**Deep Time** Adapted from: <http://staff.tuhsd.k12.az.us/gfoster/standard/evolhowitworks.htm> DO NOT WRITE ON THIS

Visit the following website: http://www.pbs.org/wgbh/evolution/change/deeptime/index.html

***Complete the questions on a separate sheet of paper using complete sentences!***

***What does MYA mean?*  \*For each answer give the date in MYA**

1. What is "deep time"?
2. How long ago did the **birth of the solar system** take place? In which Eon and Era?
3. What kinds of gases were found in the **early atmosphere**?
4. How did the **great oceans** of the earth form?
5. What is the age of the **oldest known rock**s? Why are these finds so rare?
6. What are the oldest-known living organisms? (**Bacteria diversify**)
7. How do bacteria reproduce?
8. Are all bacteria cells alike? Explain.
9. Before **photosynthesizing bacteria** existed what did microbes feed on? What process was being used?
10. Why did bacteria that can generate their own food and energy evolve?
11. What process was used to make food? Explain the process.
12. What are the **oldest fossils**? How old are they? What are they composed of?
13. How old are the **first eukaryotes**? What is the evidence for this?
14. What are sterols?
15. What does **bacteria found on land** suggest? What does this layer do?
16. What are **banded iron formations**? What are they evidence of?
17. How old are the oldest **true algae** fossils?
18. What is the oldest fossil evidence of **soft-bodied animals**? Where were they found?
19. What are the **oldest arthropod fossils**? Give examples.
20. What are the external skeletons of **hard-shelled animals** made of?
21. When do **Chordates** appear in the fossil record? What are the main characteristics of this group of organisms?
22. When do **marine reefs** appear in the fossil record? Why are they so important?
23. What are the first **land plants**? What is the fossil type and how old is it?
24. What are **sharks**’ skeletons made of? What other creatures are sharks related to?
25. What are **vascular land plants**?
26. When was the arrival of **arthropods on land**? What are some examples of these early arthropods?
27. What is the first group of **land vertebrates**?
28. What is the oldest **seed plant**? What did seed plants evolve?
29. Who do **reptiles** share similarities with?
30. What is a **conifer**?
31. In what Era and period did mammals first appear? How many years ago? What characteristics did **true mammals** evolve?
32. What were the effects of the **Late Triassic** extinction that took place 206 mya? What is hypothesized to be the cause?
33. Most evidence indicates that **birds** are descendants from…
34. In what Era and Period did **flowering plants** first appear? How many years ago?
35. What are examples of **rodents**? Where in the world are rodents found?
36. Bats are the only mammals capable of…
37. How long ago did the first ancestors (**early human** ancestors) of modern humans appear on earth? In which Era and Epoch?
38. Why are **grasses** so important?
39. What size were the **grazing** **horse’s** ancestors?
40. When did **chimpanzee and hominid line separate**? In which Era and Epoch?
41. How much DNA do chimpanzees and humans have in common?
42. What are some characteristics of **early humans**?
43. How long ago did the first **modern humans** appear on earth? In which Era and Epoch?

**Extra Credit**

1. In what Era did the ozone layer form? How many million years ago (mya)? Why is this change so important?
2. In what Era and how many million years ago (mya) did oxygen near present-day levels?
3. In what Era and how many million year ago (mya) did the continents near present-day positions?