Dinosaur Bones

Test

Quincy is a tour guide at a museum of science and history. During a tour of the museum, he tells some visitors about a fossilized dinosaur bone that is on display in the museum. He says, “Twenty years ago, a group of paleontologists donated this dinosaur bone to our museum. At the time, they told us that they had estimated the age of the bone to be approximately 90 million years. So now, the bone is about 90 million and 20 years old.” Evaluate the validity of Quincy's statement.

Commentary

The purpose of this task is to illustrate through an absurd example the fact that in real life quantities are reported to a certain level of accuracy, and it does not make sense to treat them as having greater accuracy.

Solution

There are two clues that this is not the right way to describe the age of the fossilized dinosaur bone. First, when large numbers are reported as round numbers (like 90 million), then it is almost always the case that it is reported to the nearest 10 million (or possibly to the nearest 1 million). Second, even if we thought that it was possible that the 90 million figure is an exact figure, the age of fossilized dinosaur bones cannot be determined to that level of precision.

In any case, 90 million is not reported to the nearest ten years. When we say that, "The dinosaur bones are 90 million years old," we might more precisely mean something like, "The dinosaur bones are 90 million years old, plus or minus five million years." Adding 20 more years has a negligible effect on our estimate of their age.

Licensed by Illustrative Mathematics under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License