



Teacher Guide

Sample Items

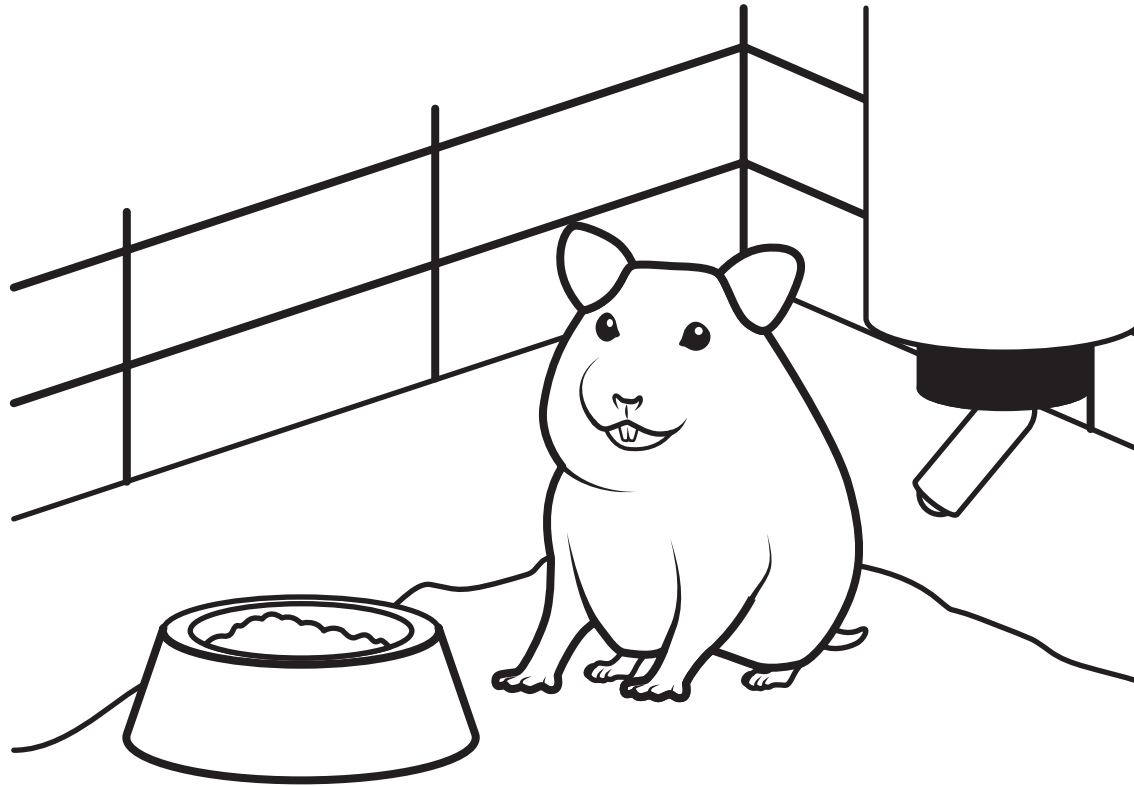
Science

Grade 8

Science
Grade 8
Sample Items

Item 1

Jeanie has a baby hamster. She wants to be sure it grows up healthy. She feeds it every day.



Item 1

Which question should Jeanie ask to find out how to help the hamster grow?

- ☐ Is the hamster a boy or a girl?
- ☐ What is the best name for the hamster?
- ☐ Does the hamster get enough food and water?

Item 2

A scientist measured the growth of small plants growing on the ocean surface. Then, she added fertilizer to the plants and measured their growth again. Her data are shown in the data table.

**Effect of Adding Fertilizer
to Ocean Plants**

	Before Fertilizer	After Fertilizer
Plant Growth Rate	0.25	0.65

Item 2

According to the data table, which factor affected the growth of the ocean plants?

- ☐ cloudy skies
- ☐ ocean temperature
- ☐ presence of fertilizer

Item 3

Scientists conducted an investigation to see how different foods available in spring affect geese. They captured geese and weighed them. Then, they weighed how much grass was in the stomach of each goose. The scientists released the geese and then captured them a second time, repeating their measurements. The data table lists their data.

**How Does Eating Grass
Affect Goose Weight?**

Date	Average Weight of Grass Eaten (grams)	Average Goose Weight (kilograms)
March 1st	22.7	4.65
March 12th	26.2	5.27

Item 3

Based on the data table, how does eating grass affect goose weight?

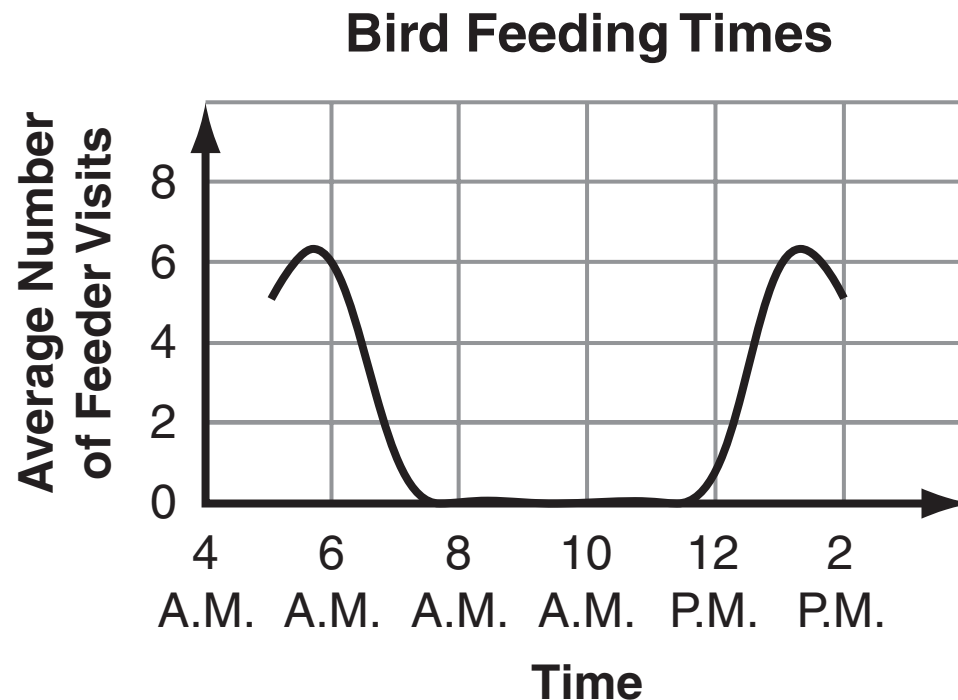
- ☐ Goose weight increases when geese eat more grass.
- ☐ Goose weight decreases when geese eat more grass.
- ☐ Goose weight stays the same when geese eat more grass.

