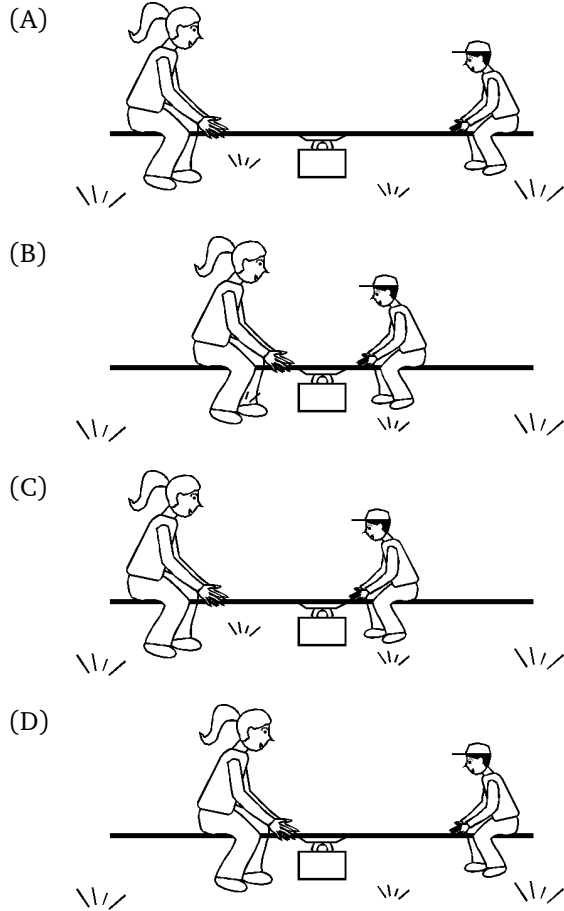
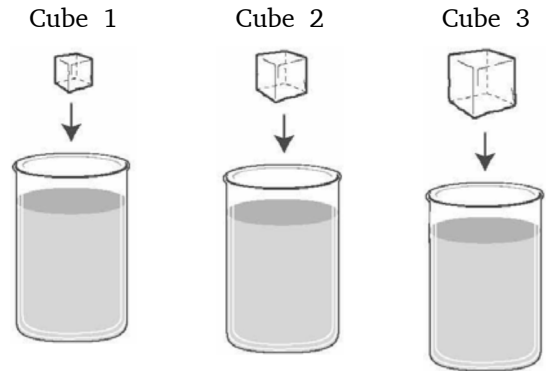


1. A girl wanted to play on a seesaw with her little brother.

Which picture shows the best way for the girl, who weighed 50 kg (kilograms), to balance her brother, who weighed 25 kg?

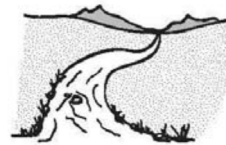


2. Susie has three ice cubes of different sizes. She places each ice cube into an identical beaker containing the same volume of water, as shown in the diagram.



What happens to the ice cubes when they are placed in the water?

- (A) Cubes 1, 2, and 3 will sink.
 (B) Cubes 1, 2, and 3 will float.
 (C) Cube 1 will float, and cubes 2 and 3 will sink.
 (D) Cubes 1 and 2 will float, and cube 3 will sink.
3. Look at the four pictures.



river



trees



seeds



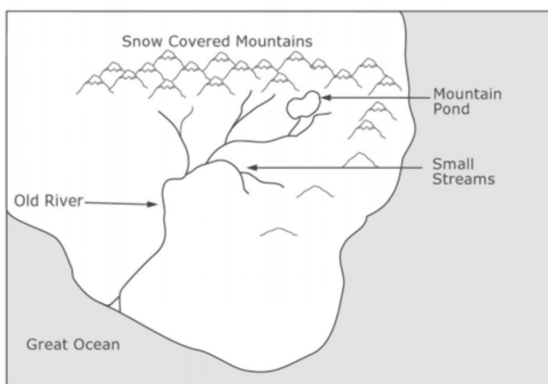
fire

Which pictures show *non-living* things?

- (A) trees and fire (B) fire and river
 (C) river and seeds (D) seeds and trees

4. Each of the following can be caused by wind. Which requires the strongest wind?
- (A) Dry fallen leaves moving along the ground
 - (B) The smoke from a chimney rising straight up
 - (C) Tree branches snapping off
 - (D) Flags waving on a flag pole

