

Life Cycle of Stars

- 1. What is the name given to the initial cloud of dust and gas from which stars form?**
 - A. Protostar
 - B. Nebula
 - C. Main sequence star
 - D. Red giant

- 2. What is the primary force that pulls dust and gas together to form a protostar?**
 - A. Thermal expansion
 - B. Nuclear fusion
 - C. Gravity
 - D. Electromagnetic force

- 3. What element primarily undergoes nuclear fusion in the core of a newly formed star?**
 - A. Helium
 - B. Carbon
 - C. Oxygen
 - D. Hydrogen

- 4. What is the stage in a star's life when the outward pressure from thermal expansion balances the inward force of gravity?**
 - A. Protostar stage
 - B. Red giant stage
 - C. Main sequence stage
 - D. White dwarf stage

- 5. How long does the main sequence stage typically last for a star like the Sun?**
 - A. A few thousand years
 - B. Several million years
 - C. Several billion years
 - D. A few hundred billion years

- 6. When does a star leave the main sequence?**
 - A. When it begins to cool down
 - B. When the hydrogen in its core begins to run out
 - C. When it starts fusing heavier elements
 - D. When it becomes more stable

- 7. What causes the outer layers of a star to expand when it becomes a red giant or red supergiant?**
 - A. The cooling of the core.
 - B. The energy released by the hot core.
 - C. The decrease in gravitational force.
 - D. The depletion of helium.

- 8. Why does a red giant or red supergiant appear red?**
 - A. Its core temperature increases.
 - B. Its surface cools down.
 - C. It emits more red light during fusion.
 - D. It absorbs all other colors of light.

9. What is left behind after a small-to-medium-sized star ejects its outer layers?

- A. A neutron star
- B. A black hole
- C. A white dwarf
- D. A protostar

10. What process allows big stars to produce heavier elements after the main sequence?

- A. Gravitational collapse
- B. Thermal expansion
- C. Nuclear fusion
- D. Radioactive decay

11. What is the explosive event that occurs at the end of a big star's life?

- A. Planetary nebula formation
- B. White dwarf formation
- C. Supernova
- D. Red giant expansion

12. What type of core is left behind after a supernova explosion of a massive star?

- A. A white dwarf
- B. A red giant
- C. A neutron star
- D. A protostar

13. Under what condition does a collapsing massive star become a black hole instead of a neutron star?

- A. If its initial temperature was too low.
- B. If it does not undergo nuclear fusion.
- C. If it is massive enough.
- D. If it loses too much mass during the supernova.

14. What is a defining characteristic of a black hole?

- A. It emits a large amount of light.
- B. It has a very low density.
- C. Not even light can escape its gravitational pull.
- D. It is primarily composed of hydrogen and helium.

15. What is the Sun currently classified as?

- A. A protostar
- B. A red giant
- C. A main sequence star
- D. A white dwarf