

# Minerals & Canadian Mining Hall of Fame Level 2

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 Important Facts

## Rocks from Space



Space is really big, and mostly empty but our solar system contains stony or metallic objects called *meteoroids*. Meteoroids often come into Earth's atmosphere.

The friction between the meteoroid and the molecules in the atmosphere causes the meteoroid to heat up and glow. We call these *meteors* or shooting stars. If the meteoroid is big enough, it may crash onto Earth's surface.

 *Meteorite* is the name given to a meteoroid that has crashed onto Earth.

Meteorites are grouped into two major categories: Chondrite and Achondrite, depending on whether or not they have chondrules.

Find and sketch one meteorite from each of the two major categories.

Chondrite

Achondrite



What is the difference between these two groups?

Chondrite meteorites have not been altered and have chondrules (round grains).

 Find the Carbo-IID meteorite next to the video projection.

Watch the video and briefly describe how meteorites form.

Asteroids occasionally collide and break apart forming meteoroids. Some get pulled towards Earth, pass through the atmosphere and burn up as meteors, then hit the Earth as a meteorite.

## Minerals for Daily Life



Most people don't realize the importance of Canada's mining industry in our daily lives. Without the mining of Canada's mineral resources we wouldn't have cell phones, electronics, digital cameras or thousands of other modern conveniences and necessities.

 The average Canadian consumes or uses over 20,000 kilograms of minerals each year.

Use the video to list three ways in which we use each of the following minerals in our daily lives. *Many possible answers*

Potash  
Fertilizer  
Television tubes  
Soap

Lead  
Batteries  
Ammunition  
Roofing

 Find the Canadian Mining Hall of Fame. Minerals we mine are classified into four main categories: metallic, non-metallic, industrial and fossil fuels.

Magnesium  
Fire works  
Flash photography  
In diet for strong heart

## Ontario Geology



Over the last 1.3 billion years Ontario has been shaped by a series of geological activities. The first 300 million were subject to the building of the Grenville Mountains.

 This mountain range rivaled that of Everest!

Millions of years later Ontario was covered by a series of shallow, tropical seas. One of the last major geological events to affect our province was the glaciation period of the last 10 thousand years.

 Find the minerals from Southeastern Ontario.

What remains today of that ancient mountain range?  
Canadian Shield

How does plate tectonics help explain tropical seas in Ontario 400 million years ago?

The North American plate was nearer the equator.

List 3 minerals that were re-exposed as a result of the last period of glaciation. *Many possible answers*  
Fluorite, Calcite, Apatite, Quartz, Barite, Magnetite

# China & Currelly Level 1 & Dinosaurs Level 2

 Gallery Search

 Important Facts

## Planets on Parade



 Find this Daoist temple mural from China. The five planets visible to the naked eye are shown personified in a celestial procession.

Each figure is depicted in such a way as to highlight the astronomical features of the planets they represent.

 Venus is the second brightest celestial body next to our moon because its dense cloud cover reflects the sun's light.

Identify which figure represents which planet and explain the associated cosmic features.

1. Mars—red planet, colour associated with warfare and blood
2. Venus—thick atmosphere makes planet very bright, shown as beautiful woman
3. Mercury—closest to sun, orbits every 88 days, shown as messenger (speedy)
4. Jupiter—largest planet, shown as ruler holding peaches (visible moons)
5. Saturn—furthest planet, orbits every 29.5 years, shown as wise old man

 Earth is represented as the floating world on the banner.

## Fossils Record Earth's History



 Find the *Barosaurus* known as Gordo, named after the ROM paleontologist who acquired the fossil remains.

The existence of dinosaurs and other ancient life forms are recorded in their fossil remains. Life can become fossilized via 5 processes. Although there are many types of fossils, the most recognizable type is a fossilized bone.

Check off when you find examples of these fossilization processes.

Replacement: when the original material is replaced with a crystallized mineral copy

& Permineralization: empty spaces in the organism are filled with minerals

Compression: only the chemical elements of an organism remain, ex: fossil fern

Preservation: ex: insect trapped in amber

Mold or Cast Formation: trace fossils, like track ways or filled in burrows

 Permineralization greatly increases the weight of fossilized remains!

What processes fossilized Gordo's bones?  
**Permineralization**

What percentage of Gordo is real fossil?  
**No exact number ~40-50%**

Why would a museum display a cast and not the real fossil?  
**Too delicate, don't have, being studied**

Dinosaurs lived during the Mesozoic Era which is divided into three time periods.

Name a dinosaur from each period.

Triassic: *Herrerasaurus*, *Coelophysis*

Jurassic: *Barosaurus*, *Allosaurus*

Cretaceous: *Triceratops*, *Parasaurolophus*

## Earth's Materials



 Find the specimens of basalt and amethyst in Currelly.

The igneous rocks that form on the surface of the Earth cool so quickly that the crystals are too small to identify. Those that form under ground cool slowly enough that the crystals are easily recognizable.

The basalt specimen is of which form? Plutonic Volcanic

 Amethyst, our provincial mineral, is abundant in northern Ontario!

Rocks are solid, naturally occurring objects that are made up of two or more minerals. They can be divided into one of three major classes according to how they are formed.

Igneous: the crystallization of molten lava or partially molten magma

Sedimentary: materials accumulated on the Earth's surface then compress

Metamorphic: existing rock is exposed to extreme heat and/or pressure beneath the earth's surface

What class of rock is used to make the stairs and pillars by the totem poles?

Stairs: **sedimentary limestone**

Pillars: **metamorphic marble**

Each class of rock can be further divided into various subclasses. There are two types of igneous rock. They can be determined by the size of their crystals.