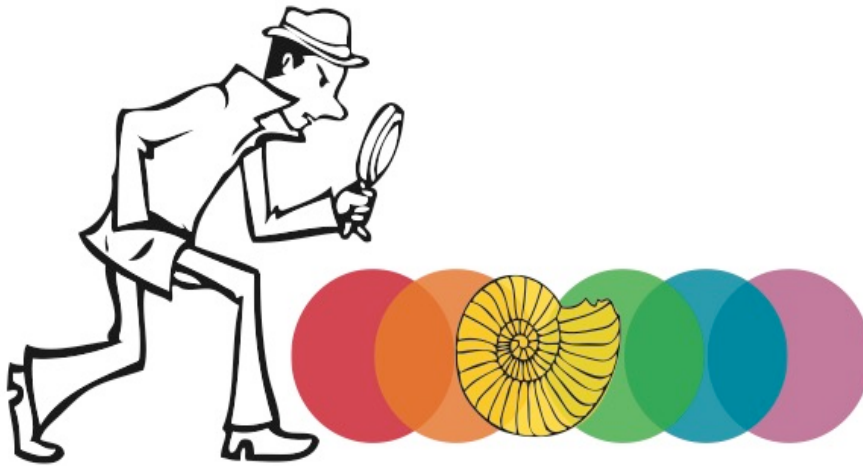


Welcome to the Pacific Museum of Earth!

This self-led tour will take you through almost all of our main exhibits. There are three sections of the tour and you can begin your tour at any section or choose between the three sections to build a custom tour (*e.g. if you're short on time, maybe choose 1 or 2 out of the 3 sections*):

- (1) Life Through Time
- (2) Earth's Treasures
- (3) Natural Disasters

The questions for each section are divided into groups based on the exhibit to which they refer. Use the text in the display to guide your answers. Good luck!



ANSWER KEY

I. Life Through Time

(What is a fossil & George the Lambeosaurus)



Part 1 (What is a fossil): What types of specimens do you see in the display cases that are **body fossils**? **Trace fossils**? List and/or sketch 4 examples below (Hint: Body fossils are those that show parts of the organism. Trace fossils are those that were made by the organism, but isn't part of the organism itself):

Body Fossils	Trace fossils
<p>Answers could include:</p> <ul style="list-style-type: none">• Leaves• Coral• Shells• Graptolites• Petrified wood• Teeth• Sea urchins	<p>Answers could include:</p> <ul style="list-style-type: none">• Coprolite• Rain drops (but not really)

Part 2 (What is a fossil): Identify different types of preservation of living organisms. Organisms get preserved in different ways. Can you find the following (list specimen names on the line provided):

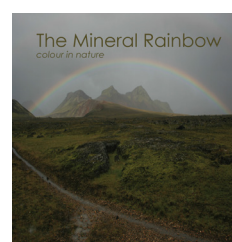
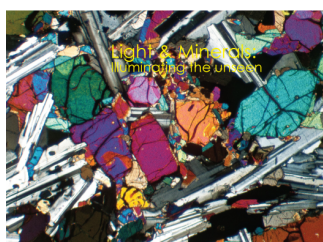
1. A mold? (This will look like a hole in the shape of the organism) Ammonite nodule, bivalve (Halobia)
2. A cast? (This is what you'd get if you filled in a mold) Ammonite nodule, bivalve “internal cast”
3. A pyritized fossil? (This is made out of the golden coloured mineral pyrite) Permineralized brachiopods
4. A body fossil trapped in amber? Fossil ant (Dominican Republic)

Part 3 (George): Watch the video about George, the Lambeosaurus. Answer the following questions:

1. What do scientists think the bump on George's head is? What is it used for?
A hollow crest, used for social functions — either for recognition (by pattern) or noise making
2. How long ago did George live? Where?
75 million years ago in present day Alberta
3. Why aren't there dinosaurs anymore?
An extinction event 65 million years ago caused in part by a meteorite impact wiped them out
4. Do you think the skeleton of George is real?
The bones on display are real! They've been painted to stand out from the white wall

