

Arizona Museum of Natural History

53 N. Macdonald, Mesa, AZ 85201, 480-644-2230

\$8 entrance fee for students WITH ID.

Attach your receipt to this exercise as proof of your visit.

Although many of the "travelling" exhibits that are displayed at the Museum are great and the Southwestern US section is quite relevant and complete, *this exercise will consist of questions to be answered from the Earth Science portion of the Museum.*

From the entrance, these exhibits will be found through a doorway to your right. Begin in the far right portion of the floor, and it will wind its way down in a path toward the lower level. Questions here are in order if you stay on the main path.

ENJOY YOUR VISIT!

1. Studying the models of Earth through time, the surface of the Earth was entirely molten between _____ and _____ billion years ago.
2. Look at the series of images (produced by Ron Blakey @ NAU) that shows the distribution of land through time. Not until _____ million years ago do we begin to see the recognizable outlines of today's continents.
3. The composition of the Tucson Meteorite is _____% iron.
4. The Barringer Crater impact (i.e., Meteor Crater/Canyon Diablo Meteorite) occurred _____ years ago. The impactor was _____ feet across and left a crater _____ in diameter.
5. Of the 4,000 known mineral species, approximately _____ can be found in Arizona.
6. Copper minerals often occur in bright colors of blue and green. This is because elements in these deposits combine with oxygen from _____ and become oxidized. The brighter colored minerals are usually found toward the _____ of the deposit.
7. Quartz is found in a wide variety of colors due to the inclusion of minor amounts of other elements. Amethyst (the purple variety of quartz) contains inclusions of _____ or _____ whereas Citrine (a yellowish-orange variety) contains inclusions of _____.
8. The largest cavern in the world is located in _____; the longest cavern is located in _____.

9. The majority of the free oxygen (O_2) in our atmosphere is produced by the process of _____.
10. The first sexual reproduction of organisms - allowing for the mixing of genetic material - occurred _____ years ago.
11. The 2nd level from the bottom of "Dino Mountain" (the feature around which you are walking on your path) includes a layer called the Morrison Formation that is exposed in northeastern Arizona. Primitive _____ like *opisthias* lived here at that time, as did huge numbers of termites that built nests up to _____ feet tall!
[Stay left on pathway]
12. Rocks deposited in the Permian period in Arizona contain non-bone evidence such as _____ left behind by several types of organisms include pre-dinosaur relatives and insects.
13. Trilobites were hugely successful during the Paleozoic Era but went extinct at the end of the Era. Their closest living relative is the _____.
14. Chondrichthyans are commonly known as _____. Approximately 750 species still survive today, even though this group first originated hundreds of millions of years ago.
15. Therapsid reptiles (like *Inostrancevia alexandri*) are the evolutionary predecessors to the _____, as partially evidenced by their up-right posture and differences in teeth from other reptiles.
16. The _____ formation is exposed as the Painted Desert and Petrified Forest in Northern Arizona.
17. The state fossil of Arizona is _____.
18. Petrified wood is made of ancient wood that has been replaced with _____.
19. 90 million years ago, the Zuni Basin of Arizona was the southwest margin of a huge ocean. This means the sea level at this time must have been _____.
20. The garfish & bowfin fish in the aquarium are known as _____ because this type of fish has existed since 100 million years ago.

21. The Chinle formation contains fossils of various lake and terrestrial organisms. An example of one of these lake organisms would be _____, whereas an example of a terrestrial organism found in this formation would be _____.
- <<At this point you will go up the stairs to view the dinosaur fossils in the upper platform>>
22. The *Probactrosaurus gobeinsis* is an example of a(n) _____ dinosaur that was one of the first dinosaur types ever found.
23. *T. bataar* (found in Asia) is a related example of the type of dinosaur found in North America that we know as _____.
24. The *Sonorasaurus* is the sauropod for which we have the most complete North American fossil. It is a smaller relative of the dinosaur known as a _____.
25. The _____ is one of the last plant-eating dinosaurs to survive in the Southwestern U.S. The fossil displayed here is an adolescent.
26. Mammals became the dominant organisms in the Cenozoic Era. Many of the plant-eating mammals ate grasses and therefore had large teeth with lots of enamel because grasses contain _____ that wears down teeth.
27. We know that Arizona had several large lakes during the Miocene Epoch of the Cenozoic Era because of _____.
28. The mammals and birds widely diversified in the Eocene Epoch. Fossils from the Green River formation in Wyoming include wide varieties of mammals including _____.
29. During the Pliocene Epoch, the isthmus formed that connected _____ to _____ for the first time.
30. <Entryway to Museum> The mammoth is a larger relative of the _____.