

Example Science Items

Appendix C



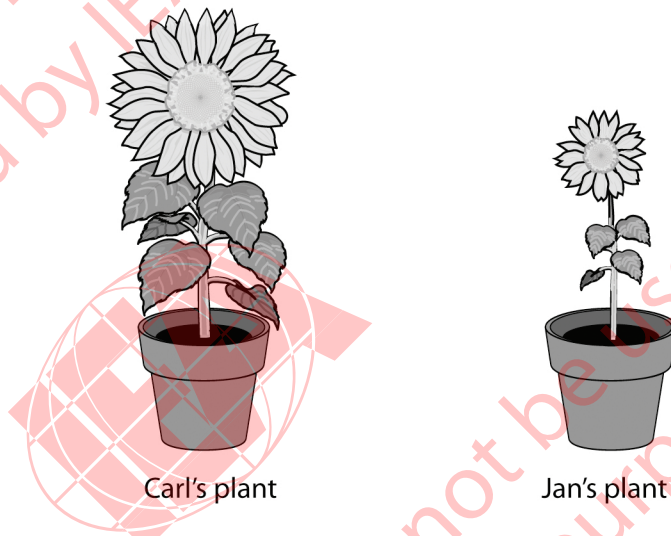


Example Science Items Grade 4

1

Carl and Jan each had a sunflower seed taken from the same plant. They took two identical pots and put potting soil in each. They then planted one seed in each pot. Carl looked after one pot in his home, and Jan looked after the other pot in her home.

After some time, they compared the plants and saw that there was a large difference in their growth, as shown in the pictures below.



Describe one way in which Carl may have treated his plant differently from the way Jan treated hers.

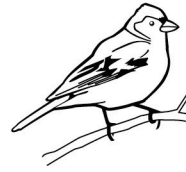
Carl might have given it more light and water.

Which bird is most likely to eat small mammals?

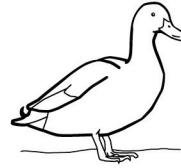
2



(B)



(D)



A ribbon is tied to a pole to measure the wind strength as shown below.

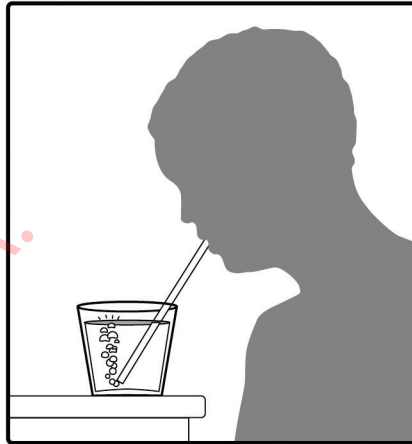
3



Write the numbers 1, 2, 3, and 4 in the correct order that shows the wind strength from the **strongest** to **weakest**.

Answer : 3, 4, 1, 2

4



When you blow into water using a straw, bubbles are formed and rise to the top. Why do the bubbles rise in water?

They rise because they are made from air which is lighter than water.

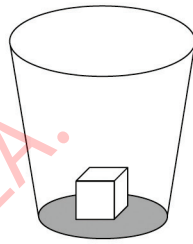
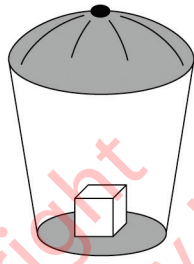
5

What is the main reason we can see the Moon?

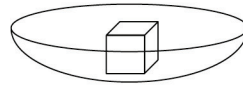
- (A) The Moon reflects light from the Earth.
- (B) The Moon reflects light from the Sun.
- (C) The Moon produces its own light.
- (D) The Moon is larger than stars.

6

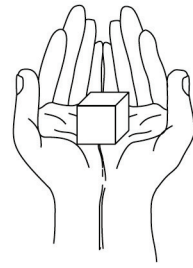
Which ice cube will take the longest time to melt?



