

Grade 8 Activities for Exhibit Exploration

This worksheet will help guide you as you investigate our exhibits.

Time to Complete: 2 hours

THE LIVING EARTH: Level 6

A. WATER SYSTEMS

1. Find **The Acid Test** exhibit.

- Measure the pH of southern Ontario rain: ~ 5-6 (acidic)
- Measure the pH of rain on limestone: ~ 8 (slightly basic)
- Measure the pH of rain on granite: ~ 5-6 (acidic)
- Circle the rock type that appears to be the most eroded:

Limestone Granite

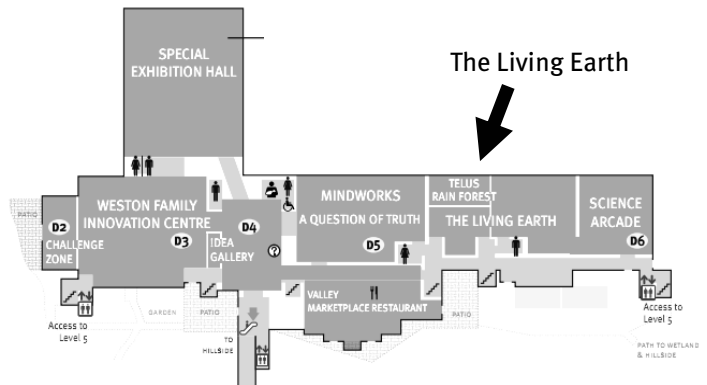
e. What do you think caused this erosion?

The erosion was caused by a chemical reaction between the limestone and the acid rain.

For further exploration: Check out the **cave exhibits** on the other side of The Living Earth. (You'll have to go through the Rainforest to get there.)

2. Find the exhibit called **Treating Water Right**.

- Sample water fountains A, B and C.
Which do you prefer? **Answer variable**
- Enter your choice in the computer.
What type of water did you choose?
A = bottled water
B = filtered water
C = tap water
- What sample do most people prefer?
Answer variable



SCIENCE ARCADE: Level 6

B. SYSTEMS IN ACTION

3. Find the giant lever. (The sign says **Your Weight by the Law of Levers.**)

a. Get on the lever, and walk very slowly away from the fulcrum. Stop as soon as the lever begins to pivot downward. Make a note of where you stopped on the lever, and mark it on the picture to the right.

b. Ask a friend to repeat step a.

c. According to your experiments, who is heavier: you or your friend?

Answer variable

How can you tell? (Hint: Think about the distance to the fulcrum.)

The person who was closer to the fulcrum when the lever pivoted is heavier. They would have a smaller number on the scale to the right.

