

Name \_\_\_\_\_

## Black Holes: Cosmic Mysteries Unveiled

### Short Answer Key

1. A black hole's singularity is a point of infinite density at the core, while the event horizon is an invisible boundary surrounding the singularity. Anything that crosses the event horizon is drawn toward the singularity and can never escape, making the event horizon a critical component of a black hole.
2. A black hole forms from a massive star through a series of events. When a massive star exhausts its nuclear fuel, its core collapses under gravity's relentless pull. If the remaining core mass exceeds a critical threshold, a supernova explosion occurs, expelling the star's outer layers into space. The core then collapses further, compressing to a singularity, surrounded by an event horizon, forming a black hole.
3. The warping of spacetime near a black hole causes objects and light to follow curved paths, as if they were rolling downhill in a curved landscape. This means that anything that gets too close to a black hole is drawn toward it due to the strong gravitational force, and nothing, not even light, can escape beyond the event horizon.

