Student Science Journal

Name: _____

myScience™

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My State Map

Section 1, Lesson 1

EXPLORE: Draw your state here. Make sure that someone else could look at your map and learn about your state.

EVALUATE: Draw your state map again.

Describe one way that you improved your map from your original drawing to your new drawing. Why was this change important?

Map Questions

Section 1, Lesson 1

1. What do the dotted lines represent?

2. What do the dark lines with numbers on them represent?

3. On your map section there are wavy lines with names on them. On your Legend it is a straight line. What do these represent?

4. Are there any lakes in your section of the map? If so, what are the names of the lakes?

5. On your section of the map, are there any gray shaded areas? What do you think they represent?

6. Do you have any bordering states? What states border?

Patterns of Earth's Features

Section 1, Lesson 2

Using the globe and Google Earth, draw and identify the location of Earth's features on the map below, including mountain ranges, ocean floor structures, and bodies of water.

What patterns do you observe in your map of Earth's features?

Photo Comparison

Section 1, Lesson 2

PHOTO A

PHOTO B

1. Which photograph is older and what is your evidence?

2. Look carefully at these two photographs. How has the land changed over the eight years?

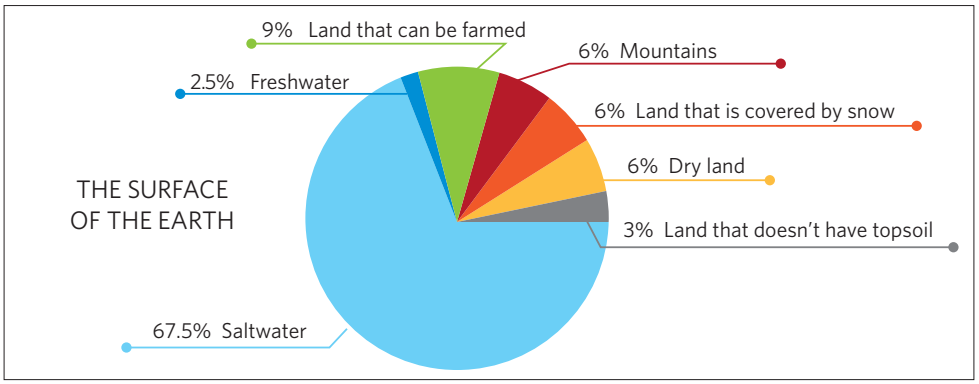
3. What do you think caused these changes?

4. Do you think the human impact was a positive or negative influence on this area? Why do you think so?

Earth's Features

Section 1, Lesson 2

This graph provides information about what covers the surface of the Earth.



What does this graph tell you about Earth's surface?

Provide one example of a pattern you noticed by looking at the globe, Google Earth and other maps.

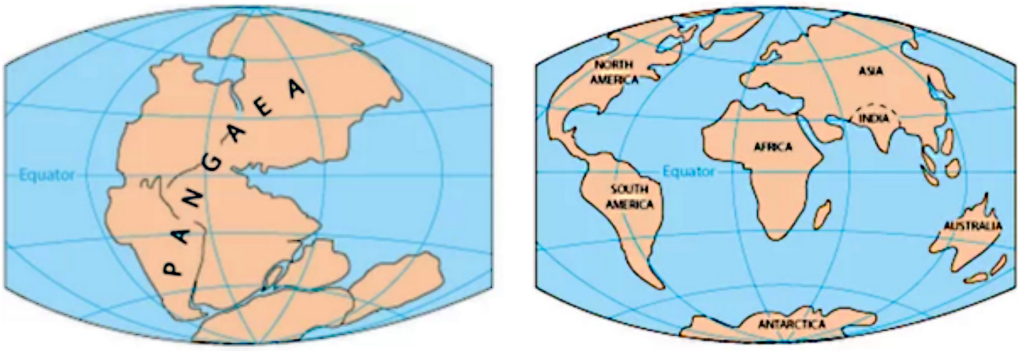
How do maps and globes help scientists study the Earth?

Write down one question you have about the patterns you observed in Earth's features.

Exploring Our Changing Earth

Section 1, Lesson 3

Scientists believe that landscapes have changed over time. The diagram below shows Earth 250 million years ago and present day.