5. Look at this diagram.



The saltiest water is in the

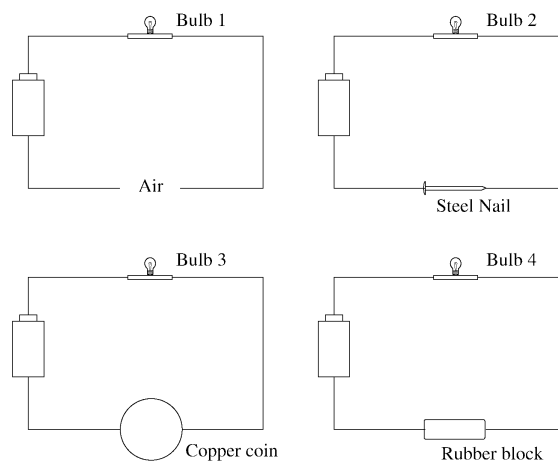
- (A) Great Ocean (B) Mountain Pond
 - (C) Old River (D) Small Streams
6. Machine A and Machine B are each used to clear a field. The table shows how large an area each cleared in 1 hour and how much gasoline each used.

| | Area of field cleared in 1 hour | Gasoline used in 1 hour |
|-----------|---------------------------------|-------------------------|
| Machine A | 2 hectares | 3/4 liter |
| Machine B | 1 hectares | 1/2 liter |

Which machine is more efficient in converting the energy in gasoline to work?

Explain your answer.

7. The following diagrams show a flashlight battery and a bulb connected by wires to various substances.

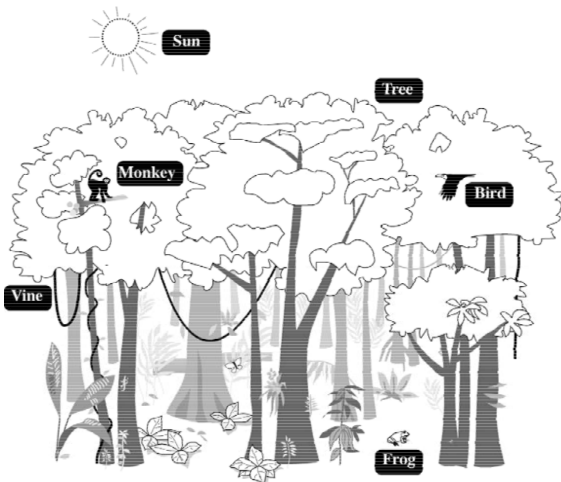


Which of the bulbs will light?

- (A) 1 and 2 only (B) 2 and 3 only
 - (C) 3 and 4 only (D) 1, 2, and 3 only
 - (E) 2, 3, and 4 only
8. A solution of hydrochloric acid (HCl) in water will turn blue litmus paper red. A solution of the base sodium hydroxide (NaOH) in water will turn red litmus paper blue. If the acid and base solutions above are mixed in the right proportion, the resulting solution will cause neither red nor blue litmus paper to change color.

Explain why the litmus paper does not change color in the mixed solution.

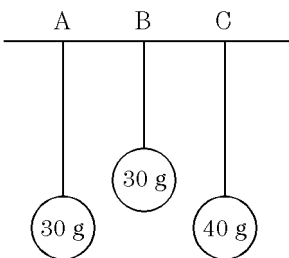
9. In the picture of a rainforest, six objects have been labeled.



Explain why each of the following is important in maintaining the ecosystem in the rainforest.

- a) The Tree
- b) The Sun

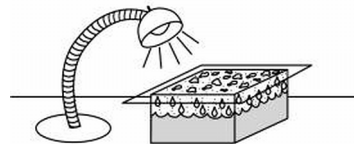
10. A student constructs 3 pendulums (*A*, *B*, and *C*) as shown. Pendulums *A* and *C* are the same length. Pendulums *A* and *B* have the same mass. In order to find the effect of mass on the time it takes for a pendulum to make one swing, what would the student need to compare?



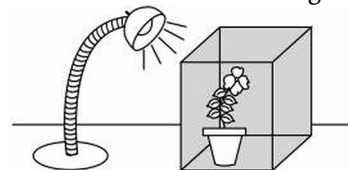
- (A) The swing time of pendulum *A* with that of pendulum *B*
- (B) The swing time of pendulum *B* with that of pendulum *C*
- (C) The swing time of pendulum *A* with that of pendulum *C*
- (D) The swing time of pendulum *A* with those of pendulums *B* and *C*

11. Which of the following would be the best model to show the interactions between water and the Sun's heat energy in cycles of precipitation?

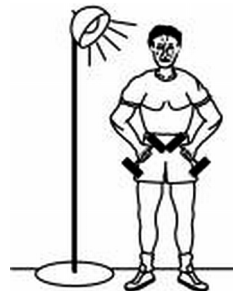
- (A) A light shines on an aquarium covered with glass, and water droplets form on the inside of the glass.



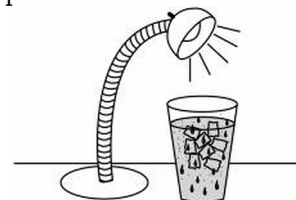
- (B) A light shines on a closed cardboard box containing a plant.



