

Grade 9 Activities for Exhibit Exploration

SPACE HALL: Level 4

- 1. The large images on the wall at the entrance to Space Hall** show 5 different objects. Object #1 is closest to the Space Hall doors, and Object #5 is closest to the Space Shuttle Model.

Try to rank these objects according to size and distance. Explain your choices. You may not arrive at a correct answer, but try to use consistent reasoning.

Smallest to largest

Object #

Nearest to Farthest

Object #

- 2. Galaxies and 6 Steps to Infinity**

This exhibit starts with a view of our own galaxy, called the Milky Way. The Milky Way contains about _____ stars.

Our galactic neighbour, the Andromeda Galaxy is a _____ galaxy. The bright, young stars in Andromeda's arm are coloured _____. The older stars in the centre are coloured _____.

Looking farther out in space, we see galaxies colliding. When they do, gas in the galaxies' arms can compress and trigger _____ formation.

The most distant galaxies we can see are captured in the Hubble Deep Field images. This image shows about _____ galaxies. It took light _____ years to reach the Hubble Space Telescope from the most distant galaxies in this image.

- 3. Decoding Starlight**

Passing starlight through a prism results in a pattern called the star's "spectrum".

What information can an astronomer get from a spectrum?

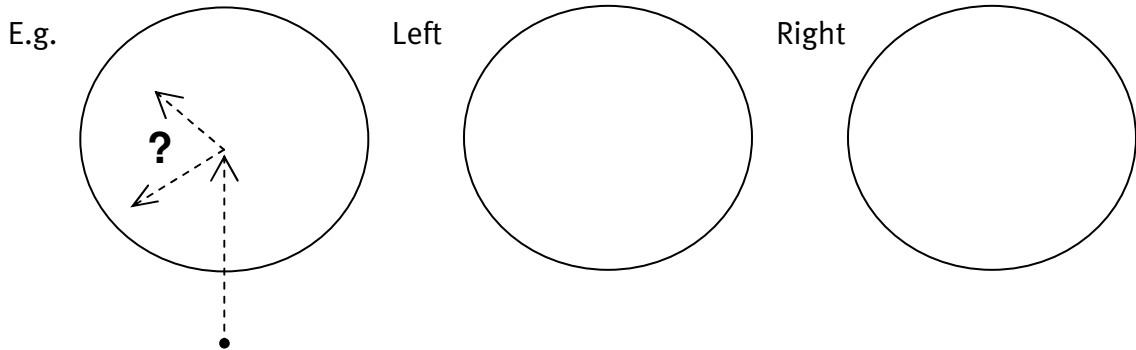
List some elements present in the Sun's spectrum.

SCIENCE ARCADE: Level 6

4. Guess What Shape!

Bounce a ball off a hidden object to reveal its shape. Rotate the object then fire the ball and observe the angle at which the ball bounces off the object. Record your observations in the space below. Use these to guess the hidden shapes.

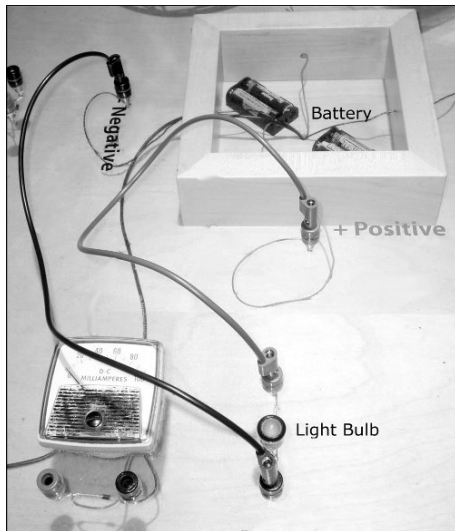
Discuss the connection between this exhibit and the techniques used to investigate atomic particles.



