

## bad dates from wrong assumptions (figures 1–5)

### ASSUMPTION—CONDITIONS AT TIME ZERO

Scientists do not know how many “daughter atoms” were present when most rocks first formed. So when they test rocks produced by lava flows in recent years, their bad assumptions yield old “ages.”



FIGURE 1

### BAD RESULTS: “OLD” DATES FOR RECENT ERUPTIONS

A rock formed at Mount St. Helens in 1986 yielded a radiometric age of 350,000 years.



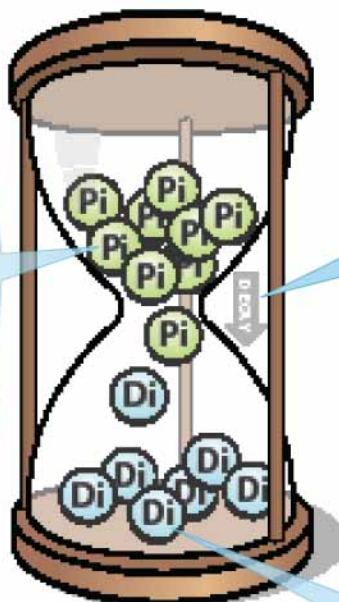
FIGURE 2

A rock formed by lava flows at Mt. Ngauruhoe in 1954 yielded a radiometric age of 3.5 million years.



FIGURE 3

A rock at the top of Grand Canyon, formed by a recent volcanic eruption, yielded the same age as volcanic rocks deep below the canyon wall—1.143 billion years.



Pi Parent Isotopes

Di Daughter Isotopes

### ASSUMPTION—CONSTANT DECAY RATE

Scientists do not know how quickly radioactive atoms decayed in the past. So they assume a constant rate. But when they tested zircon crystals from a borehole in New Mexico, they found two very different dates, depending on what measurement they used.

### BAD RESULTS: CONTRADICTIONARY DECAY RATES

Measuring the uranium in these crystals yields an “age” of 1.5 billion years. But measuring the amount of helium that leaked out as a result of the decay yields an age of 6,000 years.



FIGURE 5

### ASSUMPTION—NO CONTAMINATION

Scientists do not know how much the rocks have been contaminated. So they usually assume no contamination.

### BAD RESULTS: DIFFERENT DATES FROM THE SAME ROCKS

Contamination of lava flows at Mt. Ngauruhoe, known to be less than 50 years old, yielded three different “ages” for rocks—133 million years, 197 million years, and 3.908 billion years.



FIGURE 4