

Name _____

Life and Death of a Massive Star



Mission Context: The S.S. *Celestia* has just returned from a decades-long observation of a high-mass star's complete life cycle. Unfortunately, the mission report got scrambled during re-entry! Your task is to **reconstruct the timeline** of this star's evolution leading to the formation of a black hole.

Below are **eight jumbled entries** from the mission log. **Number them from 1 to 8** to restore the correct order of events in the life of a massive star that ends in a black hole.

_____ A. The star enters a period of instability and begins to fuse heavier elements like carbon, oxygen, and silicon in its core.

_____ B. The star forms from a dense cloud of gas and dust, collapsing under gravity and beginning nuclear fusion.

_____ C. The core becomes iron, which cannot produce energy through fusion. Without support, gravity causes the core to collapse catastrophically.

_____ D. A brilliant supernova explosion blasts away the star's outer layers into space.

_____ E. Over millions of years, the star burns hydrogen in its core, shining steadily as a main sequence star.

_____ F. The remaining core is so dense and massive that it collapses into a singular black hole.

_____ G. The star expands into a red supergiant as it starts to run out of hydrogen fuel.

_____ H. The gas cloud fragments into a protostar, where fusion hasn't started yet, but pressure and temperature are building.