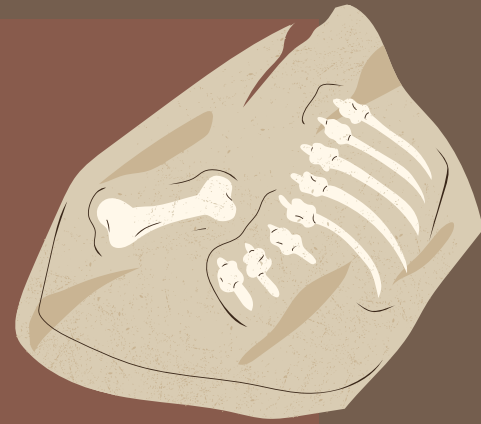


CRAIGLEITH
HERITAGE DEPOT
JUNIOR NATURALIST



JUNIOR PALEONTOLOGIST

Activity book: Understanding Fossils 10-13



BECOME A JUNIOR PALAEOONTOLOGIST

This activity book is part of the Craigleith Heritage Depot Junior Naturalist Program.



This badge will introduce kids to palaeontology and local fossil history. The activities are designed to engage kids whilst teaching them about the science of palaeontology. By completing your Junior Palaeontologist Badge you will learn about ancient life, and explore your local area for fossils. There are six booklets, complete four of the six booklets and receive your Junior Explorer badge.

HOW TO RECEIVE YOUR BADGE

To receive your Junior Palaeontologist badge you must complete the activity book and bring it to the Craigleith Heritage Depot where the staff will look over the booklet and award you a stamp in your Field Journal, once you have completed four of the six books the CHD staff will award you your badge!



FUN FACTS ABOUT FOSSILS

- **Fossils have been found in every continent and are everywhere!**
You would never imagine this but sea creature fossils have even been found on the top of Mount Everest.
- **The word fossil comes from the Latin word 'fossus' which means "having been dug up".**
- **Fossils can sometimes look like bone - but it's not!**
- **Fossils are made from rock which is shaped exactly the same as the object that was originally there.**



UNDERSTANDING FOSSILS

A fossil is the preserved remains of a plant or animal. They become rocks. Fossils are rare because an organism needs to be quickly covered by sediment and over millions of years they can turn into a fossil. The fossilisation process includes drying, freezing, mineralization and petrification. Most fossils are uncovered when rocks are worn away by wind and water. They are found all over the earth, with the largest ones being those of the dinosaurs.

