The Fossil Record

MasterFoods Fossil Gallery Year 7-10

Australian Fossil and Mineral Museum
HOME OF THE SOMERVILLE COLLECTION

Name

At School Discuss why you think fossils are useful and what they teach us about life on Earth

In the Museum go to the MasterFoods Fossil Gallery. Study the geological timescale in the Early Life, Middle Life and Recent Life sections.

Information panel	Event	When it Happened	Geological Era/ Period
Life Begins in the Ancient Seas		3800-3500 Ma (millions years ago)	_____ Era
Life Begins in the Ancient Seas		_____ Ma	Proterozoic Era
Complex Life Evolves		1000 Ma	_____ Era
An Explosion of Life		_____Ma	Proterozoic Era Cambrian Period
Moving onto land		410 Ma	Palaeozoic Era _____ Period
Moving onto land		370Ma	_____ Era Devonian Period
Trilobites—Extinction of a Success Story		_____Ma	Palaeozoic Era End of Permian Period
Ruling Reptiles		250 Ma	_____ Era _____Period
Ammonites—Extinction of a Success Story		65 Ma	Mesozoic Era End of _____ Period
Australia in Isolation		60 thousand years ago	Cainozoic Era _____ Period

Complete the table by placing the events listed below into the chart.

Trilobites become extinct

Australia's megafauna become extinct

First bacteria evolve

Land plants evolve

Dinosaurs evolve

Marine arthropods evolve

Ammonites become extinct

Multicellular life forms evolve

First eukaryotic cells evolve

Amphibians evolve

Minerals

Mineral Gallery Year 7-10

Australian Fossil and Mineral Museum
HOME OF THE SOMERVILLE COLLECTION

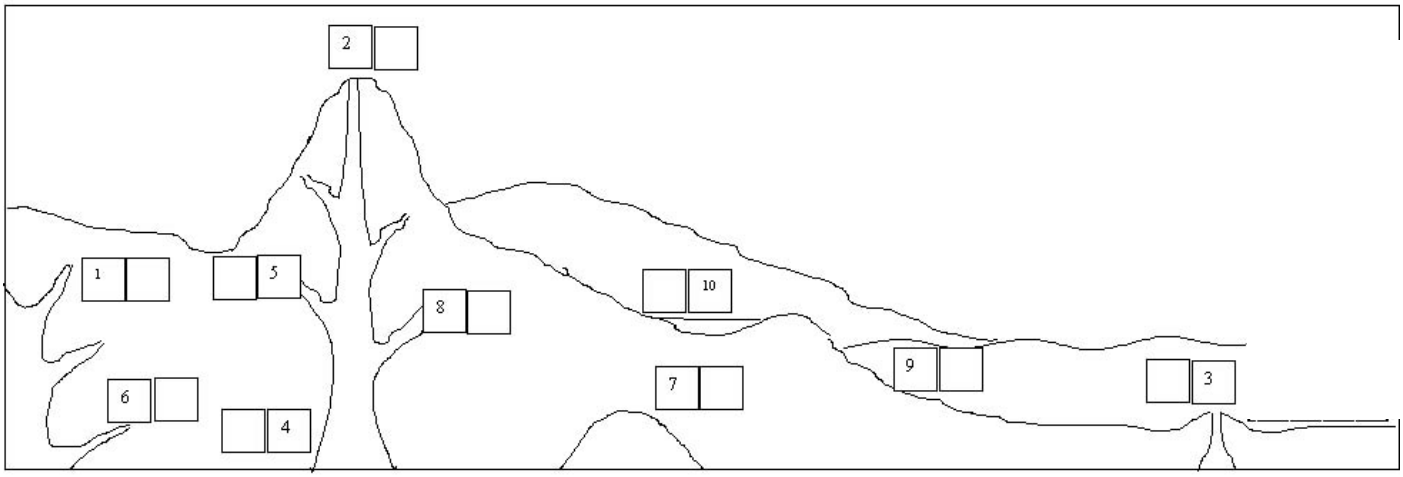
Name

Formation or Minerals and Rocks

Go to the information panel **Minerals and Rocks** in the Mineral Gallery. Use the diagram on the panel to **label** a cross section of Earth. **Indicate** where the following are most likely to form:

fossils	underground rocks	crystal pipes	gossan minerals	black smokers
mineral veins	shattered rocks	salty minerals	cooked rocks	

Indicate where you think rocks with large crystals, small crystals and fossils might form



