**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per: \_\_\_\_\_\_\_\_\_\_\_\_\_**

/82

**Capitol Reef Lecture Guide**

/66

**Objectives:**

* How fossils are made.
* Illustrate how geologists use fossils to date rocks.
* To show how younger layers contain younger fossils that more closely resemble critters of today.
* How the surface of the earth changes slowly over long periods of time.

**Questions:**

**Fossil Record & Dating Rock Layers & the Geologic Time Scale:**

1. Can geologists put exact dates on rock strata?
2. Why are fossils important to a Geologist?
3. How do geologists use the fossils to put date ranges on Sedimentary Rock strata?

**Era’s in Geologic History:**

1. Explain the following Geological Time Scale terms – or Era’s, and what types of animals were present.
	1. Proterozoic
	2. Paleozoic
	3. Mesozoic
	4. Cenozoic

**Geologic Time Scale & Associated Fossils in Each Layer:**

1. Use the diagram to interpret what era the formations at Capitol Reef were made.

1. Describe what the critters looked like during that era.

**Gooseneck Bend (Central Park Section):**

1. Which two layers can be found in the Grand Canyon?
2. How old is White Rim Sandstone (Coconino) and what type of environment was it formed in?
3. Where was Utah located at the time?
4. What type of environment was the Kaibab Limestone formed in?
5. What type of environment was the Moenkopi Formation formed in?
6. Put the layers in order from youngest to oldest:

|  |  |
| --- | --- |
| Event | Rock Formations |
| Youngest |  |
|  |  |
| Oldest |  |

**Castle Rock:**

1. How old is and what type of environment formed the Chinle Formation?
2. How old is and what type of environment formed the Wingate Sandstone Formation?
3. Put the layers in order from oldest to youngest:

|  |  |
| --- | --- |
| Event | Rock Formations |
| Youngest |  |
|  |  |
| Oldest |  |

**Fault near Chimney Rock:**

1. What layer if found in between the Chinle and Moenkopi Formation?
2. Put the layers and events in order:

|  |  |
| --- | --- |
| Event | Rock Formations |
| Youngest |  |
|  |  |
|  |  |
|  |  |
| Oldest |  |

**Chimney Rock:**

1. How old is the Shinarump Formation?

1. What formation is found on the top of the chimney?

**Visitor Center**:

1. Put the layers in order from oldest to youngest.

|  |  |
| --- | --- |
| Event | Rock Formations |
| 5 Youngest |  |
| 4 |  |
| 3 |  |
| 2 |  |
| 1 Oldest |  |

**Hickman Bridge, Capitol Dome & Petroglyphs in Fruita:**

1. What layers form the Hickman Bridge, Capitol Dome & the Petroglyphs in Fruita?
2. Between the three rocks, which site is made of the youngest rock layer?
3. What environment formed the Navajo Sandstone?
4. What type of rock material is the Kayenta formation made out of?

**Cathedral Valley; Basalt Dikes (Northern Park Section)**

1. What layer is the “Temple of the Sun” made out of?
2. What mineral is “Glass Mountain” made out of? (hint: it’s what used to be in the gypsum sink hole)
3. In Cathedral Valley – there are some Basalt Dikes protruding through Entrada Sandstone. Which event was the youngest? Entrada Sandstone or Basalt Dike?

**Bentonite Hills:**

1. How was this layer formed?

**Water Pocket Fold (Southern Park Section):**

1. Explain how these layers of rock got tilted?
2. Explain what happened to the layers of rock above the Kaibab Formation?
3. Out of all of the layers in the “Water Pocket Fold”, which layer is the youngest?

**Geologic History in a Nutshell (Earth History of Capitol Reef Part 1 & Part 2):**

1. Describe most of Capitol Reef’s history.
2. How does this exhibit explain how earth’s surface changes over time?

**Building the Bedrock Strata of Capitol Reef National Park:**

Go back through your notes on this presentation and put the following rock layer formations in order from oldest to youngest (Please write the answer – no credit for arrows drawn):

/16

|  |  |  |
| --- | --- | --- |
| **Youngest** |  | **List:** |
|  |  | Moenkopi Formation |
|  |  | Navajo Sandstone |
|  |  | Kiabab Limestone |
|  |  | White Rim Sandstone |
|  |  | Morrison Formation |
|  |  | Carmel |
|  |  | Kayenta Formation |
|  |  | Mancos Shale |
|  |  | Entrada Sandstone |
|  |  | Basalt Dike |
|  |  | Chinle |
|  |  | Windgate Sandstone |
|  |  | Shinarump Member |
|  |  | Dakoda |
| **Oldest** |  |  |

1. Which layer is most likely going to have critters that resemble the animals of today?