

AST 105IN ANSWERS TO HOMEWORK ASSIGNMENT 2

Chapter 2, “The Science of Life in the Universe”

“Science or Nonscience?”

20. An extraordinary claim, certainly, but scientific. It is a naturalistic claim, so can be study, at least potentially, by science. The process of discovery in this instance has already begun, with hints of large bodies of subsurface liquid water picked up by the two Voyager spacecraft at the start of the 80's and, in the late 90's stronger, visual evidence by the Galileo spacecraft.
21. Nonscience, clearly, because of the supernatural/imaginative nature of the subject. Scientific thought can only study what is physically real, i.e., natural. “Evidence” on those ghost-hunting TV shows? Television is not where genuine scientific discovery is presented for the first time. Enjoy them for entertainment. See if you can raise skeptical questions as you watch, but otherwise, viewers are at the mercy of the editors and the amateur, on-air investigators.
23. Scientific. This assertion meets the related scientific criteria of being naturalistic and testable now or in the foreseeable future.
24. This is an astrologically based claim, so–nonscience. We’re in the realm of pseudoscience here. But, except for “scientific” creationism (Intelligent Design), pseudosciences are not supernaturalistic, This #24 exemplifies a way to describe how pseudoscience differs from science. This claim can be tested, but only partially through statistical analysis. Interviewing a large number of people, demographically chosen (to preclude other influences confusing the results), and tallying up the # of musicians per sign will, utilizing the correct statistical analyses, show whether there is a statistically significant higher number of musicians born under the sign of Taurus. BUT–AND HERE IS A MAJOR POINT–“correlation does not prove causation”). That is, if two things are found to correlate, before claiming it understand the correlation, one needs to have an underlying theory to explain the correlation. The correlation may in fact be indirect, involving some other factor, for example. In other words, you need to know the cause and effect mechanism. And how is the only way to demonstrate that? Do science, but in this case, we can’t. Because there is no cause and effect (theory) proposed to explain what is going on here. We scientists haven’t found anything in nature that would lead to musicians tending to be born under the sign of Taurus and astrologers have proposed no mechanisms that hold water. And there we find why astrology is a pseudoscience. Its baselessness is of no concern to practitioners of it. Taking advantage of little known psychological aspects of their counseling, they can be helpful to people without a real underlying foundation.
25. Mostly Nonscientific. The claim meets the scientific requirement of being naturalistic, but how would one test it? What aliens? How can we study what they allegedly do? Studying the people abducted is possible, but forget interviewing them–“...without the people ever realizing they were taken. There might be some physical effects of the abductions and time travel, a la in Michael Chrichton’s Timeline, but for those to be helpful, they must be unambiguously interpretable.
26. This is all science. This claim is spoken in mathematics, the language of science. It is a claim based on a testable theory, in fact, a very well tested theory indeed.
27. God no, as it were, this isn’t scientific. It’s a religious claim futilely attempting to explain the natural world. Futile because it only begs the question. If one accepts that God is real, then further accepts that God made the laws, Ok. But one is still no closer to asking the real scientific questions: How did God do it?

How did He/She/It make those laws come about and create everything? The Bible is silent on these obvious questions to ask.

Quick Quiz (QQ)

- 35. b
- 36. c
- 37. a
- 38. b