

Students: Please fill out this worksheet as you explore our exhibit halls.

LEVEL

4 Space Hall

Section A

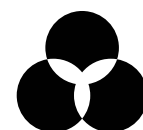
Space Shuttle Model

Topic: Form, Function and Design of Structures



Located near the Space Hall entrance.

- A1.** After lift-off, the large cargo bay doors behind the cockpit open directly to the outside of the shuttle. These doors need to open even if the shuttle is not carrying any cargo. Why do you think this is? (Hint: Think about the contents of the cockpit. What happens to electronics when they run for a long time?)
- A2.** The shuttle becomes very hot when it re-enters Earth's atmosphere. Observe the insulating tiles. Would an airplane need similar protection? Why or why not?
- A3.** Find the Canadarm inside the space shuttle. When it is on Earth, the Canadarm cannot lift even its own weight off the ground. In space, the arm can move massive payloads. Why might this be?



LEVEL

6 Forest Lane

Section B

Get a Whiff of the Woods

Topic: Interactions in the Environment

B1. Try out each scent. Which do you like best?



B2. One of the scents comes from a flower. Why do you think flowers have a scent?

Section C

Arctic Willow

Topic: Interactions in the Environment

C1. Not all trees grow taller than you! This Arctic willow would never have grown more than 25 cm tall, even if it had lived 100 years. Sketch the tree in the box below.

A large, empty, rounded rectangular box with a thin grey border, intended for sketching the Arctic willow tree.

Located near the elevators.



Section C (cont.)

- C2.** How has the willow's appearance been influenced by its environment?

- C3.** The white cedar trees living on the cliffs of the Niagara Escarpment have a similar appearance to the Arctic willow. These trees grow out of the limestone cliffs making up the escarpment. How would the abiotic (non-living) factors in a cliff habitat be similar to those in an Arctic habitat?

LEVEL

6

Weston Family Innovation Centre

Section D

Infrared Thermometer

Topic: Heat in the Environment

To take the temperature of an object, place the object underneath the thermometer. Then, hold the red button until a temperature appears.



- D1.** Working with your friends, take and record the temperature of someone's hand and six different objects/materials.

Hand temperature: _____

Object: _____ Temperature: _____

Object: _____ Temperature: _____

Object: _____ Temperature: _____

Object: _____ Temperature: _____

Object: _____ Temperature: _____

Object: _____ Temperature: _____

Section D (cont.)

D2. Do you notice any outliers, i.e., are any of the recorded temperatures much higher or lower than the others? What are they?

D3. Use your data to estimate the temperature of the room.

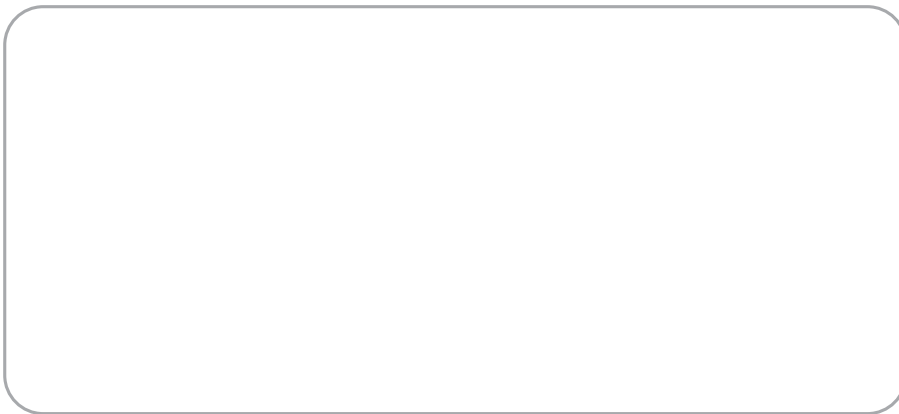
D4. Why were some measurements higher than room temperature? What do those items have in common?

Section E

Shaky Towers

Topic: Form, Function and Design of Structures

E1. Build the tallest tower you can in 60 seconds. Sketch your tower below. What internal and external forces are acting on your tower?



Section E (cont.)

- E2.** Do you think your tower could withstand the external forces applied by an earthquake? Shake your tower to find out! What happened?
- E3.** Can you identify your tower's centre of gravity? This is the point in a structure where the weight is balanced on all sides. For example, a tennis ball's centre of gravity is located in the middle of the ball, while a spoon's would be closer to the scoop.
- E4.** What happens if you move the centre of gravity higher or lower from the ground? Test it to find out, and record your observations.

LEVEL

6

The Bruce Poon Tip Living Earth Hall

Section F

The TELUS Rain Forest The Cave

Topic: Interactions in the Environment



F1. Describe the abiotic (non-living) components of the TELUS Rain Forest. How is this environment different from a local forest? Record your observations in the middle column of the chart below.

	Maple-Beech Forest (Southern Ontario)	TELUS Rain Forest (Rainforest in Costa Rica)	The Cave (Cave in Southern Ontario)
Temperature	<ul style="list-style-type: none"> • Cold in winter • Warm in summer 		
Humidity	<ul style="list-style-type: none"> • Moderate 		
Level of Sunlight	<ul style="list-style-type: none"> • High in winter and spring • Moderate in summer and fall 		
Soil Type	<ul style="list-style-type: none"> • Forest floor covered in leaf litter (thick, rich soil) 		

F2. Exit the Rain Forest and move to the Cave. Compare the abiotic elements of the Cave to those in the Rain Forest and add your observations to the chart above.



LEVEL

6

Science Arcade

Section G

Flywheel Momentum

Topic: Form, Function and Design of Structures



- G1.** Find a friend to partner with for this activity. Together, choose two flywheels with the same diameter. Record the mass and material of each wheel:

Flywheel #1 Mass: _____

Flywheel #1 Material: _____

Flywheel #2 Mass: _____

Flywheel #2 Material: _____

- G2.** With your friend, spin each wheel for 10 seconds. Make sure you both start and let go at the same time. Which wheel continues to spin for longer after you let go? Circle your answer above.

- G3.** Choose two new flywheels with different diameters. Record the mass and material of each wheel:

Flywheel #1 Mass: _____ Flywheel #2 Mass: _____

Flywheel #1 Material: _____ Flywheel #2 Material: _____

- G4.** Spin the wheels again with your friend. Which wheel spun longer this time? Circle your answer above.

- G5.** Imagine you are riding one of these bicycles down a hill, travelling very fast. Which bicycle would be harder to stop? Why?



Steel Frame

Focus on this wheel



Aluminum Frame



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