Key Idea: Scientists use fossils to determine the age of rocks.

1. Relative Dating: the age of an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to other events or objects
   1. Examples:
      1. .
      2. .
   2. Remember this is NOT an exact age or date, but an important way ­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It’s the first step to fitting together the puzzle of Earth’s past together.

*Quick Practice.* *Can you arrange these bikes in order of their ages without knowing how old each is?*

*Oldest \_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ Youngest*

1. Index Fossils are an important tool scientists use to find the relative date of rocks
   1. Fossils found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rock can offer clues about the age of the rock
   2. An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that is fossilized in rock must \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ time span in which that rock was formed

* 1. Therefore, if scientists knew how long ago a fossilized organism lived, then they could figure out ­

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in which the fossil was found.

🡪 HOWEVER, not all fossils can be used to date rocks

Why? Think about this: If an organism that lived 100,000,000 years ago is still in existence today, would finding a fossil of this organism in a rock give us any clues to how old the rock is? Why or why not?

* 1. Therefore, only specific fossils can be used to date rocks. These ‘special’ fossils are called Index Fossils. Index fossils
     1. Were common organisms (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
     2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (all over the world)
     3. Existed only during \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ spans of time

**Practice**

|  |  |
| --- | --- |
| Index Fossil | Years ago the organism existed on Earth (mya) |
| Archaebacteria (A) | 820-840 |
| Descos Diatoms (DD) | 650-700 |
| Alpha Diatoms (AD) | 630-670 |
| Epsilon Zirconus (EZ) | 500-540 |
| Paradoxides Primus (PP) | 480-520 |
| Bathyeurus Extans (BE) | 430-460 |

Index Fossil Practice: Use the information about index fossils to answer the following questions (Don’t let the names of the fossils throw you off—just write the initials instead).

1. If you find the fossil of an archaebacterial in a rock, how old does the layer of rock have to be?
2. If you found a rock from the Ordovician period (440-505 mya), what is one fossil you might expect to find in it?
3. You find a rock containing both types of Paradoxides Primus (PP) and Bathyeurus Extans (BE). How old is the rock?
4. If a rock contains both Epsilon Zirconus and Paradoxides Primus, how old is the rock?
5. You find a rock containing fossilized Alpha Diatoms. How old is the rock?
6. You find a rock containing fossilized Epsilon Zirconus. How old is the rock?
7. What is one fossil you would expect to find in a rock that was 690 mya?
8. What is one fossil you would expect to find in a rock from the Cambrian Period (505-544 mya)?
9. You find a rock containing Descos Diatoms and Alpha Diatoms. How old is the rock?