

Teachers, parents, guardians and other adult supervisors: Please use this worksheet to guide students as you explore our exhibit halls together.

The questions below help connect the exhibit content with the Grade 1 curriculum. Students will explore these concepts in their classrooms throughout the school year.

We have provided curriculum-connected answers to some questions, while answers to others will be open-ended based on each student's experience with the exhibit. These questions are intended to promote discussion among the group.

Have fun!

LEVEL

4

KidSpark

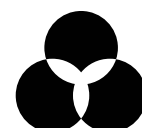
Rhoads Sculpture

Topic: Energy in Our Lives



Located near the KidSpark entrance.

- Q.** What type of energy do the balls have when you release them into the sculpture?
- A.** Kinetic (or “moving”) energy.
- Q.** Do any parts of the sculpture move without any input from a person? What kind of energy do these parts have?
- A.** Kinetic (or “moving”) energy.
- Q.** Lift a ball to the top of any track. What kind of energy does the ball have before you let it go?
- A.** Potential (or “stored”) energy.
- Q.** Let the ball go and observe what happens. What kind of energy does the ball have now?
- A.** Kinetic (or “moving”) energy.
- Q.** Other than kinetic energy, do the balls produce any other sort of energy when they move? (Hint: Listen carefully!)
- A.** Yes, the balls also produce sound energy when they move.



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Magnified Materials

Topic: Everyday Materials, Objects and Structures

Prompt:

Hold a piece of fabric (e.g., your shirt or jacket sleeve, a hat) under the camera and look at the screen. Then, compare two different pieces of fabric (e.g., your sleeve and a friend's). Finally, compare the two fabric pieces under the microscope.

Open-ended Questions:

- Q. What does each fabric appear to be made of?
- Q. What do the different fabrics have in common?
- Q. What do you notice when you compare the fabrics under the microscope? How are they the same, and how are they different?

Note:

Students may notice differences in colour, texture, appearance or fibre size.



Animal Mix-and-Match

Topic: Needs and Characteristics of Living Things

Prompt:

Spin the cylinders to create a new type of plant or animal (or combination) that can meet specific needs. For example, create an organism that eats plants, swims and would survive in hot and humid conditions.

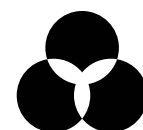
Open-ended Questions:

- Q. Based on each plant or animal's physical characteristics, which type of environment might it live in?
- Q. How would each plant or animal's physical characteristics help it survive?

Note:

There are many types of animal adaptations. Here are a few examples:

- Webbed feet are useful for living in water.
- Fur is useful for cold climates.
- Sharp teeth are useful for eating meat.
- Different skin or feather colours are useful for camouflaging in different environments.



LEVEL

4 Space Hall

Earth Moon Sun

Topic: Daily and Seasonal Changes



- Q.** Find Earth and describe how it is moving.
- A.** Earth is spinning and circling the Sun.

- Q.** How long does it take Earth to spin on its axis one full time?
- A.** It takes 24 hours for Earth to spin once around its axis.

- Q.** Can we feel Earth spinning?
- A.** No, we can't feel it spinning.

- Q.** Why can't we feel Earth spinning?
- A.** Earth spins at a constant speed. Everything else on Earth, including humans and the atmosphere (air), spins along with it. Think about putting a sticker on a ball, then spinning the ball.

- Q.** What does it feel like to ride in a car or fly in an airplane?
- A.** If you keep your eyes closed, you cannot feel any motion as long as the ride is smooth.

- Q.** Watch closely and you will see eclipses. What happens during a solar eclipse?
- A.** The Moon passes between Earth and the Sun, which casts a shadow on Earth.

- Q.** What happens during a lunar eclipse?
- A.** The Moon passes into Earth's shadow.

Prompt:

Watch Earth circle the Sun. How old are you? If you are six years old, that means Earth has circled the Sun six times since the day you were born!

Solar System Orrery

Topic: Daily and Seasonal Changes



Q. How many objects can you count in this exhibit?

A. Nine: Eight planets and the Sun.

Q. Where are the objects moving more quickly? Where do they move more slowly?

A. The planets nearer the middle (closer to the Sun) move more quickly because they have faster cycles; the planets farther out have longer cycles.