Provide a source of evidence scientists used to support the existence of Pangaea.

Scientists believe that Earth is made up of large plates that are moving slowly and are responsible for the changes of Earth's surface from Pangaea to present day. How do maps support this idea?

Layers Observation Sheet

Section 2, Lesson 4

ENGAGE: Data

STEP	COLOR	FOSSILS IN LAYER?
1 (Bottom Layer)		
2		
3		
4		
5 (Top Layer)		

Sketch:

1. Which layer is the oldest? Where is it on the picture?

2. Which layer is the youngest? Where is it on the picture?

3. Based on the fossil evidence, what type of habitat did the location have for each layer, land or water? What is your evidence?

Layer 1 (Bottom Layer): _____

Layer 2: _____

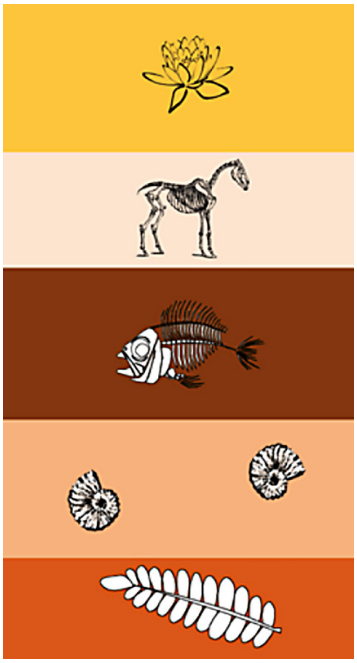
Layer 3: _____

Layer 4: _____

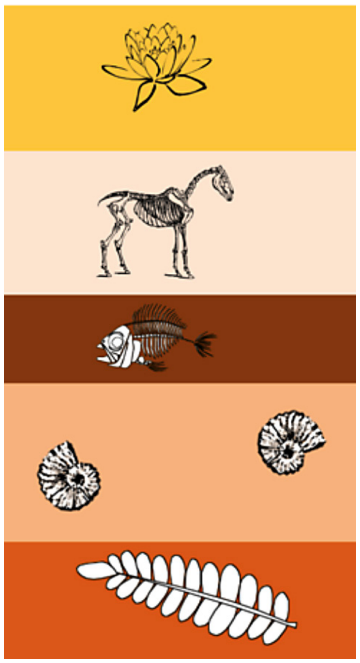
Layer 5 (Top Layer): _____

Changes in Landscapes Over Time

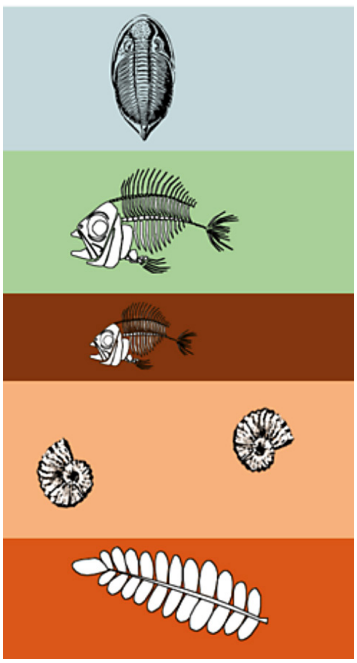
Section 2, Lesson 4



Location A



Location B



Location C

What do the fossils tell you about the landscape of Location A?

What do the fossils tell you about the landscape of Location C?