(B)

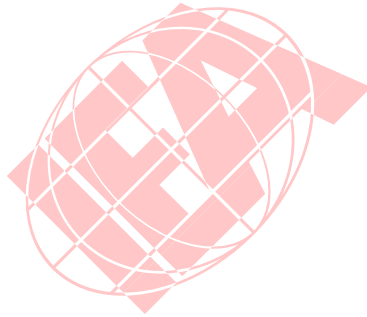


(C)



(D)

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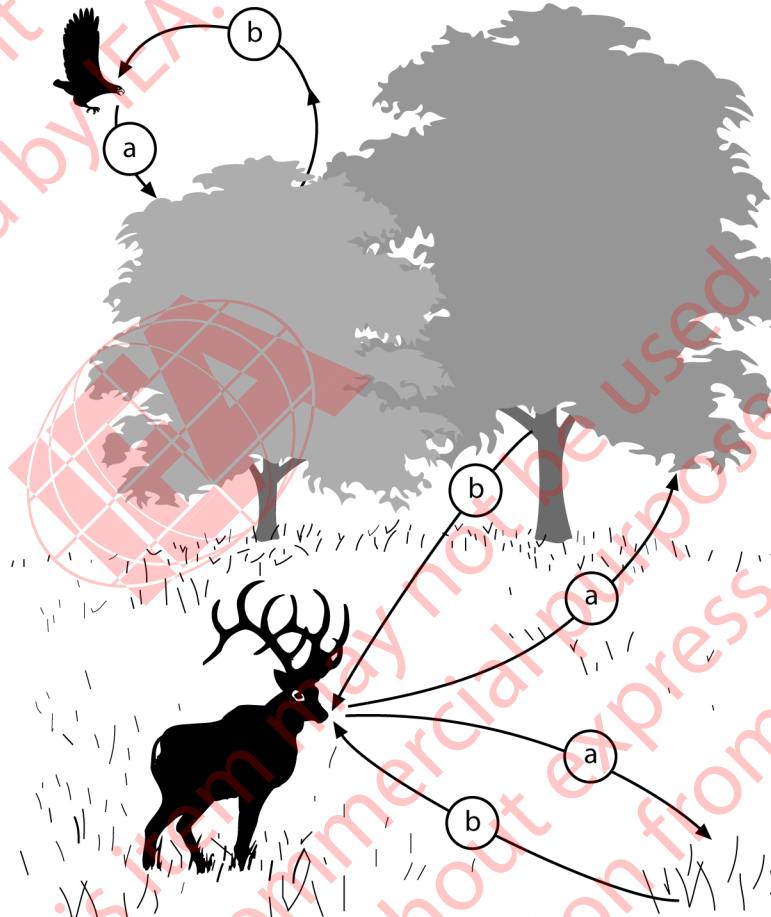


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Example Science Items Grade 8

1

The diagram below shows an example of interdependence among organisms. During the day the organisms either use up or give off (a) or (b) as shown by the arrows.



Choose the right answer for (a) and (b) from the alternatives given.

- (A) (a) is carbon dioxide and (b) is nitrogen.
- (B) (a) is oxygen and (b) is carbon dioxide.
- (C) (a) is carbon dioxide and (b) is water vapor.
- (a) is carbon dioxide and (b) is oxygen.

2

Thato fell off his bicycle and spilled the bag of salt he was carrying. He collected the salt off the ground together with sand and tree leaves and put the mixture in a plastic bag.



In the table below, describe the steps used by Thato to separate the salt from the mixture of salt, sand, and leaves. State a reason for doing each step. The first step has been done for you.

Step	Description of Step	Reason for Carrying Out the Step
1.	Put the mixture through a sieve.	This will remove the leaves.
2.	Add water	This will dissolve the salt
3.	Filter the salt solution	This will remove the sand
4.	Boil the salt water	This will evaporate the water

The mass of substances A and B are measured on a balance, as shown in Figure 1. Substance B is put into the beaker and substance C is formed. The empty beaker is put back on the balance, as shown in Figure 2.

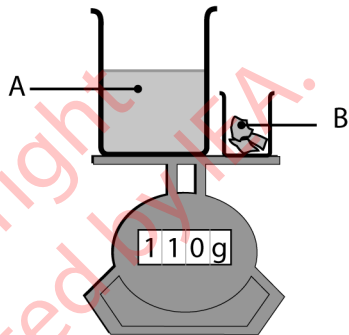


Figure 1

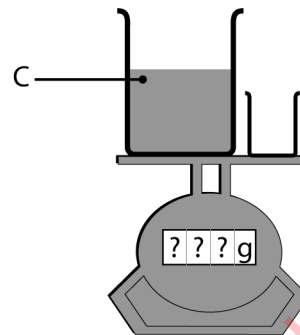


Figure 2

The scale in Figure 1 shows a mass of 110 grams.

What will it show in Figure 2?

(Check one box.)

- More than 110 grams
- 110 grams
- Less than 110 grams

Explain your answer.

The mass will be the same because the mass of reactants equals the mass of products.

