

Grand Canyon simulation
By Dr. William Schmachtenberg and 3DWebWorldz

Name _____



Objectives: The Grand Canyon pictured above is an iconic geologic feature. We can also use it as an example of the scientific method. The problem I would like you to consider is why do some of the formations form gentle slopes and why do some form steep cliffs? Put a hypothesis on the line below:

Hypothesis: The softer rocks make up the gentle slopes and the harder rocks make up the cliffs.

You may also think that the Grand Canyon preserves a complete geologic record, but this is not true. Take a virtual field trip by helicopter of the canyon to explore this magnificent landscape!

Open this website, to get the age in millions of years for each Geologic Time Period:

<http://www.geologyin.com/2016/12/10-interesting-facts-about-geological.html>

To get the fossils that have been found in each formation, go to this website:

<https://www.nps.gov/grca/learn/nature/fossils.htm>

As you explore this region fill in the table below:

Formation	Rock type	Geologic Time Period	Age Millions of years ago	Fossils
Kaibab	Limestone	Permian	252-299	Brachiopod, crinoid, bryozoan, horn coral, sponges
Toroweap	Gypsum, shale, sandstone	Permian	252-299	
Coconino	Sandstone sand dunes	Permian	252-299	
Hermit	Siltstone, mudstone, sandstone	Permian	252-299	
Supai	Limestone, mudstone, sandstone	Pennsylvanian	299-318	
Red Wall	Limestone	Mississippian	318-359	Bryozoans
Temple Butte	Dolomite, mudstone, sandstone	Devonian	359-416	

	conglomerate			
Mauv	Limestone	Cambrian	488-542	
Bright Angel	Shale	Cambrian	488-542	Trilobites
Tapeats	Sandstone	Cambrian	488-542	
Precambrian	Sedimentary, Igneous, and metamorphic	Precambrian	542-4600	Stromatolites

Questions to be answered:

- 1) Were you correct in your hypothesis? Yes
- 2) Which time periods are missing between the Temple Butte and Muav Limestone?
Ordovician and Silurian.
- 3) 72 million years. This is the duration of the Ordovician and Silurian time periods.