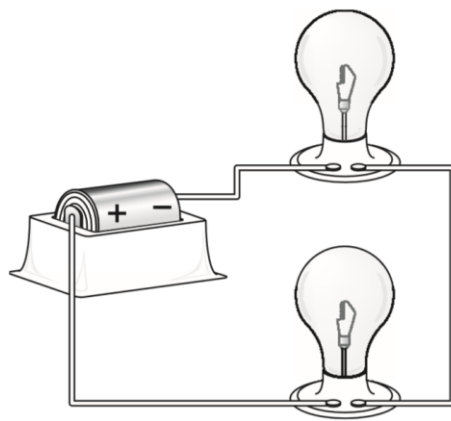
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**Q1. A metal spoon was left in a pot of boiling soup. The cook burned a finger by touching the spoon. Why did the finger get burned?**

- A. The metal spoon chemically reacted with the cook's hand.
  - B. The metal spoon conducted electricity to the cook's hand.
  - C. The metal spoon conducted heat to the cook's hand.
  - D. The metal spoon insulated the cook's hand.
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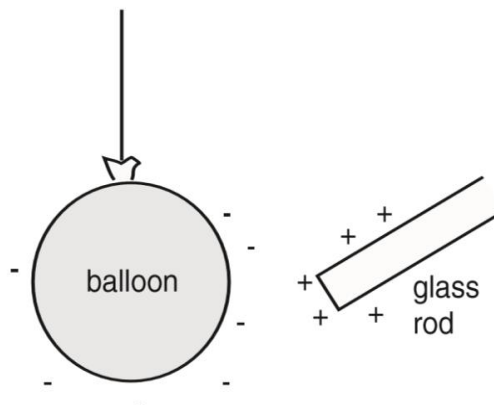
**Q2. The diagram below shows an electrical circuit**



**This circuit is a series circuit because**

- A. It has two light bulbs.
  - B. the same current flows through both light bulbs.
  - C. it uses a single battery.
  - D. the current is divided between the light bulbs.
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**Q3. A balloon has a negative charge. A glass rod has a positive charge.**



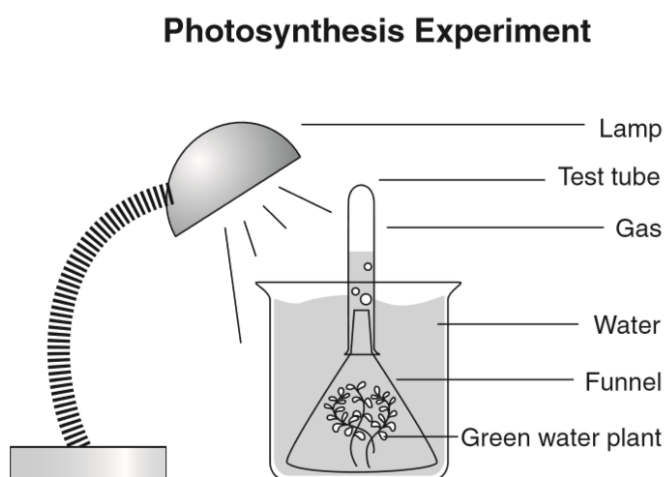
**What will happen when the glass rod is brought near the balloon?**

- A. The balloon will be attracted to the rod.
  - B. the balloon will be repelled by the rod.
  - C. the balloon will remain in place.
  - D. the balloon will spin in circles.
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**4. Which of the following best explains how stems transport water to other parts of the plant?**

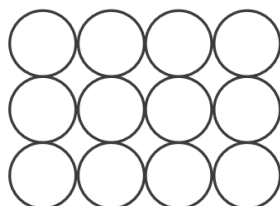
- A. Through a chemical called chlorophyll
  - B. By using photosynthesis
  - C. Through a system of tubes
  - D. By converting water to food
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**Q5. Which gas is forming in the test tube shown below?**



- A. carbon dioxide
  - B. hydrogen
  - C. oxygen
  - D. nitrogen
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**Q6. A scientist uses an instrument to observe the pattern of molecules in a substance. The picture below shows what the scientist sees.**