4

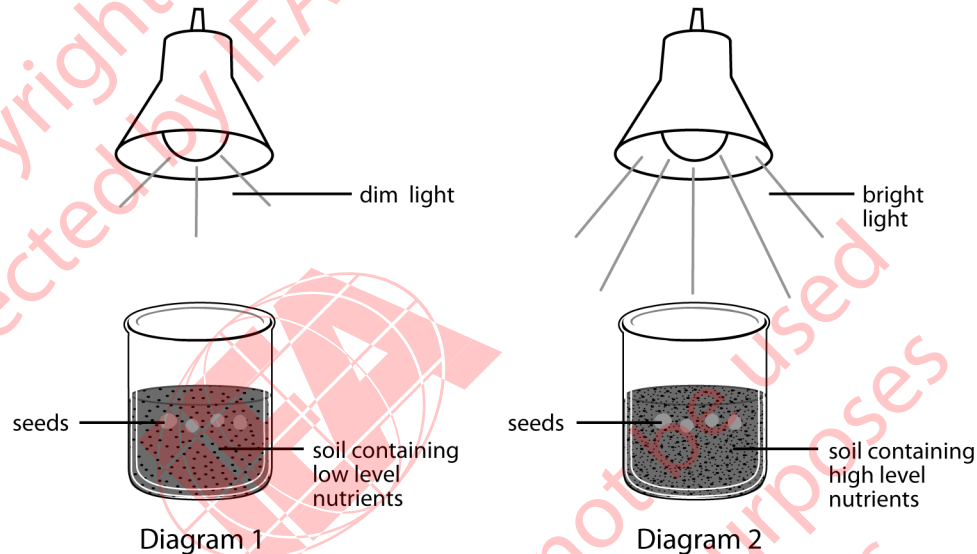
Fred has a packet of pea seeds that are genetically identical.

They are a variety of peas that produce tall stemmed pea plants.

He plants four pea seeds in a container in the conditions shown in Diagram 1.

He plants four more pea seeds in a container in the conditions shown in

Diagram 2. He waters the seeds every day.



What can be predicted about the height of the pea plants?

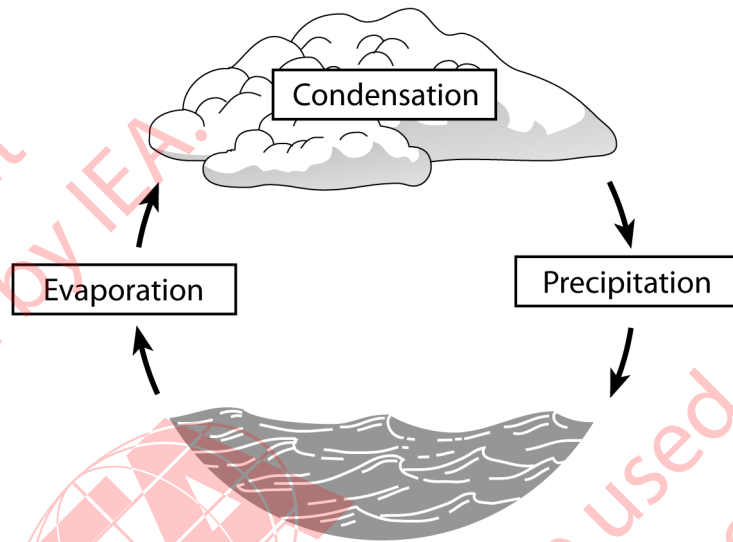
The height of the pea plants will be higher in Diagram 2.

Explain your answer.

The bright light will give the plants energy and the nutrients in the soil will help the peas grow.

5

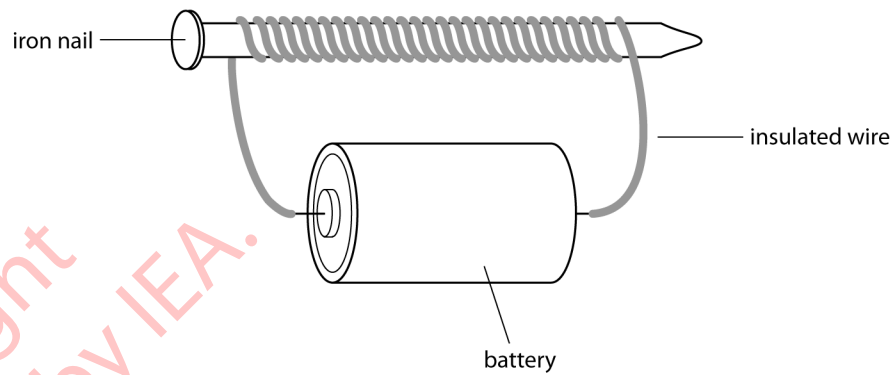
The diagram below shows Earth's water cycle.