FOSSILS WORD SEARCH

Instructions: Find the underlined words in the above Fossil Word Search

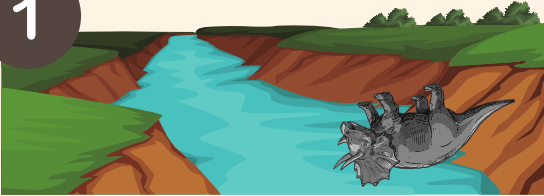
O	E	K	B	X	E	C	K	Z	H	T	H	E	A	N	X	A	C	P	H	M	C	L	N	H
A	D	C	R	T	F	O	Y	T	S	W	T	S	R	N	Q	W	M	B	E	L	K	J	D	Q
F	O	N	L	J	I	N	K	J	E	E	D	V	H	I	U	H	O	S	V	X	Z	W	Q	H
T	T	P	P	O	L	I	C	U	B	X	S	C	V	H	Y	A	O	P	D	D	T	X	A	N
Y	S	O	W	D	E	F	T	G	X	D	O	B	F	V	L	Z	F	V	X	D	N	A	N	I
H	X	N	M	Z	L	E	N	D	B	N	D	P	C	A	O	V	O	I	E	S	E	F	Y	O
M	G	P	B	E	D	R	U	Q	T	L	O	J	D	I	W	A	L	V	R	H	N	K	O	Z
F	M	K	Z	I	D	S	O	I	B	F	C	V	C	Z	T	D	A	H	J	R	I	S	S	R
J	G	X	B	N	I	X	N	G	E	O	L	O	G	I	C	S	S	K	O	G	T	H	T	N
A	R	O	L	F	M	E	Q	X	O	K	K	S	N	E	T	D	C	D	Z	H	N	S	P	K
V	P	J	S	W	N	E	M	Q	X	F	I	C	C	A	H	P	M	O	B	U	O	G	G	W
B	H	V	A	T	D	O	B	W	J	N	Z	D	T	Y	O	I	T	O	E	V	C	I	M	O
G	I	U	S	B	U	F	I	I	D	C	N	E	K	Z	H	E	B	K	O	A	R	O	D	J
I	P	O	N	T	I	H	F	T	F	Q	D	B	O	X	B	Z	I	F	J	R	E	R	W	E
H	A	V	L	A	J	I	K	S	C	F	S	N	D	U	M	S	D	B	Z	V	P	D	X	J
M	F	C	T	O	T	B	R	H	P	N	R	E	P	T	I	L	E	S	W	A	U	X	M	E
U	R	E	L	V	G	O	A	P	M	Q	I	V	B	G	G	R	R	U	E	A	S	R	U	N
N	I	F	F	E	T	I	E	N	Z	G	N	T	O	O	W	G	A	G	W	Z	R	L	G	P
V	F	O	D	S	Z	U	C	U	R	O	W	T	X	K	L	E	N	B	M	U	B	M	L	Y
G	T	O	E	Z	L	S	H	A	S	H	A	P	H	E	D	A	V	I	I	X	G	O	S	K
S	X	C	J	R	E	F	V	C	L	W	E	L	Y	K	P	B	E	A	X	R	E	T	W	R
Y	N	Y	T	C	F	E	I	H	Z	F	U	U	H	I	T	K	I	E	T	E	I	V	B	T
A	L	X	W	I	B	L	U	G	G	C	Q	K	L	D	G	V	H	Q	E	Y	C	M	L	V
E	U	P	V	Y	Y	A	V	D	Q	C	V	I	S	W	C	T	H	M	D	S	C	S	K	O
U	R	R	S	I	E	L	X	Q	X	Z	S	R	U	A	S	O	N	I	D	L	K	I	C	C



FOSSILIZATION

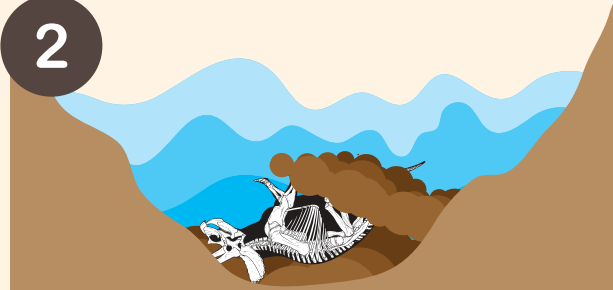
Fossilization is a game of chance - it takes a lot of luck and good timing to become a fossil. Fossilization can occur when any hard body organism dies and very soon after is buried by sediments such as sand, lava or tar. The body tissue of these organisms are replaced with minerals which harden into stone.

1



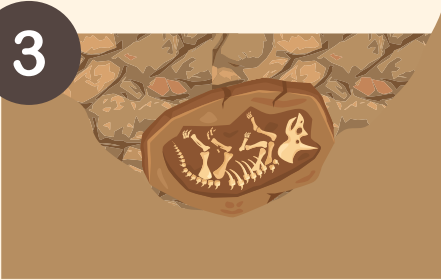
Dinosaur dies in or near water

2



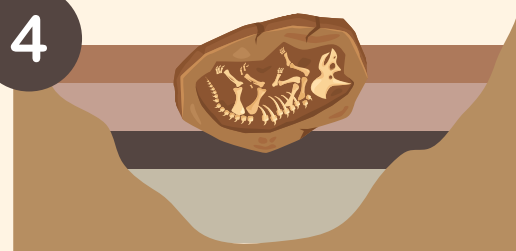
The body is covered with sediment, slowly decaying.