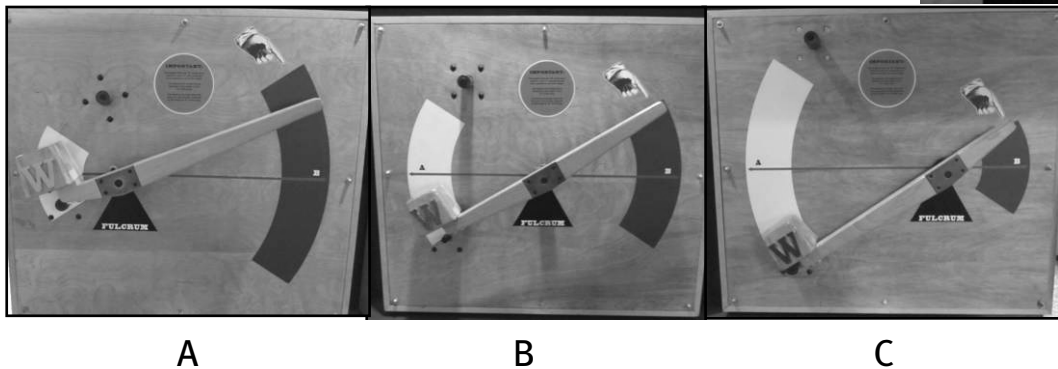
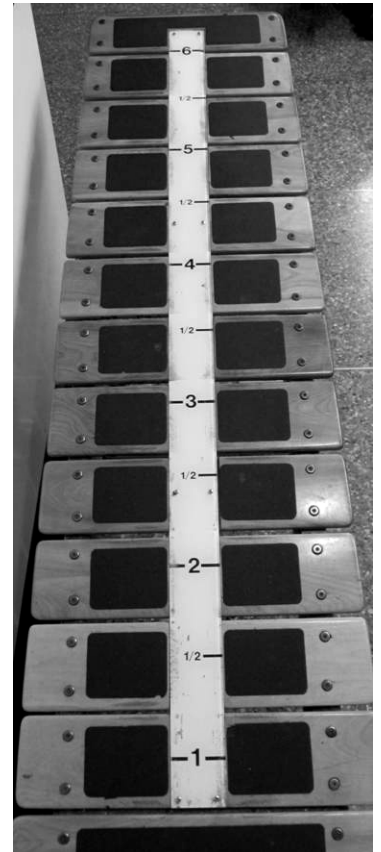
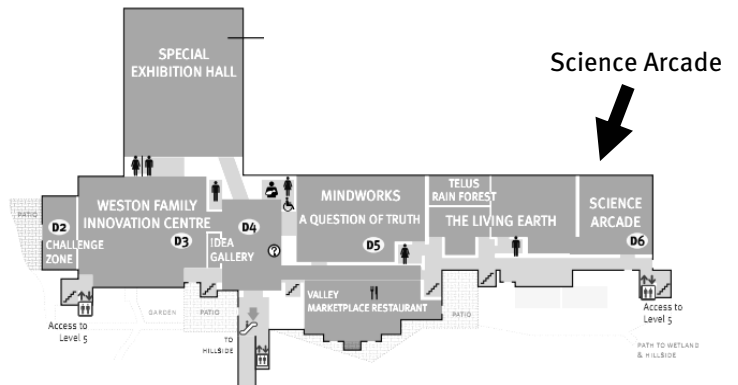
4. Look on the other side of the giant lever to find the **Fulcrum and Leverage** exhibit (see image below).

a. Which weight *feels* heaviest? **C**

b. Which weight *feels* lightest? **A**

c. Which lever moved your hand the most? **A**

d. Which lever moved the weight the most? **C**



For further exploration: Try out the pulleys at **Strength is Not Always the Answer.**

SCIENCE ARCADE: Level 6

C. FLUIDS

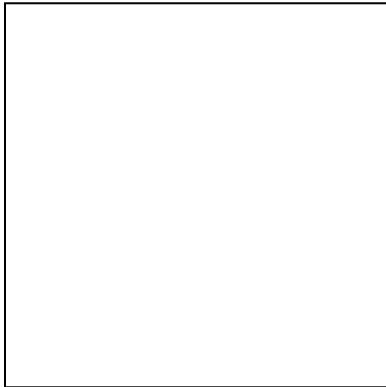
- 5. Find the **Cartesian Diver** exhibit.
 - e. What happens to the fish when you press and hold the button?

The fish sank to the bottom of the water column.

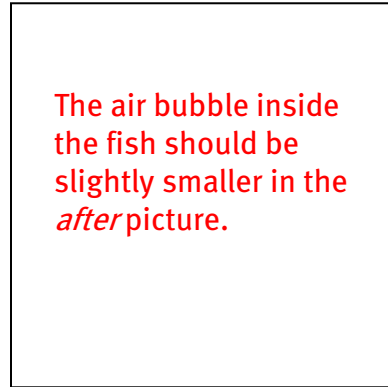
- f. After you pressed the button, was the fish *more or less dense* than the water around it?

The fish was more dense than the water around it.

- g. Try the experiment again, and look closely at the bubble of air inside the fish. Draw a quick sketch of the fish before and after you press the button:



Before



After

- h. Think about the air bubble inside the fish. After you pressed the button, did the air molecules move *closer together*, or *farther apart*?

The air molecules inside the fish moved closer together.

- 6. Find the exhibit called **Blowing up a Balloon**.

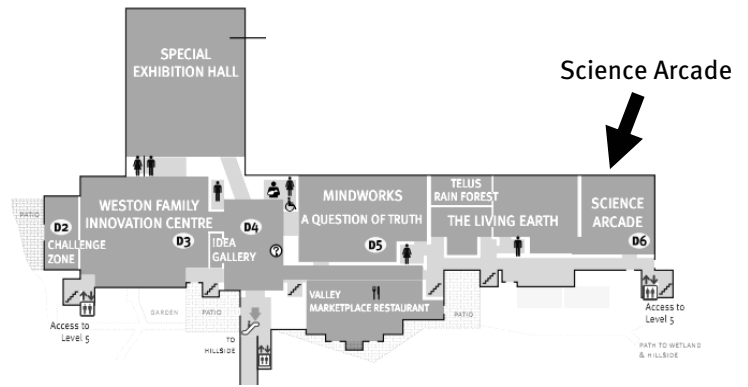
- a. Press the red button to remove the air from underneath the bell jar. What happened?