WESTON FAMILY INNOVATION CENTRE: Level 6

5. Electrical Circuits Exhibit

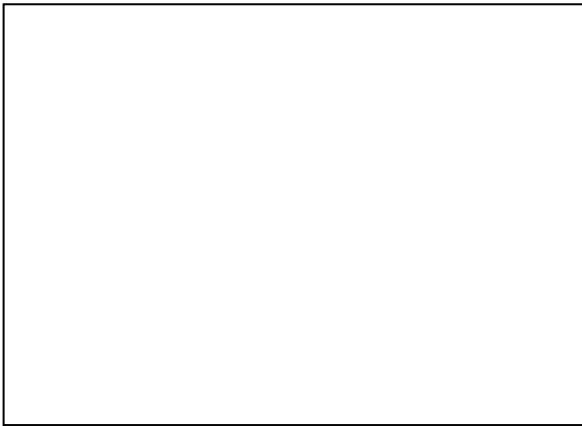
Use the wires provided and try to connect the circuit as it is depicted below.



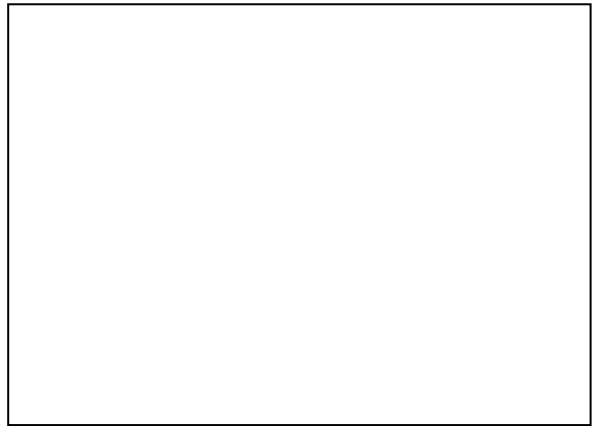
1. What is the source of electricity in this circuit? Use the voltmeter to find out the voltage of this source. _____ V
2. How can you increase the voltage? (Hint: What other form of energy in the room can be harnessed and transformed into electrical energy?)
3. Connect the circuit using two sources of electricity and record the resulting voltage. _____ V

See if you can power up the following items. Sketch your circuits.

Spinning Fan



Illuminated Rat



How many items can you run at the same time? Sketch your circuits.

THE LIVING EARTH: Level 6

6. Visit the Aquatic Ecosystem near the exit door to the Rainforest. List the elements that contribute to this ecosystem, the role of each element in the overall sustainability of the reef and whether the element is biotic or abiotic.

Element	Role in the Ecosystem	Biotic/ Abiotic

Discuss what might happen to the ecosystem if each element changed. i.e. if the light burned out for an extended period of time.

7. Look at the 3D Great Lakes map outside the Rainforest.

Why would a map of the Great Lakes Watershed show so much land?

Explore the population and pollution sites around the Great Lakes. What types of industry are found along the shores of the Great Lakes?

Look at the panels about Lake Erie and answer the following:

What organism's population exploded in Lake Erie? _____

What fed this explosion? _____

What did Canada and the United States do about it?

FOLLOW UP (to do after your trip)

SPACE HALL

Research the "Great Debate" held in 1920 between astronomers Harlow Shapley and Heber Curtis. The two debated whether the "spiral nebulae" observed in telescopes were part of the Milky Way or farther away. Describe how each astronomer justified his position based on his observations.

Which element, named for the Greek god of the Sun, was discovered in the Sun's spectrum before it was found on Earth? What property of this element made it difficult to find on Earth? How do we get this element now?

SCIENCE ARCADE

Research the work of Ernest Rutherford and how he developed the atomic model of the atom.

Visit the Independent Electricity System Operator website: www.ieso.ca. How many different methods does Ontario use to generate electricity? What method currently produces most of our electricity? Check the 'Ontario Demand in MW' graph. At what time of day will we be using the most electricity? How could we use this information to use electricity more efficiently?

THE LIVING EARTH

Explore ways in which human interference impacts coral reef ecosystems like this one.

Research and map different watersheds in Canada.