3



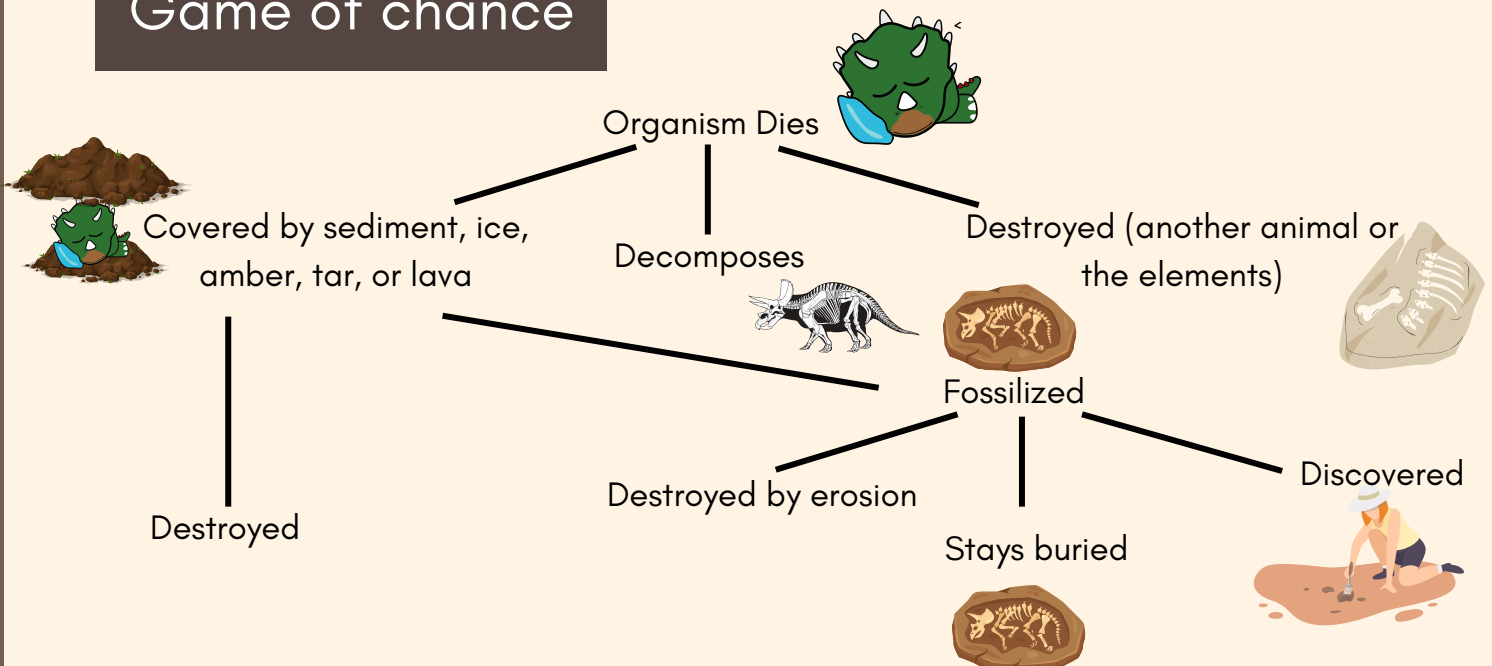
The weight of the sediment creates pressure and water and minerals slip in and press into the skeleton making it a rock.

4



The earth's movements raise the layers of the rock to the surface. The rock erodes from the elements exposing the fossil.