Minerals and Rocks

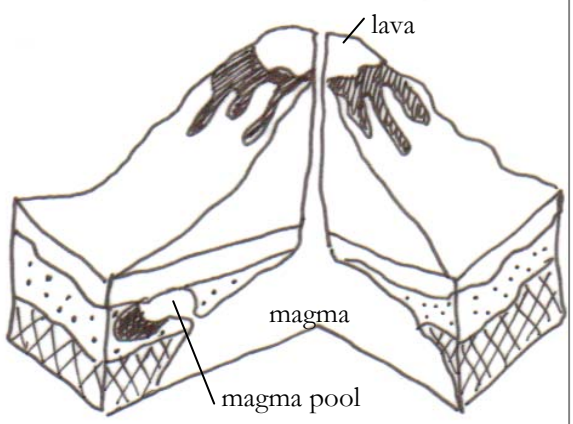
Go to showcase **Rocks and Minerals —how and where they form** located in the Mineral Gallery

Read the definition of **Rocks and Minerals.**
Choose either the granite or quartz specimen
Complete the chart by putting a tick in the correct column

	Mineral	**Rock**
Exists in the Earth's crust		
Has definite chemical composition		
Contains two or more minerals		
Has no definite ingredients		
Quartz		
Granite		

In the same showcase **read** the definition of **igneous**, **metamorphic** and **sedimentary** rocks

Label the diagram to indicate where **igneous**, **metamorphic** and **sedimentary** rock are most likely to be found.



Minerals

Mineral Gallery Year 7-10

Australian Fossil and Mineral Museum
HOME OF THE SOMERVILLE COLLECTION

Name

Broken Hill

In the mineral locations section of the Museum **go to the information panel Broken Hill**. Read the information panel and explain the changes in the earth over time to form the geological deposits of Broken Hill in the following stages:

Mountain Building_____

_____

_____

Fractures and faults_____

_____

_____

Weathering _____

_____

_____

Mineral Types

Go to the section of the Mineral Gallery called Mineral Types. Each mineral type is displayed in a separate showcase. **Choose one** mineral type as a case study to complete the chart.

Mineral Type chosen _____

Write a definition of the **mineral type** you have chosen. _____

_____

_____

Choose one mineral from that mineral type as a case study to complete the table below.

Mineral Type	Name of mineral	Use of mineral	What is it made of?	Drawing of crystal shape

Formation of Fossils

MasterFoods Fossil Gallery Year 7-10

Australian Fossil and Mineral Museum
HOME OF THE SOMERVILLE COLLECTION

Name

Go to the information panel **Rocks and Fossils. Complete** the table below.

Fossil Type	**Trace fossils**	**Cast fossil**	**Petrified fossils**	**Carbonised fossils**	**Unaltered fossils**	**Permineralised Fossils**
Specimen						
How it is formed						
Drawing of specimen						

What happened here? Go to the panel **Green River Shale**

Draw and label an image of the shoal of herring like fish *Knightia eocenae*

Age of Fossil _____

Location Found _____

Explain a possible sequence of events which occurred to explain why so many fossilized fish are found together, and how they were so well preserved

_____

_____

_____

_____

Back at School discuss the information you have collected. Why are some forms of life on Earth are much more likely to become part of the fossil record than others ?

How do you think the *Tyrannosaurus Rex* died to be found almost complete?

Continental Drift

Australian Fossil and Mineral Museum
HOME OF THE SOMERVILLE COLLECTION

MasterFoods Fossil Gallery Year 9-10

Name

Before your visit discuss the what is meant by the terms plate tectonics and continental drift. **At the Museum** In the MasterFoods Fossil Gallery, go to the section **Middle Life** (Mesozoic Era). Use the maps of the Earth on the text panels to draw images of the Earth during the Triassic, Jurassic and Cretaceous periods. In the diagram, mark the locations of the southern continents Australia, Antarctica, India South America and Africa

Triassic

Jurassic

Cretaceous

Can you see when Australia was part of a larger landmass including North America?

Write down the time that this was the case

_____

Is this at the same time as the dinosaurs were living? Yes No

Do you think that similar dinosaur fossils could be found in Australia and North America?_____

Why?_____

Australia in Isolation **Go to** the information panel **Australia in Isolation** in the recent Life Section

Explain a major geological event that occurred in Australia 45 million years ago

_____

When were diprotodontids living in Australia?_____

Do you think it is possible for diprotodontid fossils to be found anywhere else in the world?_____

Why? _____

Back at School Discuss how fossil evidence helps scientists work out the positions of the continents.

Evolution

Australian Fossil and Mineral Museum
HOME OF THE SOMERVILLE COLLECTION

MasterFoods Fossil Gallery Year 9-10

Name

Before your visit discuss the three observations of Darwin's theory of evolution: that all living things vary; that all living things can pass on their characteristics; that all living things are involved in a struggle for survival.

At the Museum, go to the MasterFoods Fossil Gallery. Locate the following three fossils to complete this exercize: *Thescelosaurus*, (Middle Life section, smallest dinosaur on display lying on the ground); *Northosaur* (Middle Life Section, Mezzanine level **Swimming Reptiles and Fish** showcase), giant Cave Bear paw, (Recent Life section, **Northern Mammals** showcase)

In the boxes below, draw a diagram of one limb of each fossil.