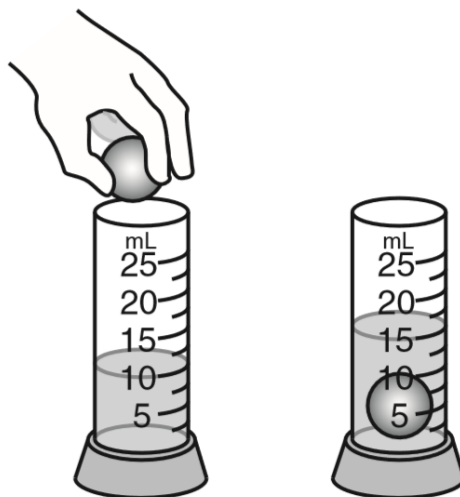
**What state of matter is the scientist most likely observing?**

- A. Gas
  - B. Liquid
  - C. Vapour
  - D. Solid
- 

**Q7. A city has a temperature of 75 °f, with partly cloudy skies. Weather forecasters are predicting that the air pressure and temperature will drop during the day. Which type of weather is most likely for this area in the late afternoon?**

- A. rainy
  - B. sunny
  - C. snowing
  - D. Hailing
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**Q8. A student added a small ball to a graduated cylinder containing 10 millilitres of water.**

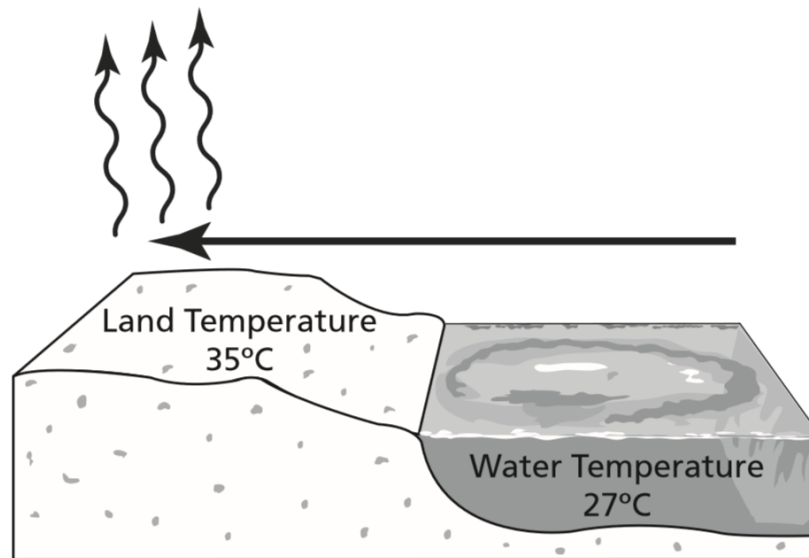


**What is the volume of the ball?**

- A. 5 ml
  - B. 10 ml
  - C. 15 ml
  - D. 20 ml
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**Q9. A diagram of land and ocean temperatures is shown.**

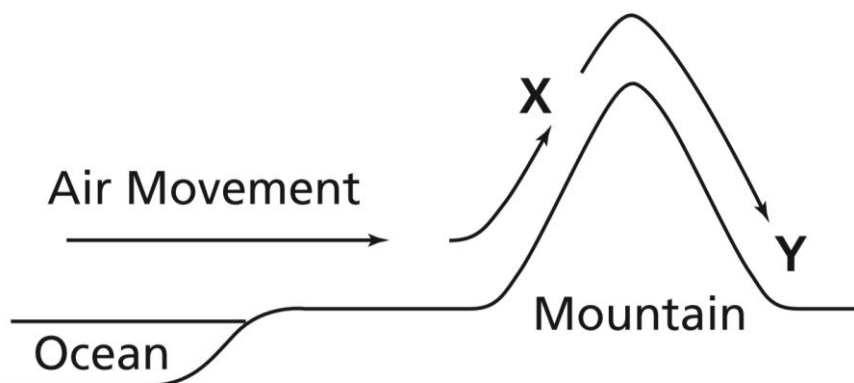


**This diagram illustrates the**

- A. cause of sea breezes.
- B. effect of erosion on the shoreline.
- C. movement of crustal plates.
- D. formation of a hurricane

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**Q10. A diagram illustrating the movement of an air mass over a mountain is shown.**



**How is the air at Y most likely different from the air at X?**

- A. The air at Y is colder than at X.
- B. The air at Y is drier than at X.
- C. The air at Y is moving faster than at X.
- D. The air at Y is more polluted than at X.