Items 4–9 | Cluster Stimulus

A school built a nature area to provide food, water, and shelter for the local birds. Levi notices young birds that visit the feeders in the nature area are becoming larger over time.

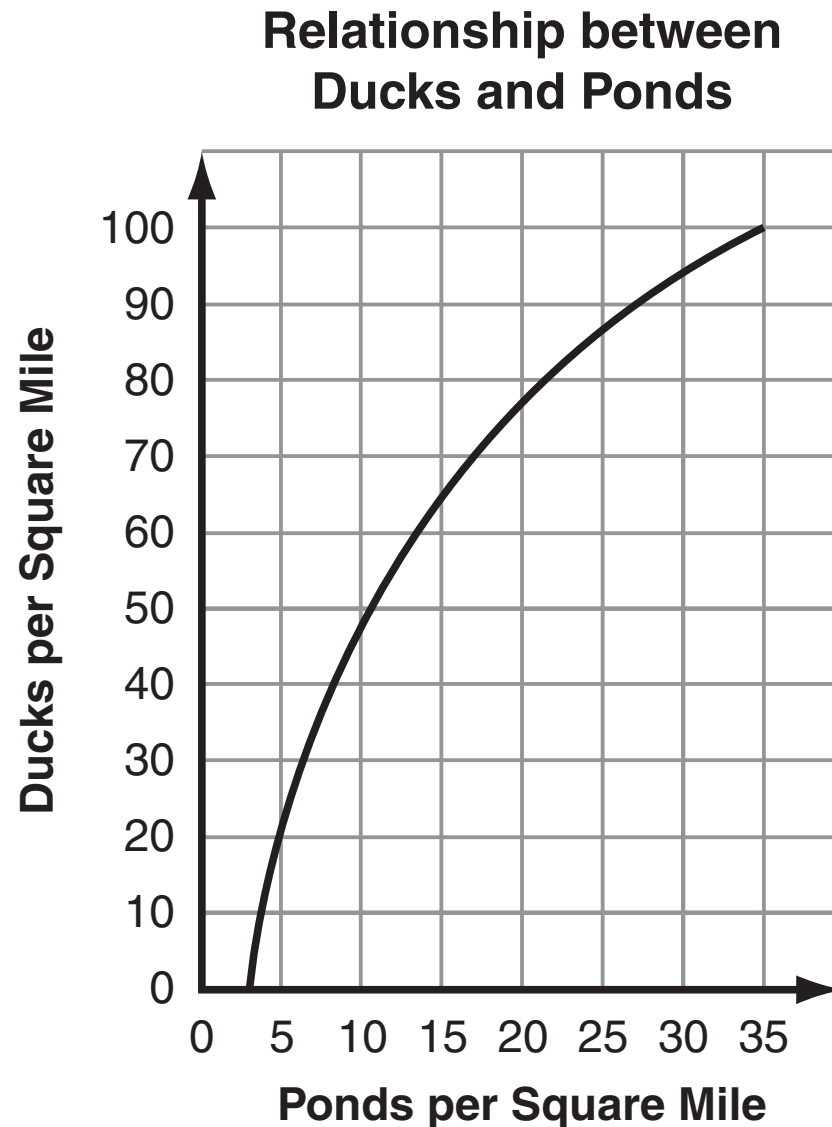
He wonders if certain human activities around the nature area might negatively affect the birds.

Levi examines a graph that models bird feeding behavior.



Items 4–9 | Cluster Stimulus

Levi also wants to restore a pond habitat near the nature area to attract ducks. He examines a graph showing the relationship between the number of ducks and the number of ponds in an area.



Item 4

Levi notices young birds that visit the feeders in the nature area are becoming larger over time.