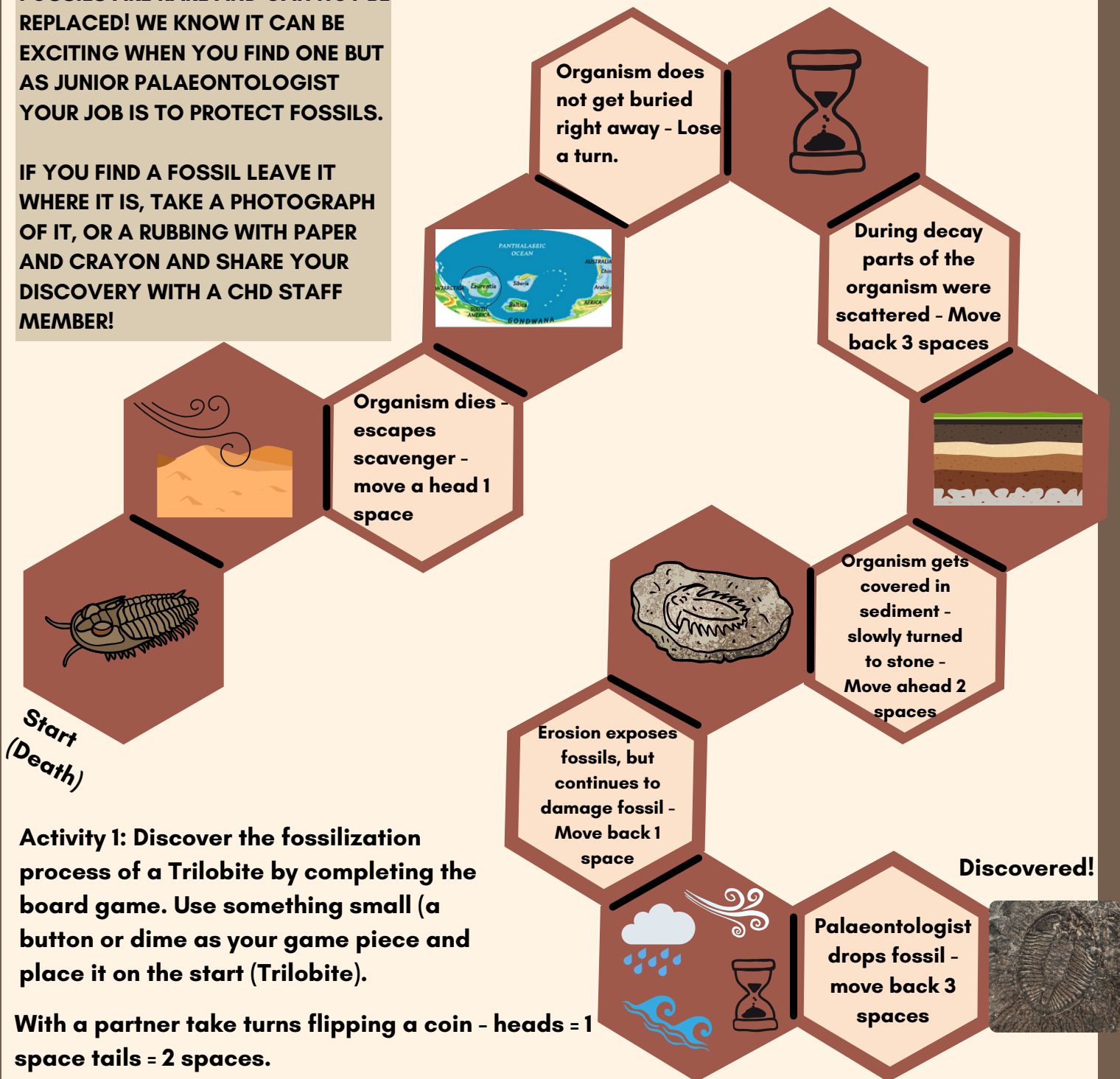
Game of chance



ROAD TRIP TO FOSSILIZATION

FOSSILS ARE RARE AND CAN NOT BE REPLACED! WE KNOW IT CAN BE EXCITING WHEN YOU FIND ONE BUT AS JUNIOR PALAEOONTOLOGIST YOUR JOB IS TO PROTECT FOSSILS.