II. Earth's Treasures

(Smart phones, Light and minerals, Name that mineral, & Mineral rainbow)



Part 1 (Smart phones)

1. What group of elements is important in modern technologies like smart phones? Why?

Rare earth elements (REEs), for their unique and strong physical, electrical, and magnetic properties

2. Name one mineral that goes into making each part of a smart phone.

Phone component	Mineral name
Circuit board	ANY OF calcite, barite, zircon, galena, quartz, monazite, xenotime, basnäsité
Frame & peripherals	ANY OF hematite, bauxite, monazite
Case	ANY OF hematite, bauxite
Display	ANY OF quartz, monazite, xenotime, basnäsité
Battery	ANY OF lepidolite, hematite, copper

Part 2 (Name that mineral & Mineral Rainbow): Identify criteria that can be used to distinguish minerals from one another:

1. Using **Name that Mineral**, list 5 physical properties scientists use to tell minerals apart?

Six named in the display: hardness, cleavage, habit, luster, streak, and colour

2. In the **Mineral rainbow** exhibit, pick your favourite three minerals and complete the chart:

Mineral name	Colour	Luster	Draw it!

Part 3 (Light and minerals): Identify some of the tools scientists use to study minerals.

1. The sky is blue because what type (i.e. what colour) of light is scattered?

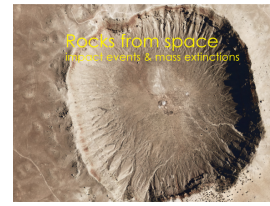
Blue light is scattered

2. What type of light can cause some minerals to fluoresce?

Ultraviolet (UV)

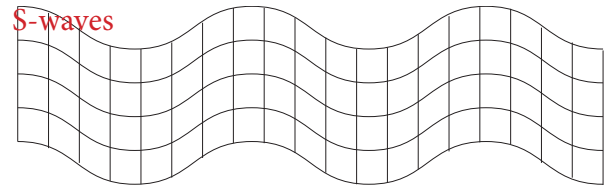
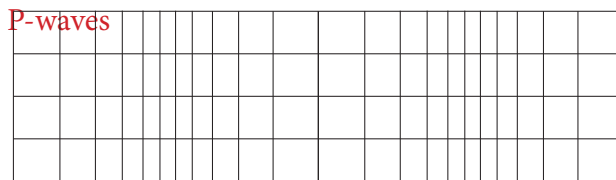
III. Natural Disasters

(Earthquakes, Volcanoes, Landslides, Tsunami, & Impacts)



Part 1 (Earthquakes)

1. What are two types of seismic waves generated during an earthquake? Sketch each type of wave below.



2. If a seismologist reported that an earthquake was “felt by almost everyone, some people awakened, small objects moved, trees and poles may shake,” what number on the **Mercalli Scale** would he/she report?

A five (V)

Part 2 (Volcanoes & Landslides)

1. There are several volcanoes near Vancouver (e.g. Meager, Cayley, Garibaldi, Baker). Which volcano(s) have been active in the last 300 years?
- Baker
 - St. Helens
 - Lassen
 - Glacier Peak
 - Hood
 - Rainier
 - Shasta
2. A rockslide consists of large blocks of bedrock sliding on an inclined surface. The slide usually occurs along bedding planes, foliation surfaces, or joints. What recent landslide near Vancouver is an example of a rockslide?

The 2008 Porteau Cove Rock Slide on Highway 99

Part 3 (Tsunami & Impacts)

1. Tsunami waves are very fast and powerful. As these waves approach land, they rise up, pour across the beach, and flood inland in a matter of minutes. At what speed do tsunami waves travel?

230 meters per second, or 720 kilometer per hour

2. What is the difference between *asteroids*, *meteoroids*, and *comets*? Describe each below:

Asteroid	The remnants of minor planets, broken up early in the solar system's history. Most reside in the asteroid belt. Rocky and metallic.
Meteoroid	Like asteroids, but much smaller (only up to 1 m in diameter)
Comet	Objects made of dust, water, ice, and frozen gases. Originate from the distant reaches of the solar system - Kuiper Belt and Oort Cloud.