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**Q11. A teacher placed a metal spoon in a container of water with a temperature of 37°C. Then the teacher measured the temperature of the spoon in the water for 5 minutes**

**Temperature of the Spoon**

Time (min)	Temperature (°C)
0	23
1	25
2	26
3	28
4	29
5	31

**Based on the data, which best explains how energy was transferred between the metal spoon and the water?**

- A. Heat from the water transferred to the spoon by radiation.
- B. Heat from the water transferred to the spoon by conduction.
- C. Heat from the spoon transferred to the water by radiation.
- D. Heat from the spoon transferred to the water by conduction.

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**Q12. An animal called a sea anemone uses stinging cells to capture prey.**

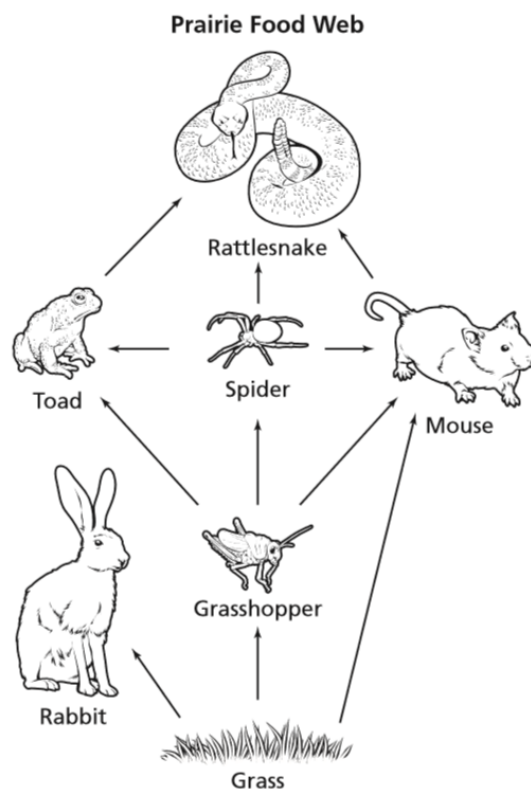


**Although this animal looks like a flower, it must get energy from which source?**

- A. soil
- B. sunlight
- C. ocean water
- D. other organisms

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**Q13. A prairie food web is shown below.**

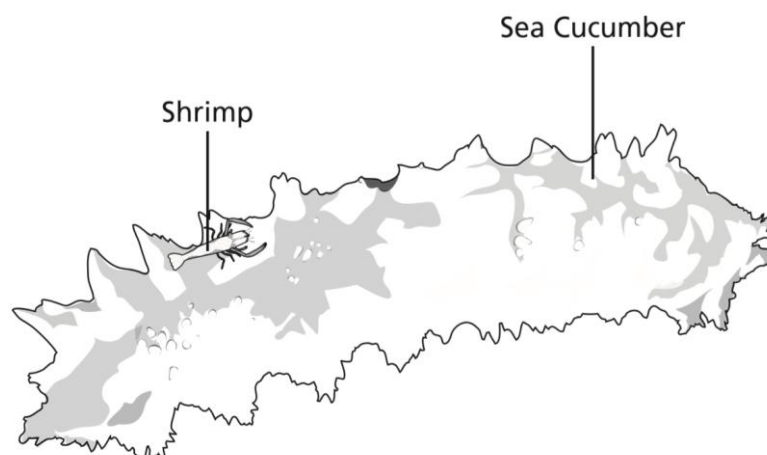


**Which group of organisms is made up of only consumers?**

- A. Spider, Grass, Mouse
- B. Toad, Grass, Rabbit
- C. Grasshopper, Mouse, Grass
- D. Rattlesnake, Grasshopper, Spider