- (C) A light shines on a man's face. Droplets of sweat form on his face as he exercises.

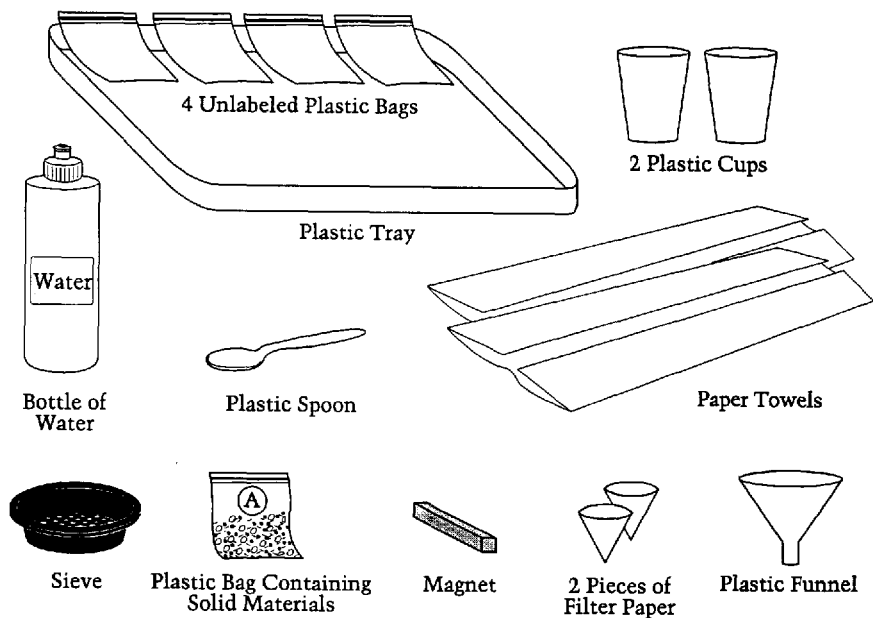


- (D) A light shines on a glass of iced tea. Water droplets form on the outside of the glass.



Separating a Mixture of Solid Materials

For this task, you have been given a kit that contains materials that you will use to perform an investigation during the next 30 minutes. Please open your kit now and use the following diagram to check that all of the materials in the diagram are included in your kit. If any materials are missing, raise your hand and the administrator will provide you with the materials that you need.



The Investigation: The plastic bag(A) contains a mixture of five solid materials. Your job is to design a procedure for separating the materials in the mixture using the equipment in your kit. It is known that the mixture contains 5 different substances:

- Three different metals
- Sand
- Salt

You will be asked to write a complete plan of all of the steps in your separation procedure. You will also be asked to save samples of the separated materials in small plastic bags.

As you perform this task, follow the directions step-by-step and write your answers to the questions in the space provided in your booklet.

Important Note: If you need more of the mixture, raise your hand and the administrator will give you another bag.

12. Look at the contents of plastic bag (A) without opening it. What properties do the substances in the mixture have that would allow the following equipment to be used to separate the mixture?

Magnet:

Filter paper:

Sieve:

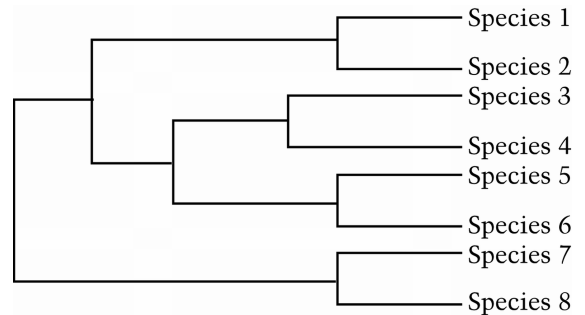
13. Now use this equipment to separate the five materials in the mixture. Each time you successfully separate a material from the mixture, place this separated material in one of the small unlabeled plastic bags. The materials that you separate *do not* have to be 100 percent pure, but they should be as pure as possible. Each separated material should be placed in its own plastic bag. The bags with the separated materials will be collected after you have completed the task.

[Notes: 1) If you have collected a material in the filter paper, you do not need to separate the material from the filter paper. Just put the filter paper in the plastic bag. 2) If you end up with one of the five materials dissolved in water, you can leave this material in the cup.]

14. Based on what you discovered as you worked to separate the materials in the mixture, write in the space below step-by-step instructions that would allow someone else to separate all five solids using the same set of equipment.

15. *The following question(s) refer to the information below.*

Scientists are studying the evolutionary history of a group of plants in the United States, and they develop an evolutionary tree, as shown below.



Which statement can be inferred from the evolutionary tree?

- (A) Species 1 is most closely related to Species 8.
- (B) Species 2 is most closely related to Species 3.
- (C) Species 3 is most closely related to Species 7.
- (D) Species 5 is most closely related to Species 6.