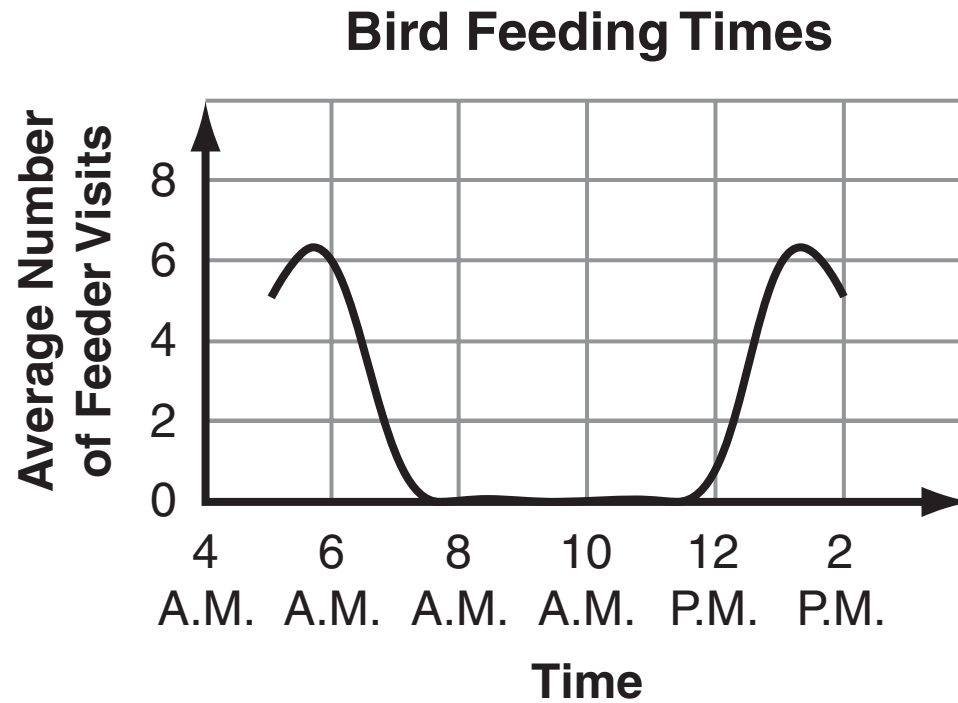
Item 4

What resource is needed to help the birds grow?

- ☐ food
- ☐ dirt
- ☐ shoes

Item 5

Levi wants to create a plan so that the bird feeders are always full. He examines a graph that models bird feeding behavior.



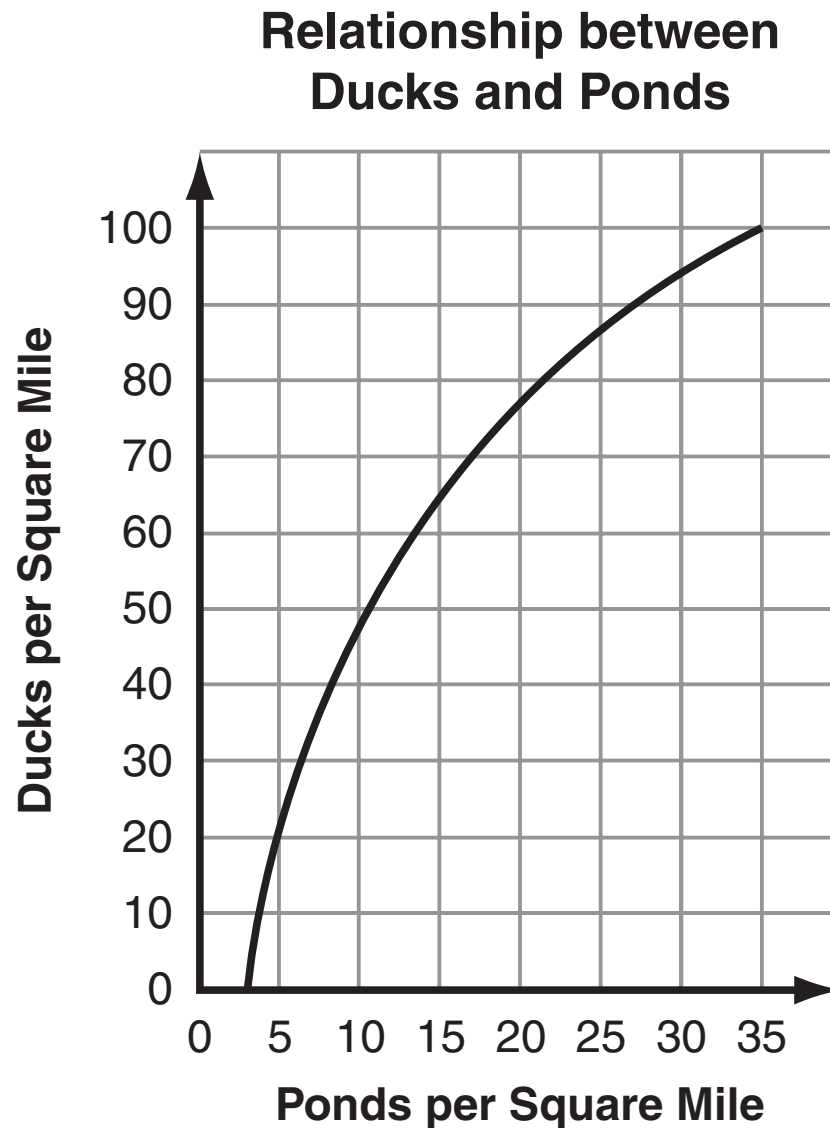
Item 5

Based on this data, when is the **best** time for Levi to refill the bird feeders?

- ☐ in the middle of the night
- ☐ in the morning and late afternoon
- ☐ in the middle of the day and early evening

Item 6

Levi also wants to restore a pond habitat near the nature area to attract ducks. He examines a graph showing the relationship between the number of ponds and the number of ducks.



Item 6

Which cause-and-effect relationship is **best** described by this data?