IF YOU FIND A FOSSIL LEAVE IT WHERE IT IS, TAKE A PHOTOGRAPH OF IT, OR A RUBBING WITH PAPER AND CRAYON AND SHARE YOUR DISCOVERY WITH A CHD STAFF MEMBER!



Activity 1: Discover the fossilization process of a Trilobite by completing the board game. Use something small (a button or dime as your game piece and place it on the start (Trilobite).

With a partner take turns flipping a coin - heads = 1 space tails = 2 spaces.

**Follow the instruction on beige tiles along the way.
The first person to discover the fossil wins!**

WHO STUDIES PALAEOLOGY

Palaeontologist are scientist who study fossils. But they do a lot more than just study dinosaurs. They study the history of life on Earth as seen in the fossil record, like plants, animals, fungi, insects, tracks, bacteria and other living things

Palaeontologist do a variety of things;



Plan digs



Direct and conduct fieldwork to search for fossils or to collect samples



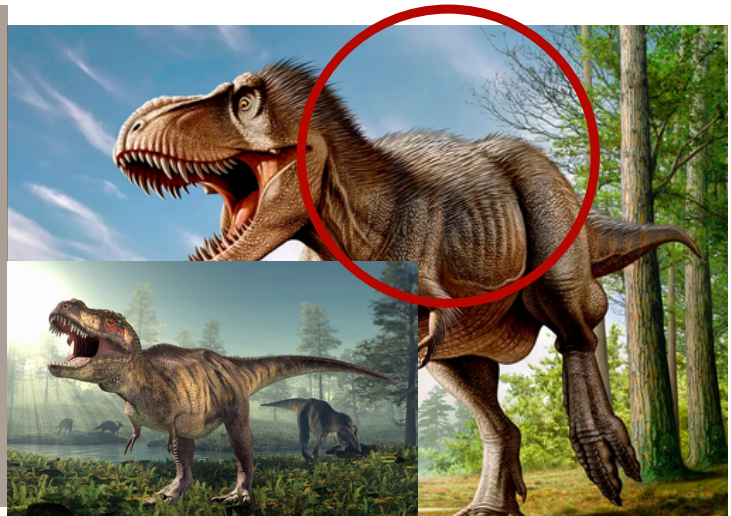
Study fossils



Set up museum displays

Paleontologists study fossils and look for information about the earth's past. They write about what they found, then share their findings with other paleontologists, magazines, museums, and universities!

The recently they found that dinosaurs looked a lot different then first thought, so they are always learning new things. Movies like Jurassic Park and Jurassic World depict dinosaurs as large reptilian like creatures. We now know many of these dinosaurs would have had feathers!



PALAEONTOLOGY VS ARCHAEOLOGY

Paleontology is the field of science which uses fossils to study life throughout geologic time. Animal, plant, and track fossils are collected, observed, described, and classified. Paleontologists use fossils to learn more about what the Earth was like in the past and how the environment has changed over time.

Archaeology focuses on understanding human culture from the deepest history up until the recent past. It studies what humans have made and/or left behind such as objects, footprints or building remains.

VS

Palaeontology and Archaeology often get confused with each other! Try the activity below to see if you can tell the difference between Palaeontology and Archaeology.

Circle what you think a Palaeontologist would study. Put an X through what an archaeologist would study.



marshcharitabletrust.org

timesofisrael.com

dailystar.co.uk



PALAEONTOLOGIST TOOL KIT



Palaeontologist use a bunch of different tools to find and clean fossils. Some tools are specific to palaeontology, others can be found in your own home!



Safety Goggles

These are used to protect the eyes from flying rocks, dirt or sand.