The balloons expanded.

- b. If you know that air did not enter or leave the balloon, can you explain what happened?

(Hint: did the air molecules *inside* the balloon move closer together or farther apart?)

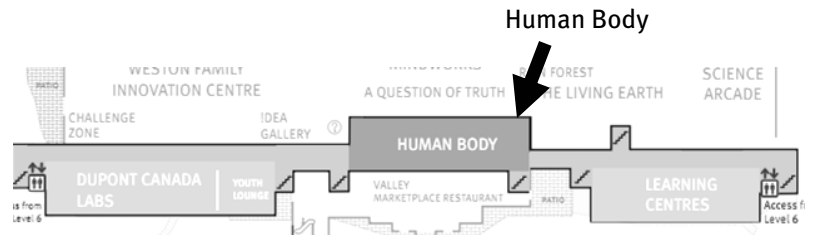
The air molecules inside the balloon moved further apart.



HUMAN BODY: Level 5

D. CELLS

7. Find the exhibit that deals with **blood**.
Locate the panel titled:
What can you tell from a blood test?



- a. Healthy Blood: How can you tell red blood cells from white blood cells?

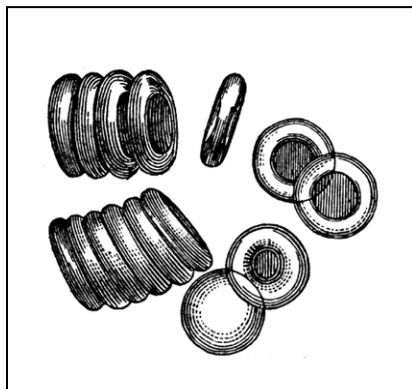
White blood cells are stained a very dark purple. There are also many more red blood cells than white.

- b. Acute Leukemia: Does this sample contain more or fewer white blood cells than healthy blood?

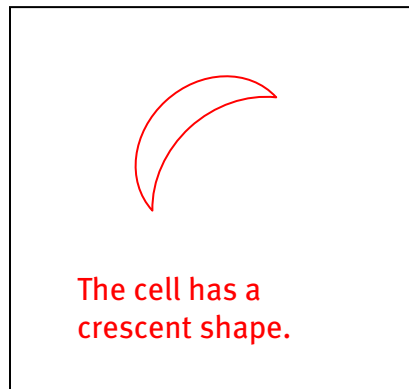
The sample contains more white blood cells.



- c. Sickle-cell Anemia: Below are some healthy blood cells. Find a sickled cell in the photograph, and sketch it in the box below.



Healthy red blood cells

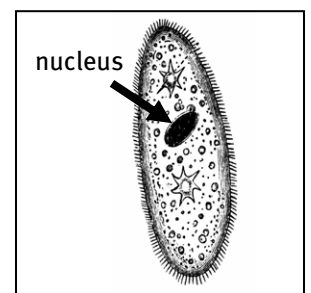


Sickled red blood cell

- d. A cell's nucleus contains DNA. This paramecium cell's nucleus is stained a dark colour.

Can you see a nucleus in any of the red blood cells in the display?

No.



8. Explore the rest of the exhibit hall and find a sketch of the largest human cell.
What type of cell is it?
(Hint: it was an important part of you when you were very very young.)

The largest human cell is an egg cell. (Some other sources may dispute this, because neurons can be very long. However, the egg cell has the largest diameter.)

FOLLOW UP (to do after your trip)

HUMAN BODY

Research red blood cells, and answer the following questions:

- A. Where in your body are they produced?
- B. Why don't mature red blood cells have a nucleus?
- C. The pigment bilirubin is produced when red blood cells break down in the liver. Where in your body can you find evidence of bilirubin?

SCIENCE ARCADE

SCUBA divers must take special precautions to avoid decompression sickness, also known as “the bends”. What causes the bends, and how can it be avoided?

THE LIVING EARTH

Research the Blue Flag program, and list at least three water quality standards a Blue Flag beach must meet. Are there any Blue Flag beaches near where you live?