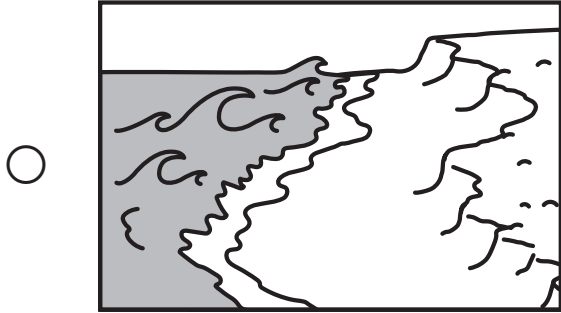
- ☐ clean pond water → more ducks per square mile
- ☐ many pond habitats → more ducks per square mile
- ☐ enough pond food to eat → more ducks per square mile

Item 7

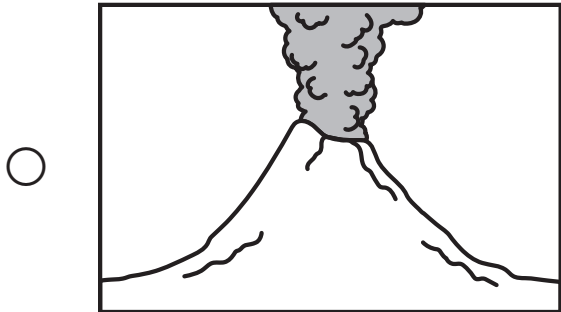
Levi knows that human activities can affect the environment.

Item 7

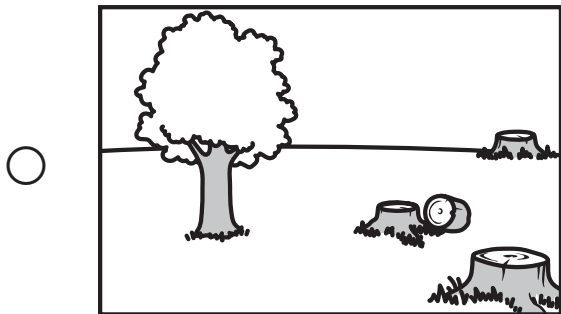
Which environmental change is **most likely** caused by humans?



Waves remove sand from a beach.



A volcano erupts.



Some trees are cut down.

Item 8

Levi observes that the number of birds visiting the nature area has decreased over time. He thinks this is because humans have caused changes to the natural environment. There are not as many places for birds to build nests.

Levi researches how human effects on birds could be reduced. A list of his findings is shown.

Actions to Reduce Human Effects on Birds

- Plant native trees and bushes.
- Decrease the amount of city noise.

Item 8

Which action would **best** help the birds in the nature area build sturdy nests?

- ☐ Plant native trees and bushes.
- ☐ Decrease the amount of city noise.
- ☐ Clean the classrooms in the school.

Item 9

Levi observes that birds are using the nature area. His science teacher tells him that human activities such as building roads have disrupted bird habitats. Without habitat for the birds to rest and have shelter, they cannot survive.

Levi makes a list of design changes to the nature area that could help protect the birds.

Possible Design Changes to Nature Area

- Build nesting boxes.
- Add clean birdbaths.
- Hang several bird feeders.

Item 9

Which design change would make sure that the birds have shelter?

- ☐ Build nesting boxes.
- ☐ Add clean birdbaths.
- ☐ Hang several bird feeders.

Items 10–15 | Cluster Stimulus

Syreeta lives near a lake and likes to explore the lake in her small boat. She wears a life jacket and has two paddles to move the boat through the water. Syreeta enjoys paddling fast and watching waves move in the water.

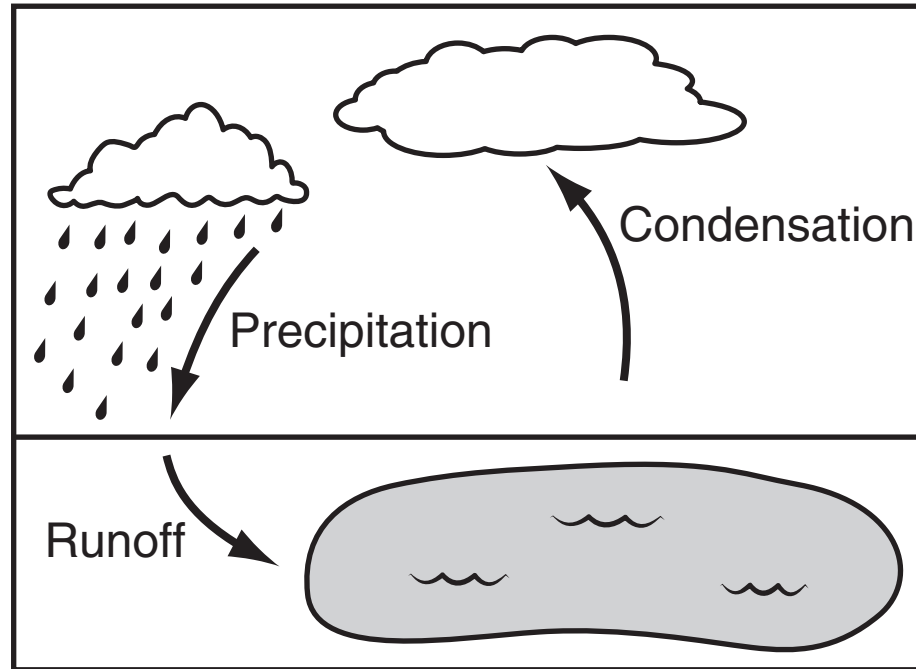
In the early mornings, the lake is often foggy. One day, Syreeta raises her hand into the air and feels tiny water droplets on her hand.

Before Syreeta goes out on her boat, her friend Marcel stops by. He tells Syreeta that the water cycle helps explain how the lake was formed. Syreeta is surprised to learn that the lake affects the environment.