Chisels & Hammers

Fossils are embedded in stone, in order to extract dino bones, palaeontologists need to break away the stone around it. Chisels and hammer are used to break up rock and dirt



Walkie-talkie

A lot of digs are in remote places, walkie-talkies help palaeontologist from getting lost and keep in contact with each other.



GPS

GPS are used to locate coordinates of the dig site, help palaeontologist get from their home base to the dig site and assist in documenting every site /fossil with GPS coordinates in field notebooks.



Rock/Pick Axe

Much like chisels and hammers pickaxes can help break up rock and dirt to get to fossils. They can also split shale rock to find fossils



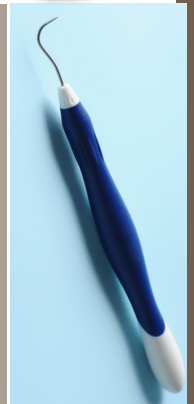
Shovel

Shovels are used to dig up dirt to find fossils. They can also be used to move any debris from a site



Dental Pick

Depending on how close a palaeontologist must get to a fossil will depend on the tool they will use. Dental pick allows palaeontologist the best results when trying to remove close up dirt and rock from a fossil



Paint Brushes

Once you chip up a ton of debris and dust, brushes reveal what's underneath. Palaeontologist use a variety of sizes depending on how much debris they want to move away from the fossil.