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**Q14. A certain species of shrimp can travel from one place to another by riding on a sea cucumber, as shown in the diagram below.**



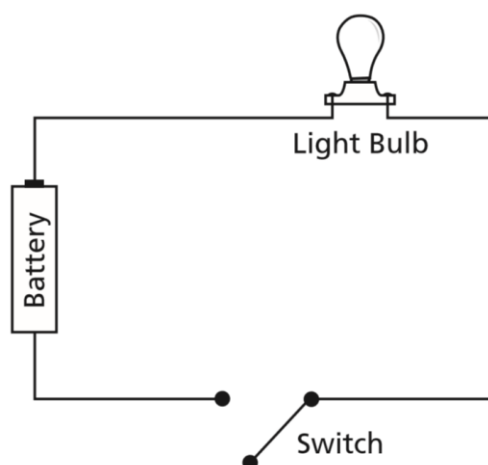
**The sea cucumber is not harmed by the presence of the shrimp. Which term best describes this relationship?**

- A. competitive
  - B. mutualistic
  - C. commensalism
  - D. parasitic
- 

**Q15. A student is trying to determine if the composition of ice cubes affects the melting point. Which will be the best investigation to use?**

- A. Freeze pure water in 3 identical ice cube trays, and then place each tray on a table in different rooms.
  - B. Freeze pure water, sugar water, and salt water in 3 identical ice cube trays, and then place the trays side by side on the same table.
  - C. Freeze pure water in 3 different-sized ice cube trays, and then place each tray on a different table in the same room.
  - D. Freeze pure water, sugar water, and salt water in 3 different-sized ice cube trays, and then place the trays side by side on the same table.
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**Q16. The diagram below shows a simple electrical circuit.**



**What energy conversions occur when the switch is closed?**

- A. chemical energy → electrical energy → light energy
  - B. light energy → electrical energy → thermal energy
  - C. thermal energy → electrical energy → light energy
  - D. light energy → chemical energy → electrical energy
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**Q17. The following is a process that takes place in the atmosphere.**

**Solar energy → warm air rises → air cools in upper atmosphere and sinks → air currents**

**This process can best be identified as**

- A. wind formation.
- B. cloud formation.
- C. precipitation runoff.
- D. static electricity.

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**Q18. In a biotic response experiment, two plants with the same mass are placed in identical pots. Both plants are given the same amount of water, soil, and sunlight. After one week, the test plant is given one tablespoon of liquid fertilizer. Two weeks later, the data shows the test plant has the greater mass. What is the independent variable in this biotic response experiment?**

- A. amount of sunlight
- B. soil temperature
- C. liquid fertilizer
- D. size of the pot

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**Q19. Water and ketchup are each poured onto a tray from two separate bottles. The charts below represent the amount of time it takes each liquid to flow from the top to the bottom of the tray.**

**Water Data**

<b>Trial #</b>	<b>Time (sec.)</b>
1	2
2	3
3	2

**Ketchup Data**

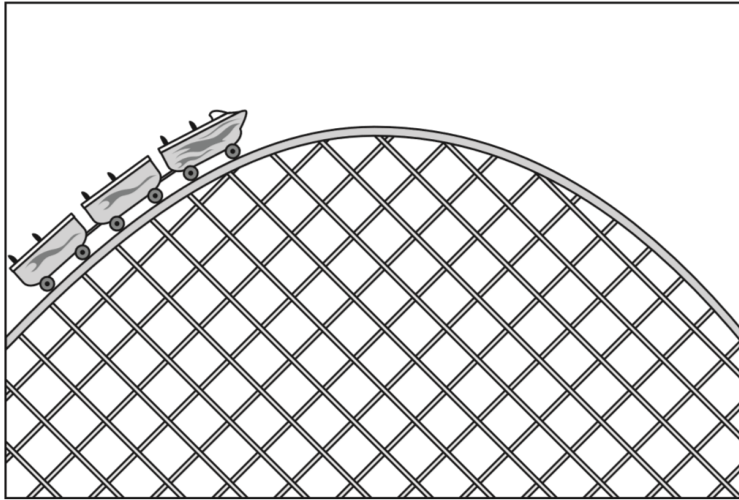
<b>Trial #</b>	<b>Time (sec.)</b>
1	35
2	35
3	40

**What conclusion is best supported by the data?**

- A. Thicker liquids take longer to travel to the bottom of a tray.
- B. Thicker liquids take less time to travel to the bottom of a tray.
- C. Liquid with sugar crystals travels to the bottom of a tray faster.
- D. Liquid with a darker color travels to the bottom of a tray faster.