Items 10–15 | Cluster Stimulus

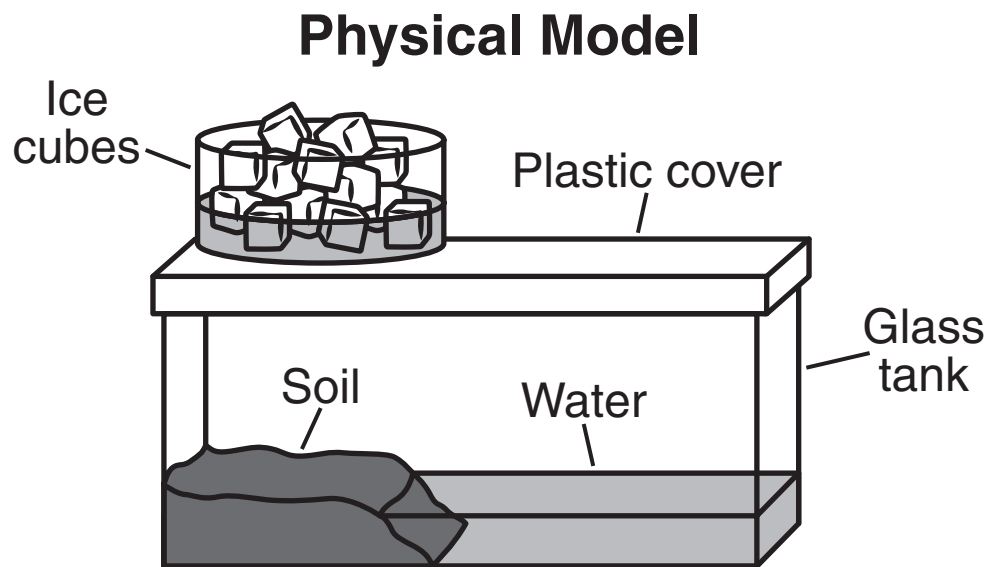
Syreeta decides to draw a model that shows the lake in part of the water cycle.

Drawing Model



Items 10–15 | Cluster Stimulus

Syreeta also builds a physical model of part of the water cycle that includes the water and soil of the lake. Syreeta starts with an empty glass tank. She pours soil into the bottom left side of the tank. Syreeta then fills the bottom right side of the tank with water. She places a plastic cover on top of the tank. Syreeta sets a container of ice cubes on the left side of the cover.



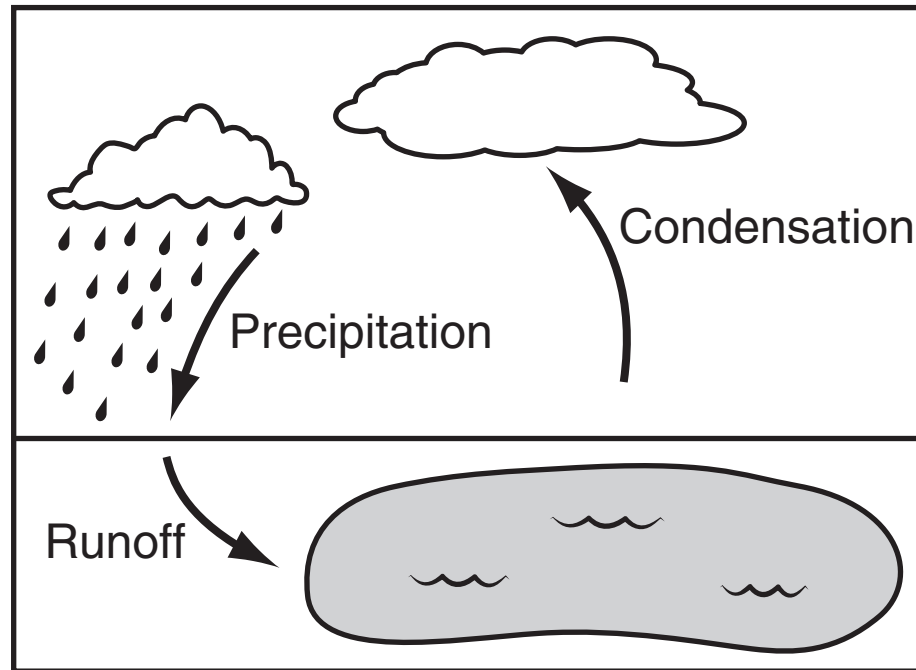
After drawing and building her models, Syreeta decides to take her boat onto the lake. Marcel is going to watch her from the dock.

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Item 10

Syreeta draws a model that shows part of the water cycle.

Drawing Model



Item 10

Which list of steps describes how water moves in the model?

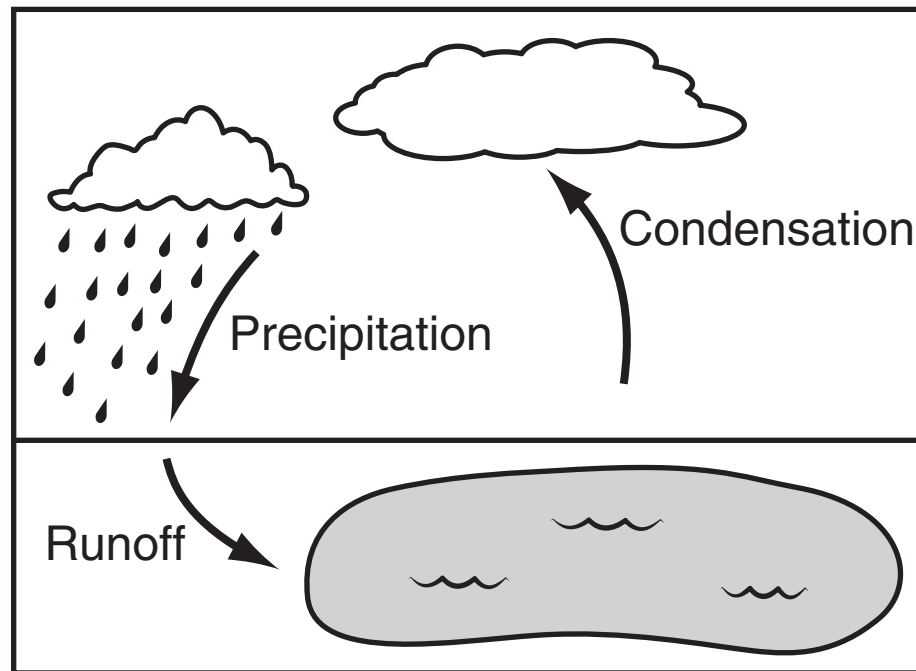
- ☐ bus → school → classroom
- ☐ imagination → travel → vacation
- ☐ condensation → precipitation → runoff

Item 11

In the early mornings, the lake is often foggy. One day, Syreeta raises her hand into the air and feels tiny water droplets on her hand.

