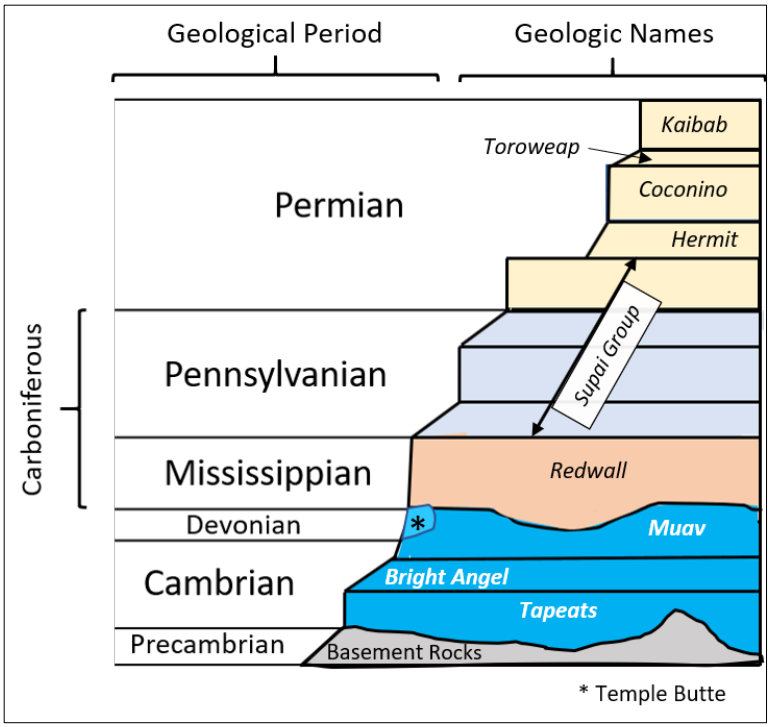
Name: _____ Teacher: _____

The Evidence is Stacking Up || 8th Grade || MS-ESS1-4, LS4-1 Formative Assessment Task

Grand Canyon National Park in Arizona is one of the largest canyons in the world, measuring 277 miles long, up to 6,000 feet deep, and 18 miles wide. As the Colorado River eroded the canyon over millions of years it exposed parts of the rock all the way down to the basement rocks. The model to the right shows a simplified version of the Grand Canyon's rock strata (layers) and the geological period in which they formed. Each layer is labeled with its geologic name.



1. Using the picture of the Grand Canyon's rock strata as evidence, make a claim about how scientists know which rocks are the oldest and youngest. Support your claim with reasoning that explains why that phenomenon helps scientists figure out the relative age of rocks.

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If it helps you explain, you may draw a model with labels in addition to your written explanation.

2. Rock strata can give us information about the age of rocks, but they cannot tell us about their exact age. Explain why not.

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*****Use the following fossil data table as evidence in the rest of the questions on this assessment.*****

Fossil Organisms in Different Geologic Periods

Pictures of the fossils are shown only once in the table.

Geological Period	Fossil Organisms				
Permian	 Fish  Shark Teeth  Nautiloids (related to squid)	 Pelecypods  Gastropods  Crinoids	 Corals  Sponges  Brachiopods	 Pines  Gingko  Seed Ferns	 Dragonflies  Amphibian/Reptile Footprints (277 mya)
Pennsylvanian	Amphibians Reptiles Early land plants  				
Mississippian	Primitive starfish (335 mya)  Brachiopods Crinoids Gastropods	Eel-like animals Corals Sponges Fish 			 Trilobites Ammonites (related to squid) 
Devonian	Freshwater fish bony plates Coral Sponges		eel-like animals crinoids		
Cambrian	Brachiopods Trilobites				

3. What do the patterns in the fossil data allow you to conclude about the change in organisms over time?

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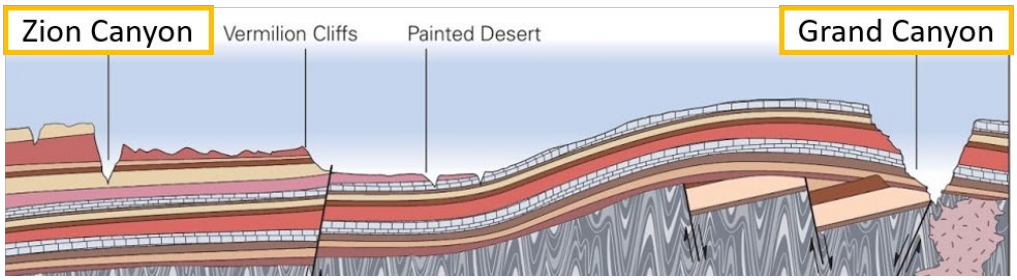
4. The Grand Canyon is part of large geological feature that includes several other national parks. Zion Canyon National Park in Utah shares the same rock strata, but only the *Kaibab* Limestone and *Toroweap* Formation are exposed. When weathering and erosion eventually expose the lower rock strata, what fossils would you expect to find in the older rocks of the *Supai* Group? Explain your answer.



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5. The Grand Canyon is currently considered a semi-arid desert, but scientists report that this was not always the case. Do the patterns in the rock strata and fossil data support the conclusion that the Grand Canyon area was also covered by swamps and oceans at other times in the past? **Circle yes or no** and answer the question under your choice.

YES

Why did the data support the conclusion? Use evidence from the figure and tables you used before to explain your answer.

NO

What other information would you need to support the conclusion? Explain why the new data would support the conclusion.

If it helps you explain, you may draw a model with labels in addition to your written explanation.