

Exhibit Exploration Guide

Grade
1

Learning World Key

Energy Factory = EF

Water Works = WW

Grow U = GU

Upper Atrium = UA

Lower Atrium = LA

Idea Lab = IL



Ohio's Learning Standards for Science

1.ESS.2: Water on Earth is present in many forms. The physical properties of water can change. These changes occur due to changing energy. Water can change from a liquid to a solid and from a solid to a liquid. **WW**

1.PS.2: Objects can be moved in a variety of ways, such as straight, zigzag, circular and back and forth. The position of an object can be described by locating it relative to another object or to the object's surroundings. An object is in motion when its position is changing. The motion of an object can be affected by pushing or pulling. A push or pull is a force that can make an object move faster, slower or go in a different direction. Changes in motion are a result of changes in energy. **EF, WW, UA, LA, IL**

1.LS.1: Living things have basic needs, which are met by obtaining materials from the physical environment. Living things require energy, water, and a particular range of temperatures in their environments. Plants get energy from sunlight. Animals get energy from plants and other animals. Living things acquire resources from the living and nonliving components of the environment. **GU**

1.LS.2: Living things survive only in environments that meet their needs. Resources are necessary to meet the needs of an individual and populations of individuals. Living things interact with their physical environments as they meet those needs. Effects of seasonal changes within the local environment directly impact the availability of resources. **GU**



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Energy Factory

Spinning Blackboard

1. Answers will vary.
2. Answers will vary.
3. Circular

Lariat Chain

1. Answers will vary.

Dominoes

1. Answers will vary.
Example: The first domino knocked the other dominos down.

Water Works

Vortex Pool

1. Spiral
2. In the center of the pool
3. Answers will vary.

Cloud Pusher and Fog Maker

1. Wet
2. Water droplets
Note: observe that clouds and fog are made of water.

Erosion and Deposition Table

1. Answers will vary.
Note: Observe that water can change the shape of the land.

Grow U

Bees

1. 

2. Honey

Land to Feed One Person

1. Heat and water

Upper Atrium

Hot Air Balloon

1. The balloon moved
2. Up

Lower Atrium

Tennis Ball Launcher

1. Up
2. Up (Or up then down)

Idea Lab

Marble Run

1. No written answer necessary.

Flying Things

1. Answers will vary.
2. Answers will vary.

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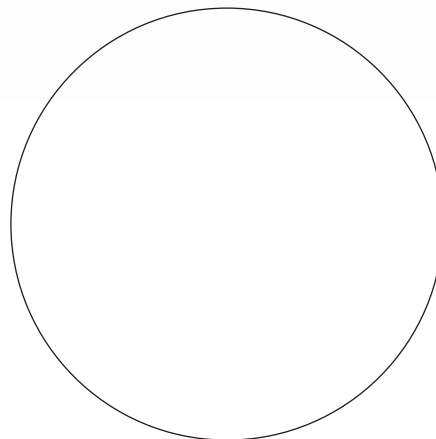
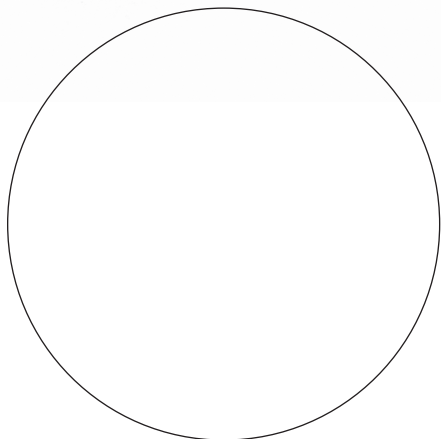
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Energy Factory

Spinning Blackboard (1.PS.2)

Add some sand to the blackboard to do the next two challenges.

1. Try to draw a **straight line** while the blackboard is **stopped**. Draw what it looks like below.
2. Try to draw a **straight line** while the blackboard is **spinning**. Draw what it looks like below.