Syreeta wonders where fog is represented on her drawing model that shows part of the water cycle.

Drawing Model



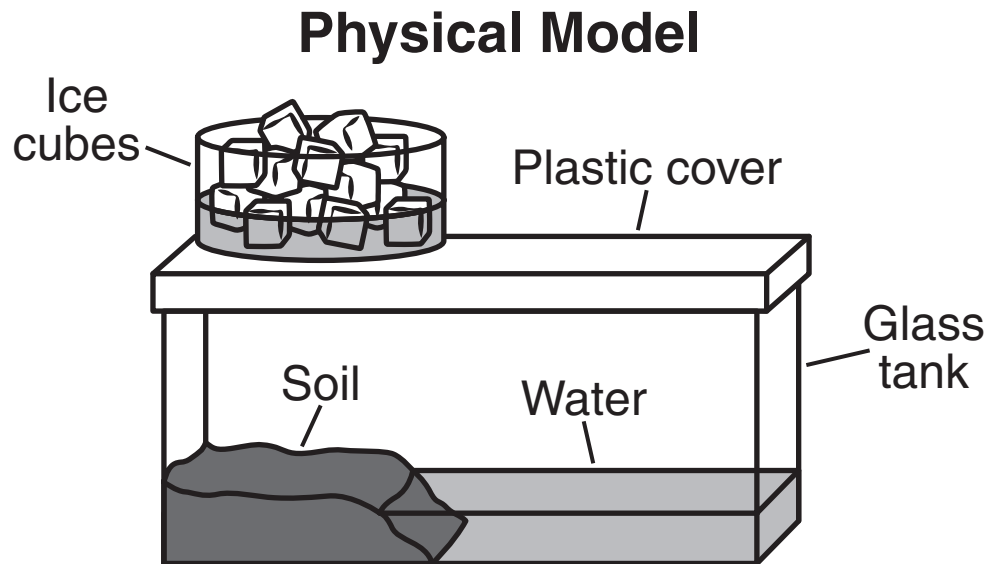
Item 11

Which part of Syreeta's model represents fog?

- ☐ friction
- ☐ precipitation
- ☐ condensation

Item 12

Syreeta also builds a physical model of part of the water cycle that includes the water and soil of the lake. Syreeta starts with an empty glass tank. She pours soil into the bottom left side of the tank. Syreeta then fills the bottom right side of the tank with water. She places a plastic cover on top of the tank. Syreeta sets a container of ice cubes on the left side of the cover.



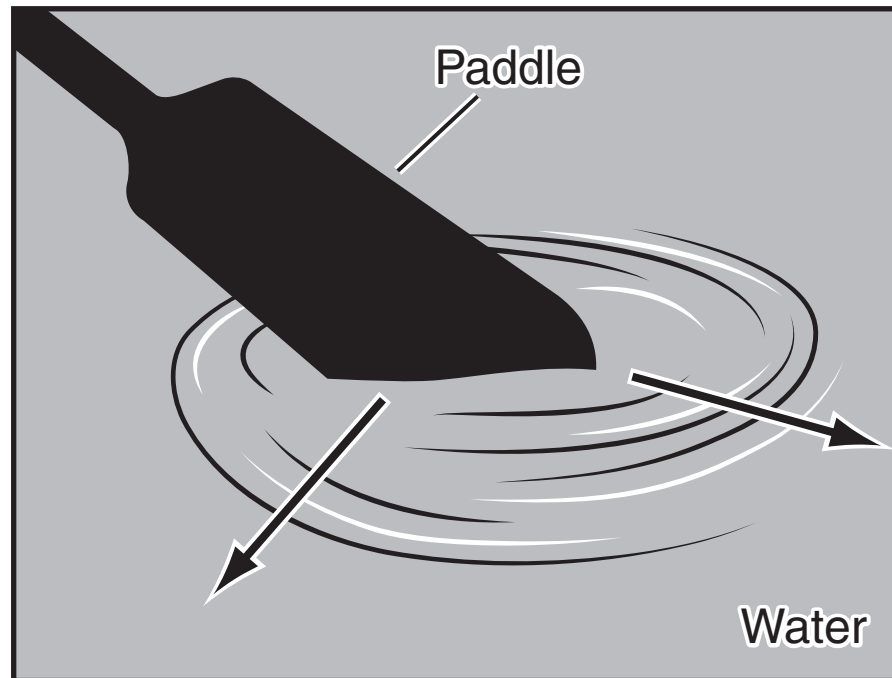
Item 12

What should Syreeta add to her model to show how gravity moves water?

- ☐ a plant in the soil, to clean the air
- ☐ a rock on top of the soil, to represent a hill
- ☐ a lamp shining light on the soil, to heat the tank

Item 13

Syreeta takes her boat onto the lake. She places a paddle in the water. She sees waves form circles around the paddle and move outward.