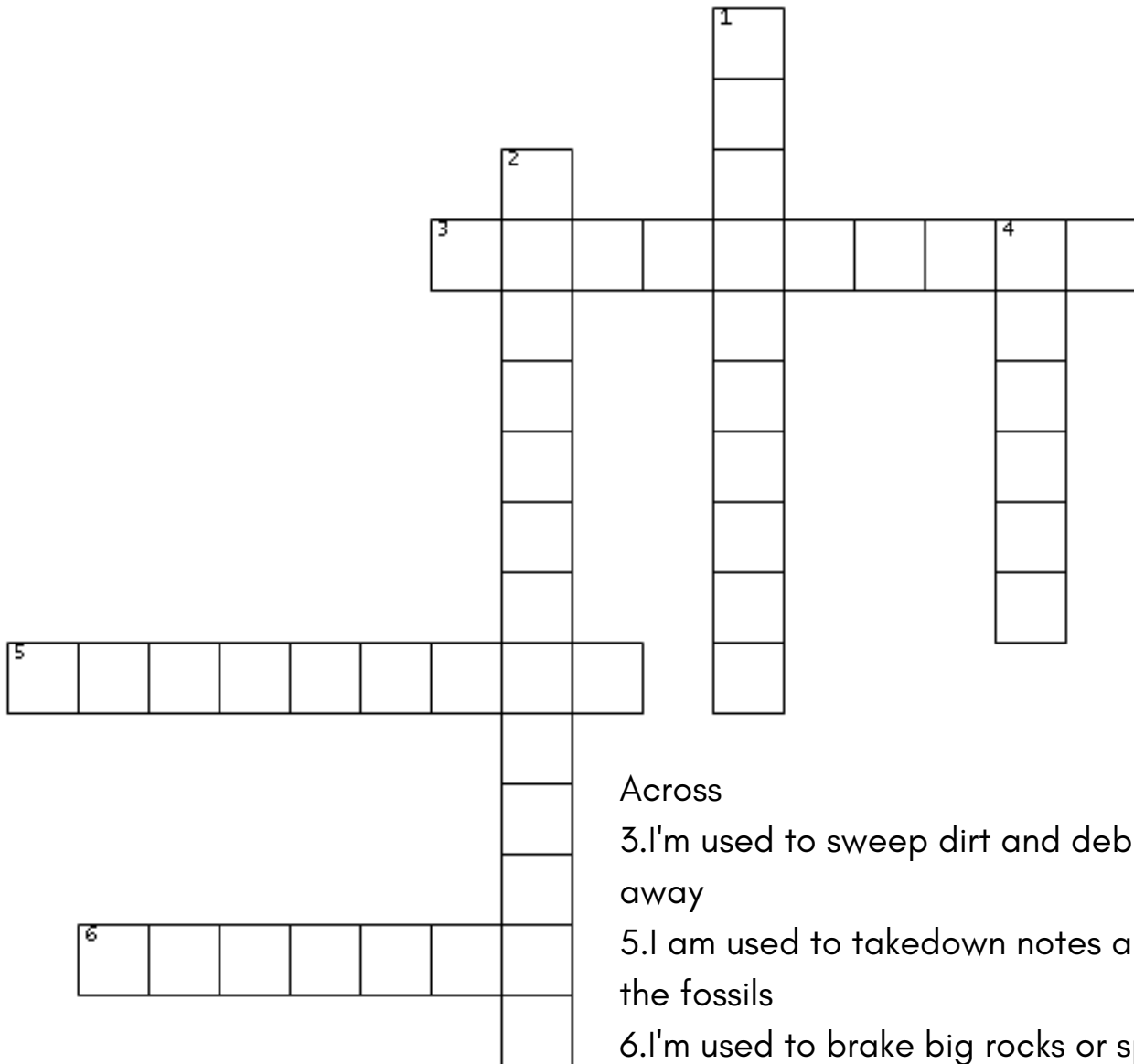
Field Book

Field books or field journals are used to jot down notes about a dig site, fossil, or any thoughts regarding the dig.



PALAEONTOLOGIST TOOL KIT

You've learned about the tools Palaeontologist used lets see if you can name some of the tools in this crossword



Across

3. I'm used to sweep dirt and debris away

5. I am used to take down notes about the fossils

6. I'm used to break big rocks or split shale rock to find fossils

Down

1. Many fossils are stuck deep into dirt - I'm used to pick closely at the dirt around a fossil

2. I'm used to protect your eyes from flying rocks or dirt

4. I'm used to dig up dirt to find fossils

FOSSIL HUNTERS

Due to the vast span of time and the amount of flora and fauna over the millions of years it is hard for one person to be an expert in all of it! Palaeontology has a variety of different specialties, this allows for better study of the fossils that are found!

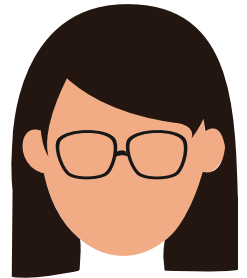
Match the scientist to the field of study!

I study fossilized plants, which includes algae, fungi and land plants!

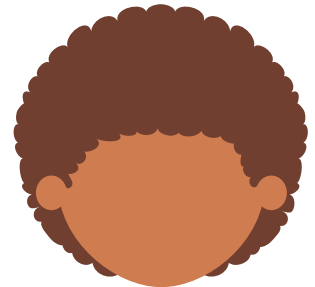
I study fossil tracks, trails and footprints

I study the ecology and climate of the past and its interactions and the responses of ancient organisms with changing environments

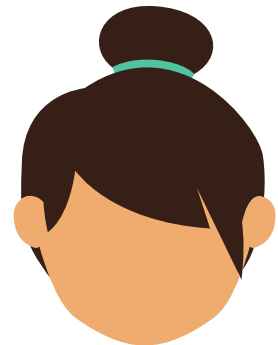
I study microscopic (super tiny) fossils. Because most of the fossils we find are so small I am part of the largest branch of palaeontology