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**Q20. A diagram of a roller coaster moving to the top of a hill is shown below**

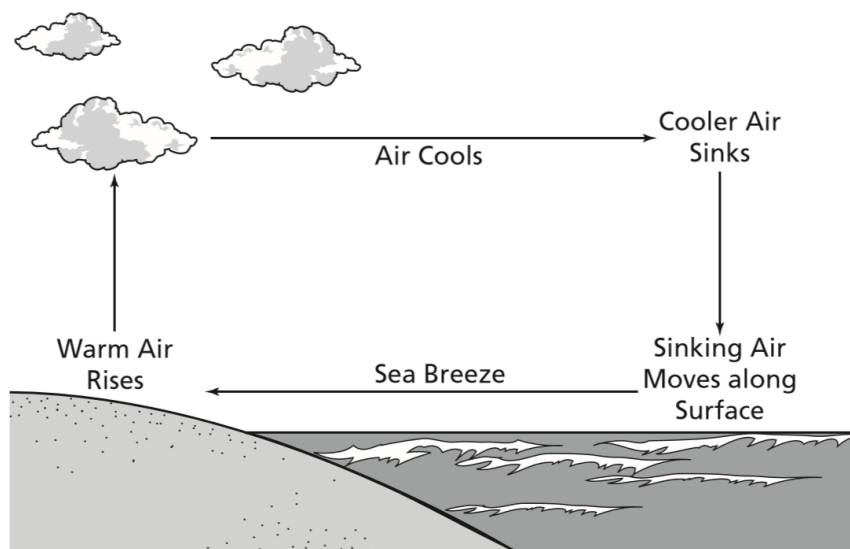


**Which type of energy will be greatest at the top of the hill?**

- A. chemical potential energy
- B. nuclear potential energy
- C. elastic potential energy
- D. gravitational potential energy

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**Q21. The drawing below shows a sea breeze.**

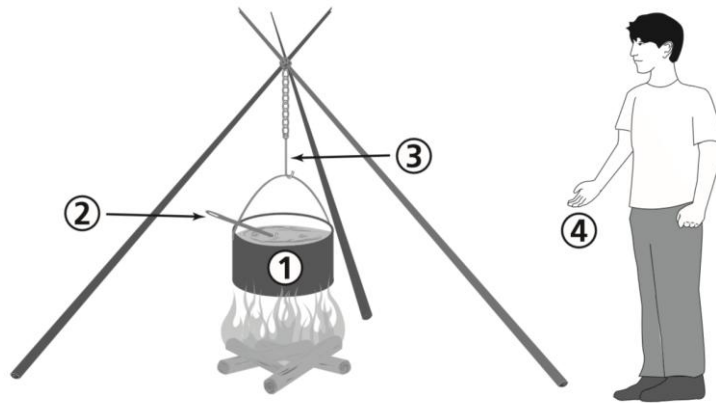


**When is this type of wind pattern most likely to occur?**

- A. during the day when the land heats faster than the surface of the sea
- B. during the night when the surface of the sea cools faster than the land
- C. during the day when the sea is as warm as the land
- D. during the night when the air above land is warmer than the air above the sea

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**Q22. A camper cooks a pot of stew over a fire as shown.**