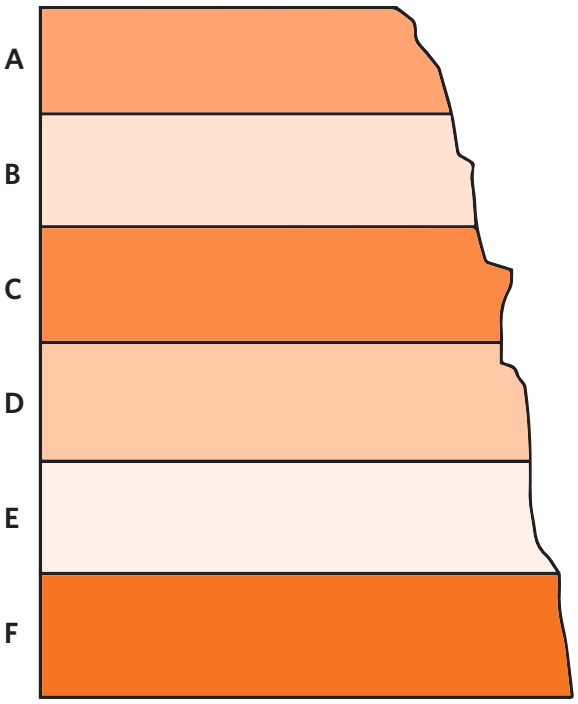
Which two layers were most likely taken from the same location?

What is one reason why Location C might have some similarities to Locations A and B?

Canyon Wall Evaluate

Section 2, Lesson 4

Use the diagram below to answer the following questions.



1. Which rock layer do you think is the oldest, and why?

2. Which rock layer do you think is the youngest, and why?

3. Dinosaur fossils have been found in layers D and E, but not the other layers. Why are dinosaur fossils not found above or below those layers?

Station Observations

Section 2, Lesson 5

Station One: Chemical Weathering Model

Look at the materials. What does this model represent?

Testable Question: How does changing the type of rain affect the rate of weathering of rock?

What are we changing? _____

What data do we need to collect? _____

What variables do we need to control? _____

Hypothesis:

Procedure:
1. Place one Tums in each side of the petri dish.
2. Use eye droppers to place drops of vinegar on the Tums. Record observations.
3. Use eye droppers to place drops of water on the Tums. Record observations.

Observations and Data:

Conclusion:

Station Observations *(continued)*

Section 2, Lesson 5

Station Two: Glacier Erosion Model

Look at the materials. What does this model represent?

Testable Question: How does the steepness of slope affect erosion by glaciers?

What are we changing? _____

What data do we need to collect? _____

What variables do we need to control? _____

Hypothesis:

Procedure:

1. Place the tray flat on the table. Place a sheet of paper on the tray, then pour the sand on the sheet. Spread it evenly over the tray.
2. Place a blob of flubber (about golf ball sized) at the top of the small tray.
3. Tilt the tray so there is a slight downward slope and wait a few minutes until you see the "glacier" beginning to flow. Record observations.
4. Add another blob of flubber to the top of the small tray.
5. This time, tilt the tray so there is a steeper downward slope and wait until you see the "glacier" beginning to flow. Record observations.
6. If time, make a bigger glacier. Tilt the tray until it begins to flow. Record observations.

Observations and Data (What has happened to the sand layer under the glacier? Look at the bottom of the flubber - what do you observe?)

Conclusion:

Station Observations *(continued)*

Section 2, Lesson 4

Station Three: Wind Erosion

Look at the materials. What does this model represent?

Testable Question: How does the speed and/or direction of wind affect the rate of erosion?

What are we changing? _____

What data do we need to collect? _____

What variables do we need to control? _____

Hypothesis:

Procedure:
1. Put on safety goggles.
2. Put sand into a pile in the center of the pan.
3. Blow VERY gently onto the sand through the straw. Record observations.
4. Put sand into a pile in the center of the pan once more.
5. Hold the straw at a different angle or change the amount of wind. Record observations.

Observations and Data:

Conclusion:

Station Observations *(continued)*

Section 2, Lesson 4

EXPLAIN: Use this two-column chart to record examples of weathering and erosion and provide examples of how it changes the Earth.

EXAMPLES OF WEATHERING AND EROSION	HOW IT CHANGES EARTH'S LANDFORMS

Water Erosion Model

Section 2, Lesson 5

Materials:
- Wood blocks
- Spray bottle
- Cup
- Water
- Centimeter ruler
- Sod (optional)

What factors might affect the rate of erosion by water?