Q. The Sun is at the centre of this model. Where is Earth?

A. Earth is the third planet from the Sun.

Q. How does Earth's cycle around the Sun compare to some of the other planet cycles?

A. Earth's cycle is not as fast as the two inner planets, but it is faster than the planets farther out. In other words, Earth has a longer orbit than the inner planets and a shorter orbit than the outer planets.

Open-ended Question:

Q. How many special events or days can you think of that happen in one Earth cycle around the Sun?

Note:

Answers to the question above might include birthdays, specific holidays, number of months (12), number of days (365) and seasons of the year.

LEVEL

6

Weston Family Innovation Centre

Race Against Resistance

Topic: Everyday Materials, Objects and Structures

Prompt:

With a friend or two, choose a racing block and race it down one of the slides.

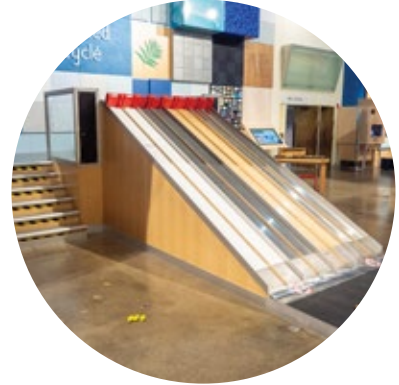
Open-ended Questions:

- Q. Which racing block is the fastest? The slowest? Why do you think this is?
- Q. Which materials prevent some blocks from sliding easily? What are these materials often used for, and why is it important for these items not to be slippery?
- Q. Choose your favourite racing block. Based on its properties, what would this material be used for?

Note:

Answers to these questions will vary. Here are a few things students might observe:

- Some materials create more friction when they are rubbed together or against other materials. Friction makes things slow down. Therefore, these materials are not ideal for racing blocks.
- Rubber does not make a good racing block because it is not slippery. However, it is waterproof, which makes it a good material for rain boots.



LEVEL

6

The Bruce Poon Tip Living Earth Hall

The TELUS Rain Forest

Topic: Needs and Characteristics of Living Things

- Q.** What does the environment feel like in the Rain Forest?
- A.** It's warmer and more humid. There are also different sounds and smells.
- Q.** What are some living things in the Rain Forest?
- A.** Some examples include plants, trees, a tortoise, frogs, snails and people.
- Q.** What are some non-living things in this ecosystem?
- A.** Some examples include water, rocks and soil.



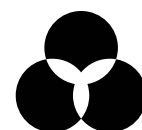
Open-ended Questions:

- Q.** Choose a living thing in the Rain Forest and describe how it has adapted to its ecosystem.
- Q.** What type of ecosystem do you live in?
- Q.** What adaptations or characteristics does your body have that allow you to survive in your ecosystem?

Note:

Answers to the above questions will vary. Here are some examples of adaptations and ecosystems that students may note:

- Fish have gills, which allow them to breathe underwater.
- Leaves have curved shapes, which allows rain to run off instead of building up on the leaf.
- Humans sweat, which keeps us from overheating in warm climates.
- Examples of ecosystems include forests, prairies, bodies of freshwater, oceans, urban settings, deserts and Arctic settings.



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LEVEL

6

Science Arcade

Pedal Power

Topic: Energy in Our Lives

- Q.** Pedal the bikes and observe the results. Which types of energy are being produced? (Hint: There are at least four!)
- A.** Kinetic (or “moving) energy, electrical energy, light energy, heat energy and sound energy are all being produced.

- Q.** Where do you get your energy from to pedal the bikes?
- A.** All energy on Earth comes from the Sun. You get your energy from food, which cannot grow without the light of the Sun. When you pedal the bikes, this energy transforms into electrical energy that powers the light bulbs.



Open-ended Questions:

- Q.** How would your life change if electrical energy were no longer available?
- Q.** What activities do you need a lot of energy for?
- Q.** Do you think you could use your energy to run a television set or light up a bank of lights?