**At which location is heat from the fire mainly transferred by radiation?**

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

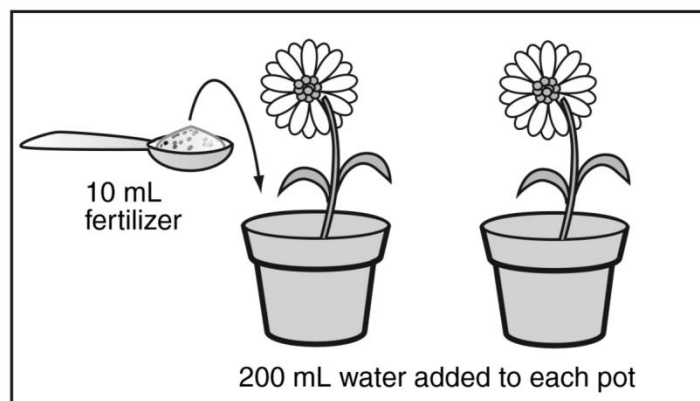
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**Q23. Ocean currents bring deep, nutrient-rich water to the surface. What causes these currents to move upward?**

- A. Warm rainwater mixes with surface water, pushing deep water upward.
- B. Cold surface water from the poles sinks, pushing deep water upward.
- C. Wind currents cause surface water to sink, pushing deep water upward.
- D. Surface runoff from rivers causes warm water to sink, pushing deep water upward.

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**Q24. A student will measure and record the growth of two flowering plants every other day for 10 days.**



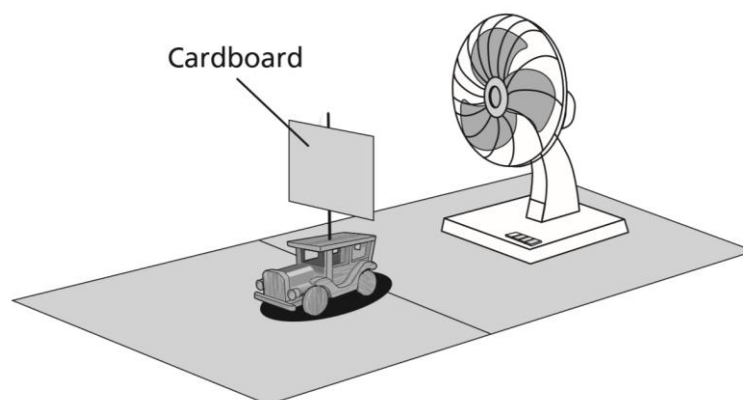
**According to the diagram, which question is being tested?**

- A. Do flowering plants grow better when watered with salt water?
  - B. How much fertilizer do flowering plants need?
  - C. Does fertilizer added to the soil lead to taller flowering plants?
  - D. How tall do flowering plants grow?
- 

**Q25. Which list gives the correct order of food traveling through the digestive system after it is swallowed?**

- A. stomach, esophagus, large intestine, small intestine
  - B. small intestine, large intestine, esophagus, stomach
  - C. esophagus, stomach, large intestine, small intestine
  - D. esophagus, stomach, small intestine, large intestine
- 

**Q26. An investigation using a fan and a wooden car is shown.**



**Which of these will most likely increase the distance the car will travel?**

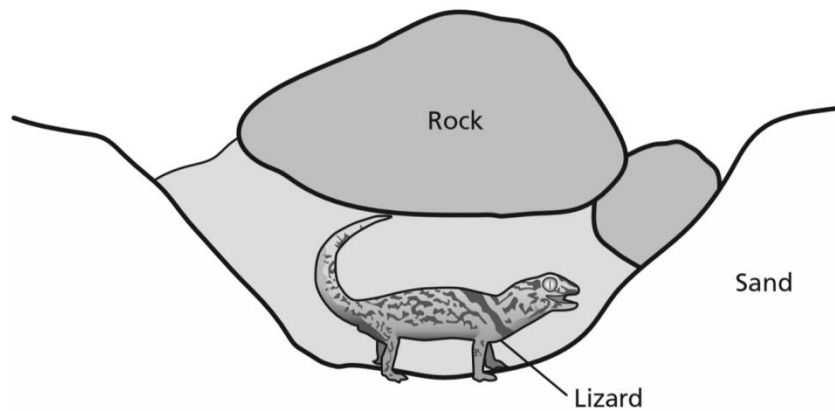
- A. change the direction the car is pointed
  - B. make the size of the cardboard larger
  - C. decrease the speed of the fan
  - D. add mass to the car
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**Q27. A student has four identical footballs. A different force is applied to each football as it is thrown. Which force will most likely cause the football to travel the least distance before hitting the ground?**