Our Testable Question:

What are we changing? (independent variable)

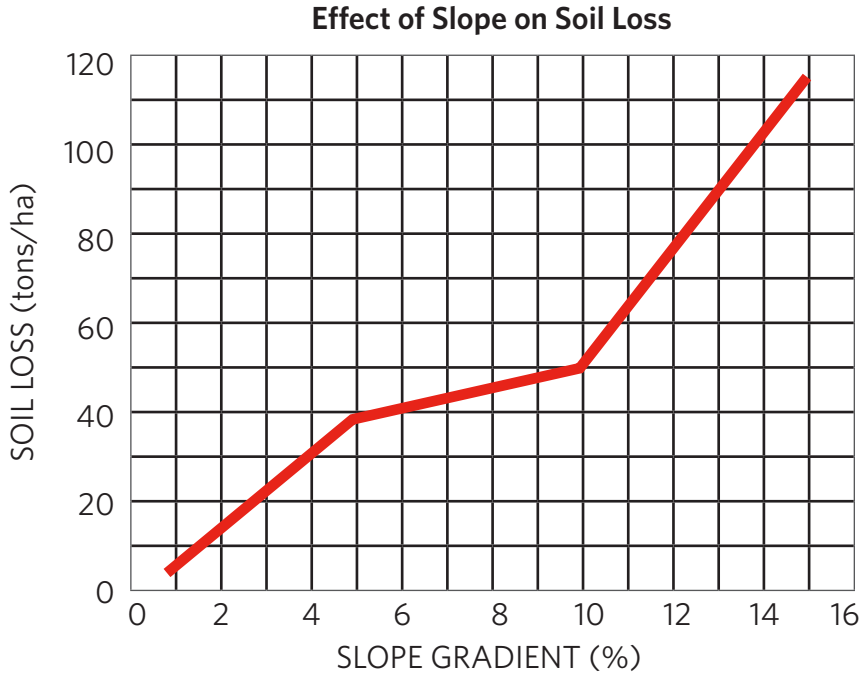
What are we measuring? (dependent variable)

Observations and Data:

Conclusion:

Water Erosion Model *(continued)*

Bruce and Oki tested annual soil loss in a particular region of Missouri. They recorded data about the slope gradient and how much soil was lost. The higher the slope gradient % the steeper the hill.



What is the relationship shown by the graph of their data?

Explain why you see this relationship.

What is one way you could reduce soil loss (erosion)?

Comparing the Rate of Erosion

Section 2, Lesson 5

QUESTION: How does the _____ affect the height of the hill?

CLAIM: What do you think?

When we changed _____ by _____

the height of the hill _____ .

EVIDENCE: How do you know that?

From the experiment, I saw that when I _____ the hill height

_____ by _____ centimeters.

From the experiment, I saw that when I _____ the hill height

_____ by _____ centimeters.

I observed the pattern that as _____ the hill height _____ .

Is there any other evidence you would like to provide?

_____

_____

_____

REASONING: How does your evidence support your claim?

Describe how your evidence supports your claim about how hill height is affected by certain factors. Use cause and effect, as well as scientific ideas, to connect your evidence to your claim.

_____

_____

_____

_____

Erosion and Weathering Evaluate

Section 2, Lesson 5

EVALUATE:

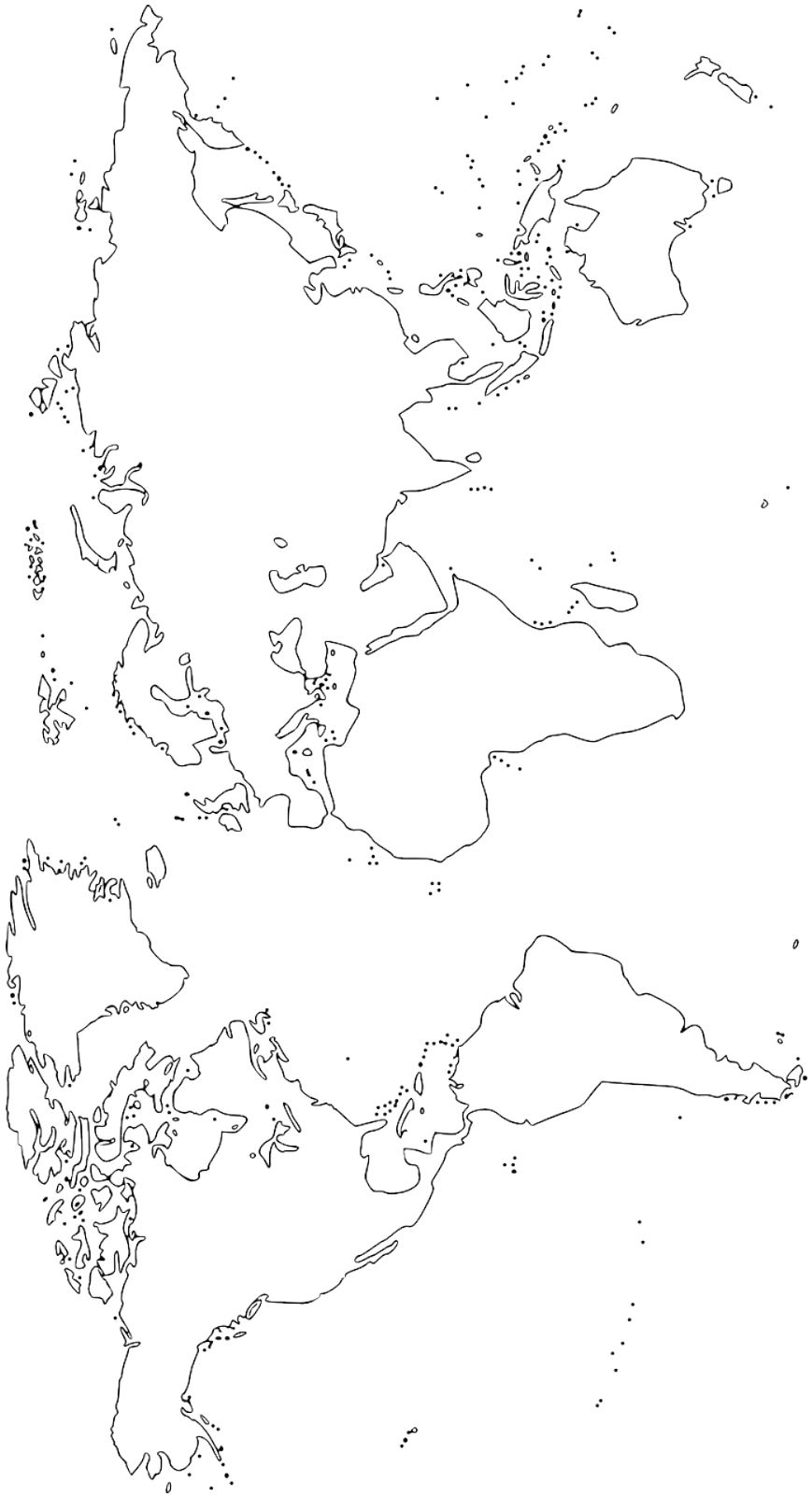
1. Give some examples of factors that affect the rate of erosion or weathering. Provide evidence from the experiments to support each of your examples.

2. Which kind of erosion do you think is the most common in Missouri? Explain your reasoning.

3. Which kind of erosion do you think is the most common in desert habitats? Explain your reasoning.

Volcano and Earthquake Map

Section 3, Lesson 6



△ = Volcanoes

○ = Earthquakes

Earthquakes and Volcanoes

MAP OBSERVATIONS: What do you notice about where earthquakes and volcanoes occur?

ELABORATE: What kind of damage do these natural disasters cause? What ideas do you have to design buildings that keep people safer in earthquakes?

Sketch:

EVALUATE: What is similar about earthquakes and volcanoes? How are they different?