3. What word best describes the **movement** of the blackboard? Circle the best answer.

straight

zig zag

circular

back and forth

Lariat Chain (1.PS.2)

Apply a force to the chain by giving it a push from the side. How does the chain move differently? Draw it below.



Dominos (1.PS.2)

Set up a design with the dominoes. Then apply a force to a domino by giving it a push. What happened?



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Water Works

Vortex Pool (1.PS.2)

Add some balls to the vortex pool basin. Then pull on the rope to lift up the plunger.

1. **How** are the balls moving? Circle the best answer.

- zigzag straight line spiral back and forth

2. Where do the balls move the **fastest**? Circle the best answer.

- At the edge of the pool In the center of the pool All of the balls move the same speed

3. How can you change the motion of the balls? Draw a picture or write what you did.

Cloud Pusher and Fog Maker (1.ESS.2)

1. Hold your hand in the cloud pusher for 15 seconds. How does your hand feel when you take it out of the cloud?

2. Create a breeze to move the fog around and look inside the fog basin. What do you see inside the basin?

Erosion and Deposition Table (1.ESS.2)

1. With the water source turned off, build a structure in the sand. Then turn the water on.

Draw what it looks like before and after you turn the water on.

Before the water flows

After the water flows



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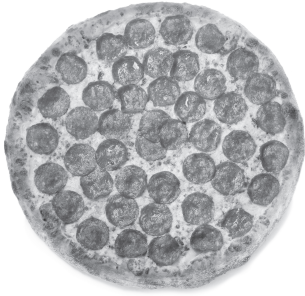
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Grow U



Bees (1.LS.1, 1.LS.2)

1. What do bees use as their food source? Circle the best answer.



2. The bees' food source isn't available year-round, so they store extra food during the summer in order to have enough food to last through the winter. What is a product that bees make to eat in the winter?
Circle the best answer.

honey

beeswax

flowers



Land to Feed One Person video (1.LS.1)

What are two things the plant seeds needed in order to sprout?



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Upper Atrium

Hot Air Balloon (1.PS.2)

Hold the red button for 60 seconds, then hit the green button.

1. What did the balloon do?
2. What direction did the balloon move?



Lower Atrium

Tennis Ball Launcher (1.PS.2)

1. Move the bowling ball by pulling on the rope. Which direction does the bowling ball move when you pull on the rope? Circle the best answer.

down left up right

2. Let go of the rope. The bowling ball pushes air through the tube, which pushes on the tennis ball. How does the tennis ball move when the air pushes it? Circle the best answer.

down left up right

Idea Lab

Marble Run (1.PS.2)

Build a path for a marble on the marble wall.

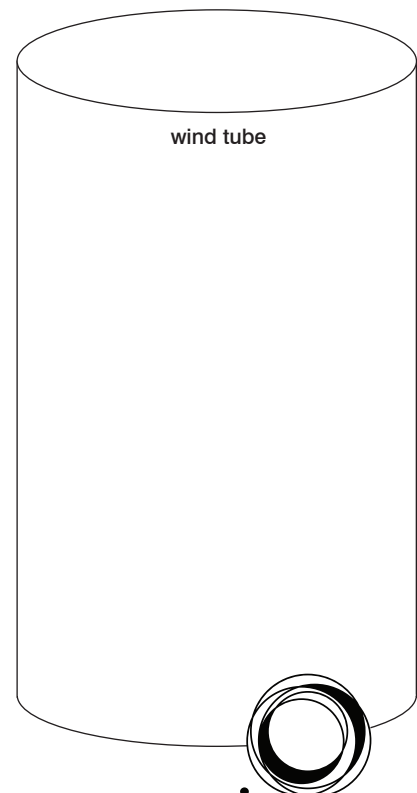
Can you make the marble move in a straight line?

Can you make the marble move in a zigzag?

Flying Things (1.PS.2)

Build a flying thing and put it in the wind tube.

1. Draw the path of your flying thing in the drawing of the wind tube.
2. Did your flying thing move in a straight line, a zigzag, back and forth, or some other way?



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