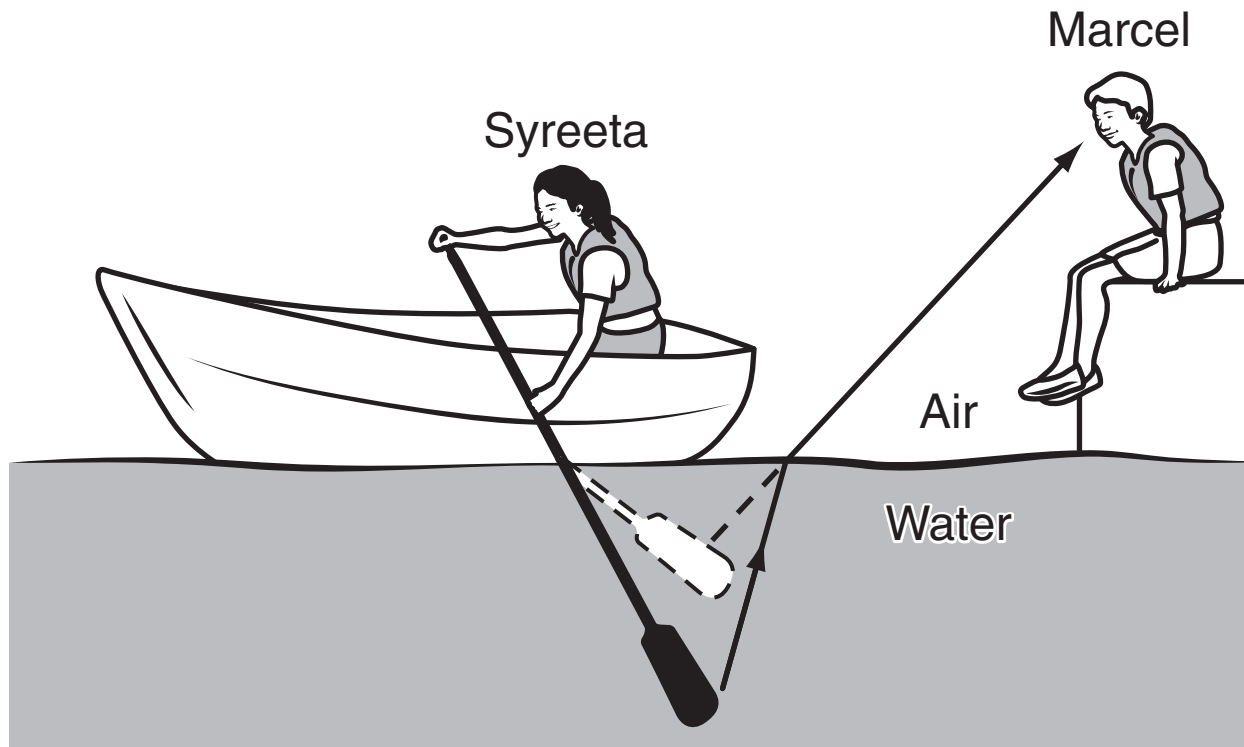
Item 13

What happens to the water wave when Syreeta uses the paddle?

- ☐ The cover protects the food.
- ☐ The trees block the sunlight.
- ☐ The water transmits the wave.

Item 14

Syreeta's friend Marcel is watching her from the dock. He sees Syreeta place her paddle in the water. Syreeta's paddle appears to be bent under water. Marcel draws a model to show what he sees.



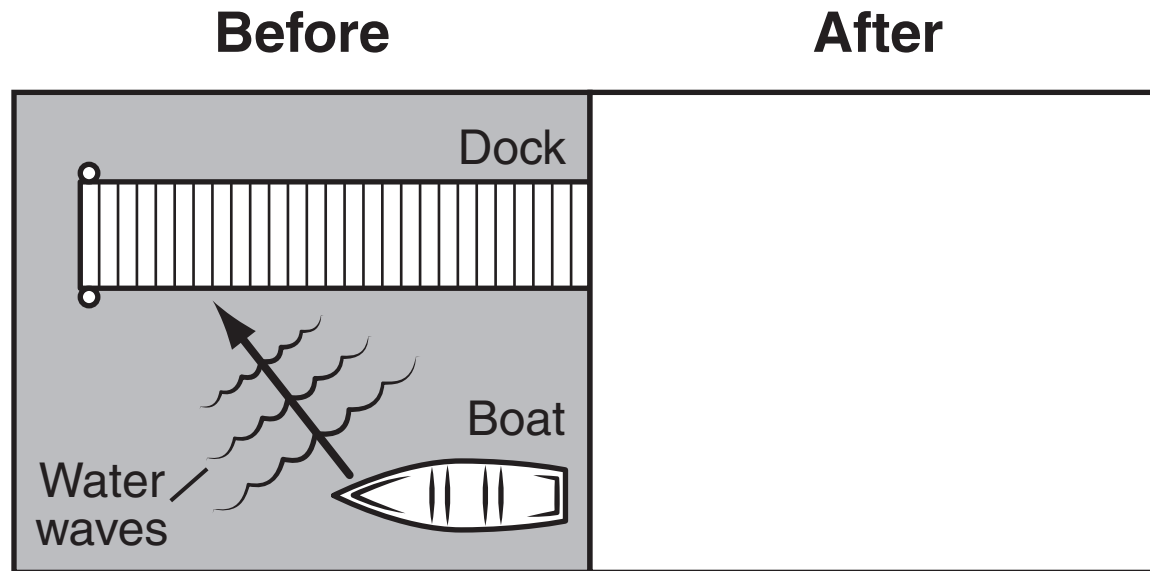
Item 14

Which statement describes how light moves in Marcel's model?

- ☐ The paddle pushes the boat forward in the lake.
- ☐ The light bends as it moves from the water into the air.
- ☐ The bird eats many seeds as it walks through the grass.