EARTHQUAKES ONLY	BOTH EARTHQUAKES AND VOLCANOES	VOLCANOES ONLY

Engineering Design Cycle

Section 3, Lesson 7

1. Identify Need/Problem

2. Research & Brainstorm

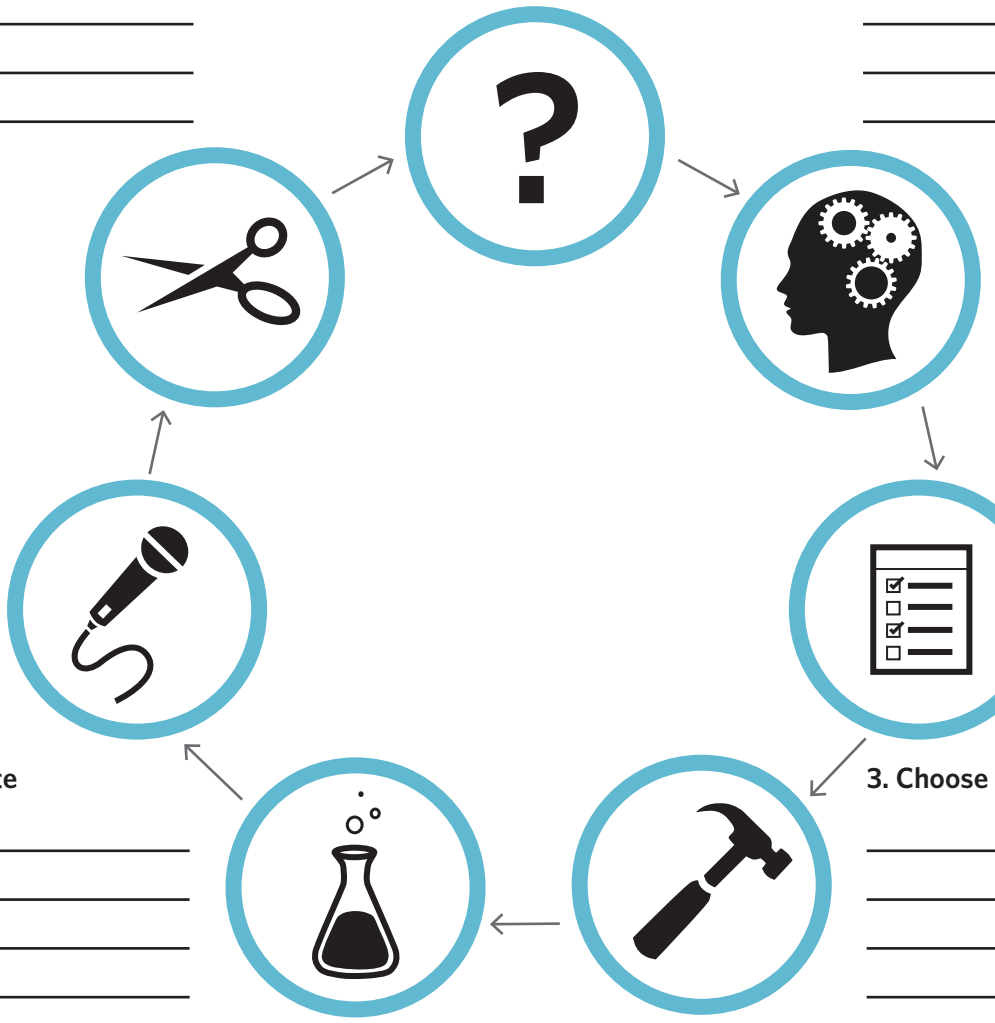
3. Choose Best Ideas

4. Construct Prototype

5. Test & Evaluate

6. Communicate

7. Redesign



Earthquake-Resistant Structures

Section 3, Lesson 7

NAME: _____ **DATE:** _____

CRITERIA (MUST DO!)

- Must have one opening (door or window) to get the bear in and out of the house
- Must be big enough for the bear to fit inside without touching any part of the house
- Must fit on the plate
- Must have a roof
- Must be designed to resist the shaking of a mild and severe earthquake for as long as possible
- Must be ready to test in _____ minutes

CONSTRAINTS (CAN'T DO!)

- Cannot use any materials except what your teacher provides

PLANNING

Your plan must include:

- A sketch or drawing
- Measurements (how tall and how wide will your structure be?)
- Number of materials needed

Earthquake-Resistant Structures *(continued)*

RESULTS OF TESTING (ROUND 1):

Make notes about anything you see during testing, including:

- How long your structure lasted?
- Where and how your structure failed?

REDESIGN:

Your plan must include: a sketch or drawing, measurements (how tall and how wide will your structure be?), and the number of materials needed

RESULTS OF TESTING (ROUND 2):

Make notes about anything you see during testing, including:

- How long your structure lasted?
- Where and how your structure failed?