What is the source of energy for the water cycle?

- (A) The Moon
- (B) The Sun
- (C) The tides
- (D) The wind

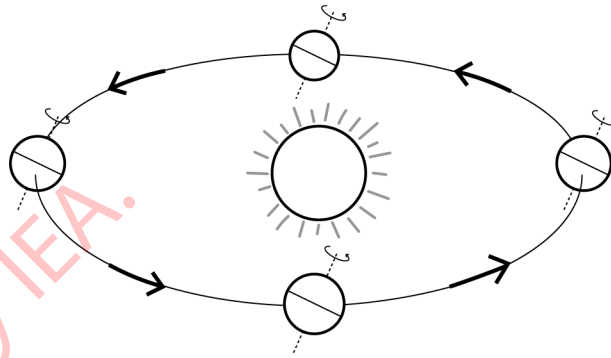
6



The figure shows an iron nail with an insulated wire coiled around it. The wire is connected to a battery.

What will happen to the nail when current flows through the wire?

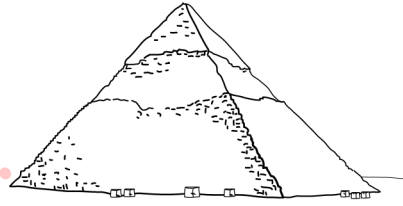
- (A) The nail will melt.
- (B) Electric current will flow through the nail.
- (C) The nail will become a magnet.
- (D) Nothing will happen to the nail.



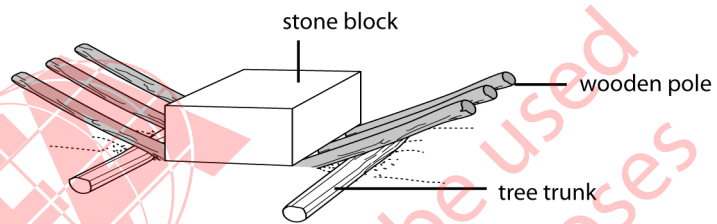
The diagram above shows the Earth's path around the Sun and the tilt of Earth's axis. Which of the following patterns on Earth is caused by the tilt of Earth's axis?

- seasons
- (B) day and night
- (C) years
- (D) time zones

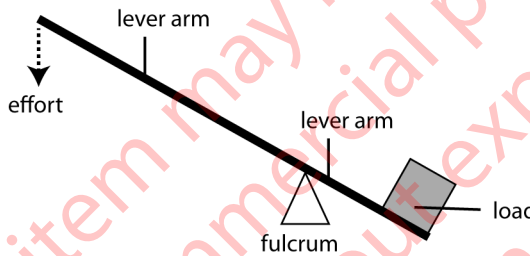
Peter and Joan are learning about the Great Pyramid of Cheops (Khufu) that is found in Egypt.



They wondered how the ancient Egyptians managed to lift the stone blocks to build the pyramid. They did some research on the Internet and found the diagram shown below.



Peter was not sure he understood the diagram so Joan drew a diagram to help him understand how the stone was lifted. Her diagram is shown below.

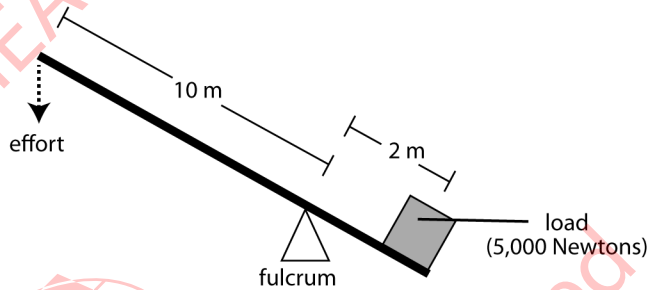


A. Match the parts of the Egyptian levers to the diagram of the lever Joan drew. One has been done for you.

Joan's Diagram	Egyptian Levers
Effort	Downward pull of the worker
Load	Stone block
Fulcrum	Tree trunk
Lever arm	Wooden pole

B. Peter and Joan read that six men could together lift a stone weighing 30,000 Newtons. Each man would then need to be able to lift one sixth of this weight (5,000 Newtons). They decided to work out how much effort each man had to exert on his wooden pole.

Peter added the length of each lever arm to Joan's diagram as shown below.



He looked up the following formula in a textbook:

$$\frac{\text{force exerted by load}}{\text{force exerted by effort}} = \frac{\text{length between effort and fulcrum}}{\text{length between load and fulcrum}}$$

How much force does each man have to exert to lift the block?

1,000 Newtons