

Section 14.2 The Evolution of Stars – Answer Key

1) Where do scientists believe stars are born?

Most scientists believe that stars are born in nebulae.

2) Where does fusion occur? **Fission occurs in the core of stars.**

3) What happens to the hydrogen atoms to make fusion occur? **Hydrogen atoms fuse together and create helium.**

4) What famous equation predicts the missing mass converted into energy during fusion?

$E=mc^2$ is the famous equation.

5) Define red dwarf. **Red dwarfs are low mass stars that consume their hydrogen very slowly over a period as long as 100 billion years.**

6) Define white dwarf. **A white dwarf is a small, hot star, that is not very bright.**

7) What happens to the size of a star when it has no more hydrogen left? **When there is no more hydrogen left to burn, the temperature in the core increases and the outer layers expand.**

8) What happens to the helium when there is no more hydrogen left? **The helium starts fusing into carbon.**

9) Define planetary nebula. **A planetary nebula is a fuzzy object that is not a planet, but the left over gas and plasma after the death of a star. They are named this because they look like planets.**

10) Define black dwarf. **A black dwarf is the final phase of a white dwarf star that no longer emits light or heat.**

11) What do high mass stars do with their hydrogen? **High mass stars consume their hydrogen very quickly.**

12) What element does a massive star produce just before supernova occurs? **A massive star produces iron just before supernova occurs.**

13) Define supernova. A supernova is an explosion (death) of a star.

14) Define neutron star. **A neutron star is a small super dense star thought to be the crushed leftovers after the explosion of a large star.**

15) Define black hole. **A black hole is an object in space that has such strong gravity that nothing can escape it, not even light.**

16) What happens to supernova cores that are 3 solar masses or greater? **It is believed that they form black holes.**

17) What causes a star to become a red giant? **A star becomes a red giant when it no longer has enough hydrogen left for fusion to occur. This causes temperatures in the core of the star to increase, therefore, causing the star to expand.**