8. **Begin with human history**

Remind students that you used a scale of 1 cm for 1 million years. Have students gather around as you point out 1 cm on the time line. Unreel the time line as you add cards. This will keep students together and on task.

Tell them that this time line for Earth starts from modern times, so year 0 is today and is represented by this end of the rope. They will go backward in time on the time line to find out how long ago things happened on Earth. This is like the personal time line, where year 0 was the present and they moved backward in time. Ask,

➤ *Where would your lifetime show up on this scale?* [It is right on the end of the rope. It wouldn’t even be seen with a magnifier. It would be 0.001 mm.]

Call up the student holding the *Homo sapiens* card. Ask the student to read the information on the back of the card loud enough for other students to hear, then tell the class where the card should be attached [0.04 cm from the 0 end].

Repeat this process for the following cards. One at a time, each student should read the information and time data aloud, then add the card to the time line.

- *Homo erectus* [1.6 cm]
- Ice age [2.0 cm]
- Primitive humans [3.5 cm]
- First horses [60.0 cm]
- Dinosaur extinction—Cenozoic era begins [66.0 cm]

Point out that each event prior to this point has been during a period of time called the Cenozoic era. Tell students,

*We live in the Cenozoic era, which is all of the time since the dinosaurs. Cenozoic means “recent life.”*

9. **Continue with the Mesozoic era**

Call up the next round of students, one at a time:

- First birds [1.5 m]
- First true mammals [2.2 m]
- Age of dinosaurs—Mesozoic era begins [2.52 m]

Tell students,

*Geologists call the era from 252 mya to 66 mya the Mesozoic era. Mesozoic is derived from the Greek language and means “middle life.” Now let’s take a look at some of the life that appeared during the Mesozoic.*

Call up the next round of students, one at a time.

- First amphibians [3.6 m]
- First trees [3.85 m]
- First insects [4.0 m]
- First land plants [4.75 m]
- First fish [5.0 m]
Just before the dinosaurs appeared, before the Mesozoic era, there was a great extinction. More than 90% of all species of marine life disappeared at that time. This extinction occurred at the end of what geologists call the Paleozoic era, the period of “ancient life.” The Paleozoic era lasted from 541 mya to 252 mya.

Have the student with the card add it to the time line.

- Oldest complex organisms preserved as fossils—Paleozoic era begins [5.4 m]

Tell students,

A number of organisms came into existence during the Paleozoic era. All of the fossils you observed in the Grand Canyon rocks were found in Paleozoic rocks.

10. Continue with the Precambrian era

Tell students,

All of the time before the Paleozoic era is called the Precambrian era. It wasn’t until the end of the Precambrian era around 600 mya that complex life on Earth evolved, with hard body parts that were easily preserved.

Call up the last round of students, one at a time.

- First cyanobacteria (blue-green algae)—stromatolites [37 m]
- First life [41 m]
- Earth takes form [46 m]

Have students follow you as the rest of the time line is unfolded, and have students look back to the beginning. Ask,

➤ Look back along the time line to where we started, to where our lifetime is located. Where do we seem to know the most about Earth’s history? [Close to our lifetimes, recent times.]

➤ What patterns do you notice in the fossil record when you compare more ancient fossils with more recent fossils? [More ancient fossils are simple organisms (algae); more recent fossils are more complex organisms like humans, dinosaurs, and birds.]

11. Assess progress: notebook entry

Ask students to write this question in their notebooks and take a few minutes to write a response.

➤ What main ideas about the history of life on Earth does the time line communicate?

What to Look For

- The time line represents the history of life on Earth from the time of its formation, about 4.6 billion years ago (or 46 million years ago).
- Events closer to 0 cm are more recent events in history.
- Human history is a tiny, recent piece of the vast history of life on Earth, and of the history of Earth itself.

12. Roll up the time line

Have some students help remove the event cards and roll up the time line. Return to the classroom.