ICHNOLOGIST



MICROPALAEONTOLOGIST



PALAEOBOTANIST

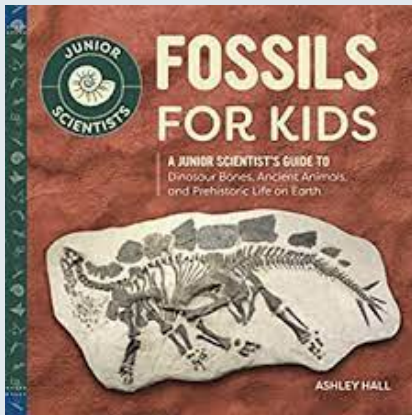


PALAEOECOLOGIST

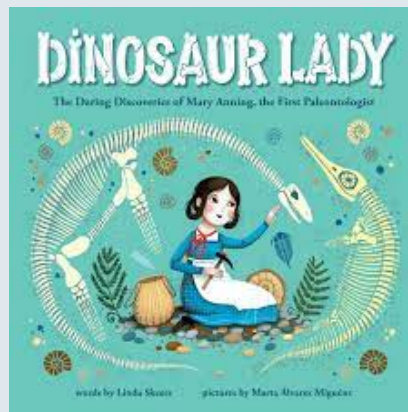
LEARN MORE!

WANT TO LEARN MORE ABOUT LOCAL ANIMALS CHECK OUT SOME OF THE ONLINE AND LIBRARY RESORUCES!

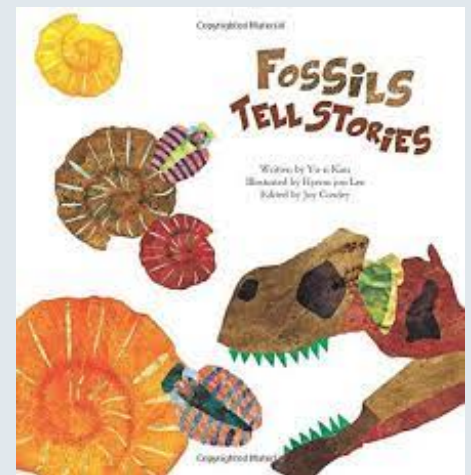
GREAT BOOKS



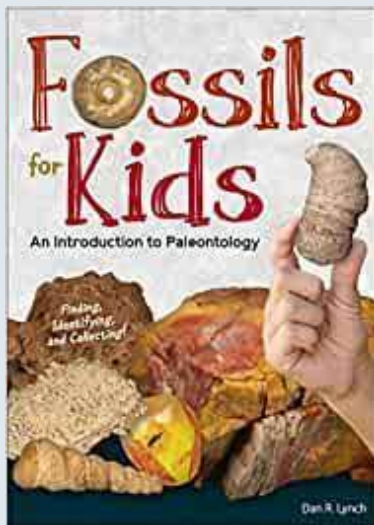
J 560 HAL



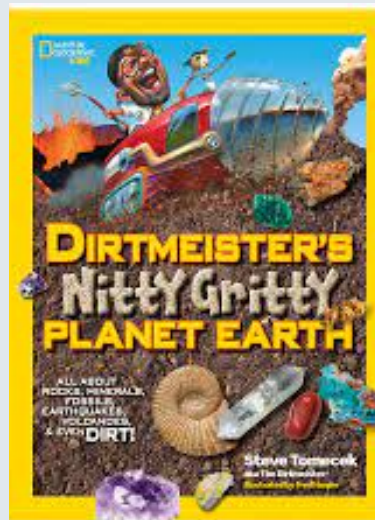
J 560.92 ANN SKE



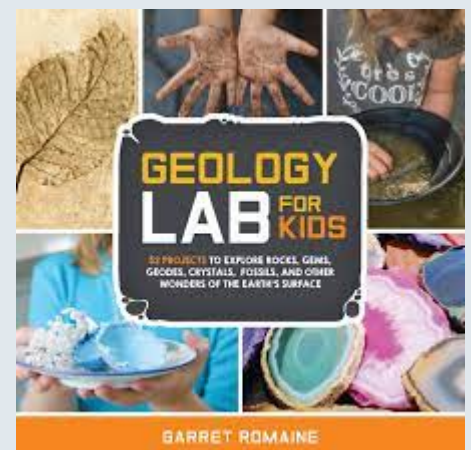
J 560 KIM



J 560 LYN



J 551 TOM



550.78 ROM