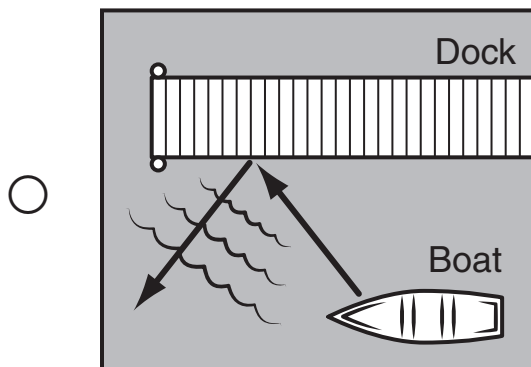
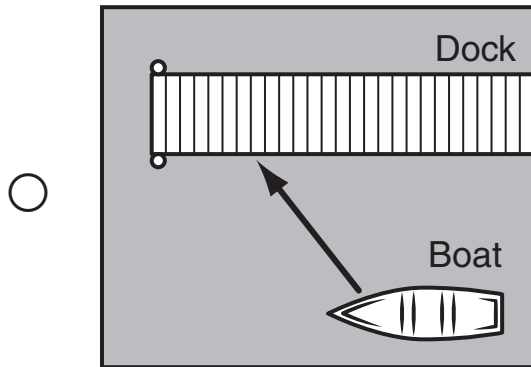
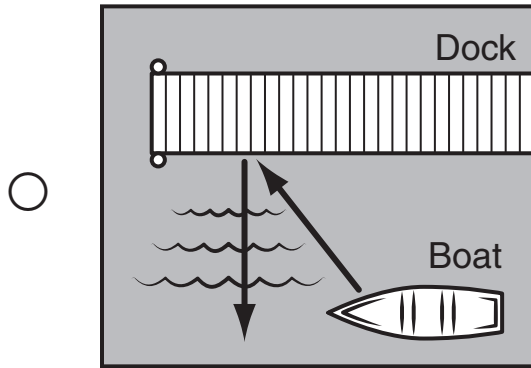
Item 15

Syreeta notices that the waves from her boat are reflected off the dock. When she leaves her boat at the dock, she draws an incomplete model to show how water waves are reflected.



Item 15

What diagram should Syreeta add to complete her model?



Item 16

Sanjay uses a spoon to mix baking soda with water. The baking soda cannot be seen in the water because it dissolves.

Item 16

Which statement describes a property of baking soda?

- ☐ Grass grows in sunlight.
- ☐ Turtles hide in their shells.
- ☐ Baking soda dissolves in water.

Item 17

Salma reads a data table that shows the solubility of flour, salt, and sugar. Solubility measures whether a substance can dissolve in water.

Solubility of Substances

Substance	Dissolves in Water
Flour	No
Salt	Yes
Sugar	Yes

Salma has an unknown substance that does not dissolve in water.

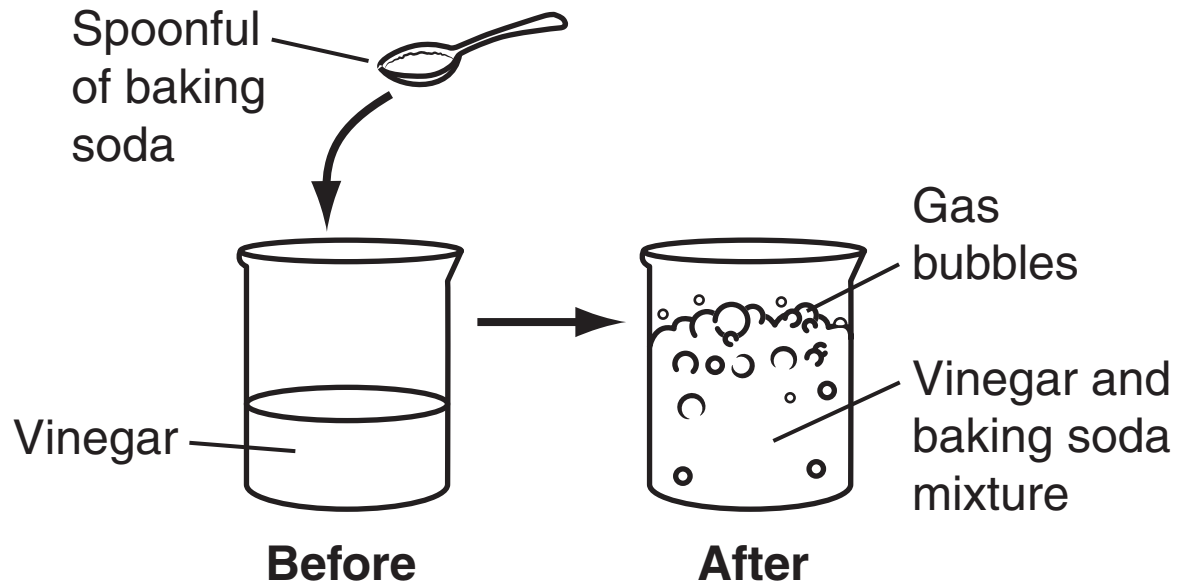
Item 17

According to the data table, which substance could be Salma's unknown substance?

- ☐ flour
- ☐ salt
- ☐ sugar

Item 18

Juan adds a spoonful of solid baking soda into a beaker of liquid vinegar. Some of the baking soda falls to the bottom of the beaker. Gas bubbles form in the beaker.



Item 18

Which observation shows that a chemical reaction occurred?

- ☐ Vinegar remains a liquid.
- ☐ Gas bubbles form in the beaker.
- ☐ Baking soda falls to the bottom of the beaker.