Right front claw of the *Thescelosaurus*

Flipper of the *Northosaur*

Giant Cave Bear paw

How many parts does each limb have? (ie fingers, claws etc) _____

What part of Darwin's theory does this information support?

_____

_____

_____

_____

Back at school discuss the function of each limb drawn. Does the information recorded suggest a common ancestor? Why?

Kingdoms

Australian Fossil and Mineral Museum
HOME OF THE SOMERVILLE COLLECTION

MasterFoods Fossil Gallery Year 9-10

Name

Before your visit discuss the classification of living things into five kingdoms. What is meant by the terms Procaryotae, Protoctista, Fungi, Plantae and Animalia?

At the Museum, go to the MasterFoods Fossil Gallery. Go to the panel **Life Begins in the Ancient Seas.** Use the information on the panel and fossil specimens to complete the exercize.

Kingdom Prokaryote is made up of single-celled organisms and contains all the blue-green algae, bacteria and cyanobacteria. Draw and label an image of a prokaryote cell and a fossil made by a prokaryote organism.

Procaryote Cell

Fossil

Type of fossil _____

Age of Fossil _____

Type of organism _____

Kingdom Protista contains brown, red and green algae, protozoan, water moulds and slime moulds. Their cells are eukaryotic and are arranged to form simple multicellular organisms.

Type of fossil _____

Age of Fossil _____

Does this type of cell contain a nucleus? _____

Kingdom Animalia have eukaryotic cells arranged to form a multicellular organism. Go to the showcase Complex Life Evolves . Locate the fossil specimen 7-8 of Dickinsonia. Draw an image of this fossil.

Type of fossil _____

Age of Fossil _____

Location found _____

Is this a single celled or multicellular life form? _____

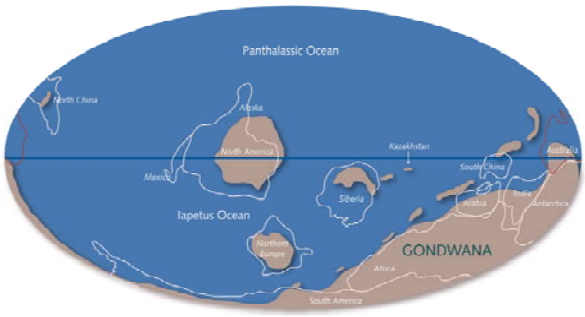
Maps of the Earth

Australian Fossil and Mineral Museum
HOME OF THE SOMERVILLE COLLECTION

MasterFoods Fossil Gallery Year 9-10

Name

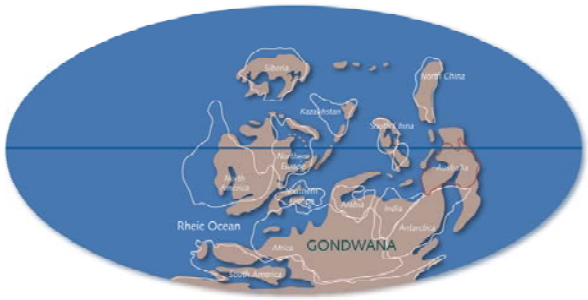
In the Fossil gallery, look at the maps of the earth in each showcase. Use these diagrams to label these maps.



Era: _____

Time Period: _____

Approx Date:_____



Era: _____

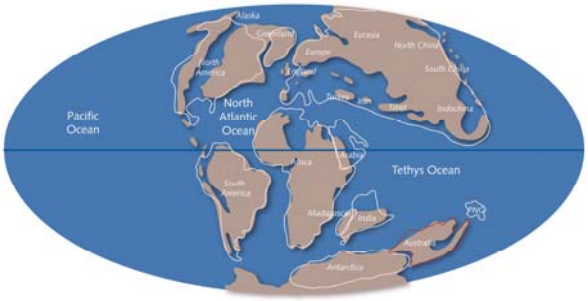
Time Period: _____

Approx Date:_____

Era: _____

Time Period: _____

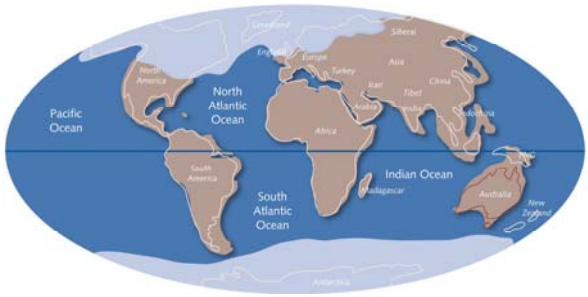
Approx Date:_____



Era: _____

Time Period: _____

Approx Date:_____



Era: _____

Time Period: _____

Approx Date:_____