

1. The Sun is a main-sequence star. Where did the calcium that we see on the Sun's surface come from? Prove that the sun could not have made it.
2. Cite the evidence that all globular star clusters are old.
3. Why are main-sequence stars so much more common than red giants?
4. Since all stars smaller than about two solar masses evolve into white dwarfs and since such stars are so plentiful, why don't we see billions of white dwarf stars?
5. Imagine that the temperature of the center of a star is suddenly increased. What will happen and why?
6. In the Big Bang Theory of the origin of the Universe, *why* do distant galaxies have large velocities of recession?
7. In spiral galaxies one finds regions of ionized hydrogen containing very hot stars strung out like beads along the spiral arms. What implications does this have for star formation?
8. Can a red main-sequence star be young? Explain fully.
9. Population II stars are expected to form in a collapsing cloud of gas after the Population III stars have died. This collapsing cloud marks the formation of a galaxy. Compare the luminosity of elliptical and spiral galaxy of the same mass at this stage.
10. Why will most stars die as white dwarfs?
11. In the Big Bang Theory, how do we estimate the age of the Universe?
12. Why don't elliptical galaxies have disks full of Population I stars?
13. Why doesn't a white dwarf star collapse as it cools?
14. Remembering only how the main sequence lies in the H-R diagram, how can you prove that main-sequence O stars are burning their hydrogen much faster than main-sequence M stars?