- A. 10 newtons
  - B. 12 newtons
  - C. 15 newtons
  - D. 18 newtons
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**Q28. Many desert lizards spend daylight hours under rocks, as shown.**

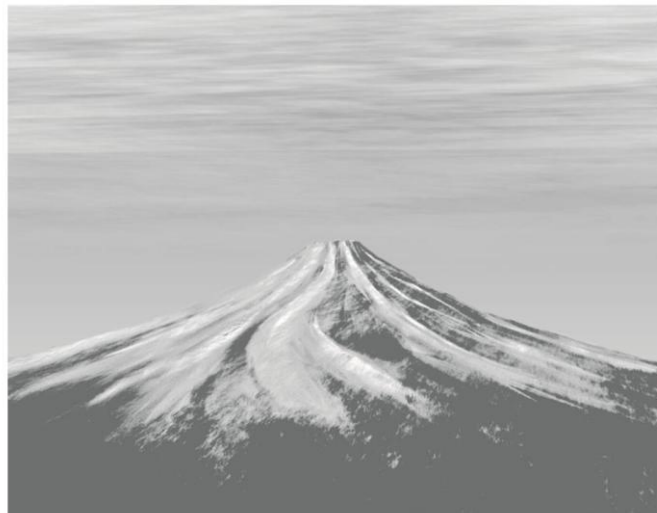


**This behaviour is mainly a response to which part of the environment?**

- A. lack of rain
- B. high temperatures
- C. shifting sand
- D. high winds

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**Q29. The picture shows a land feature.**

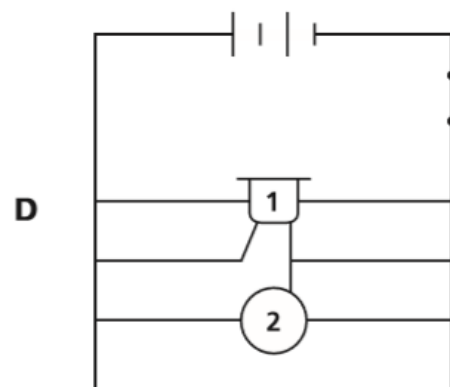
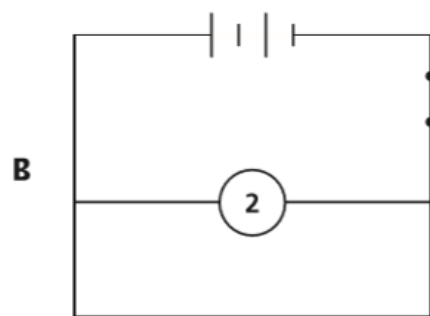
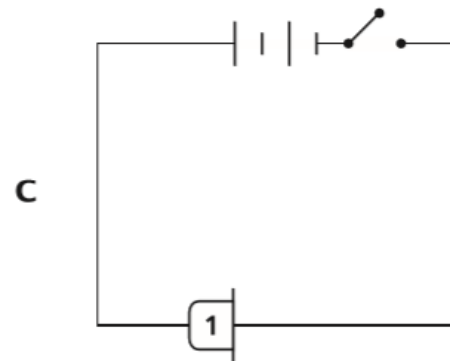
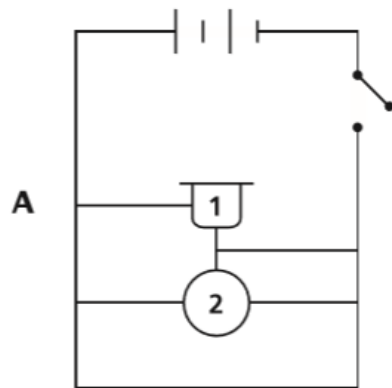


**Which event most likely formed this feature?**

- A. two crustal plates sliding past each other
- B. rivers depositing large amounts of sand
- C. hot liquid rock moving to the surface
- D. sediments being dropped by the wind

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**Q30.** Each diagram shows a circuit. The number one represents a buzzer and the number two represents a clock. Which diagram most likely shows a circuit producing sound?





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