

Name _____

Exploring the Mysteries of Black Holes

Short Answer Key

1. A black hole is formed when a massive star reaches the end of its life and undergoes a supernova explosion. During the explosion, the star's core collapses under its own gravity, leading to the formation of a black hole.
2. The event horizon of a black hole is an invisible boundary surrounding it. Once something crosses the event horizon, it is trapped by the black hole's immense gravitational pull and can never escape. It is significant because it marks the point of no return.
3. The three main types of black holes are:
 - Stellar Black Holes: Formed from the remnants of massive stars, they have masses several times that of our Sun.
 - Intermediate Black Holes: More massive than stellar black holes but smaller than supermassive black holes.
 - Supermassive Black Holes: Found at the centers of galaxies, they can have masses millions or even billions of times that of the Sun.
4. The singularity inside a black hole is a point of infinite density where the laws of physics as we know them break down. It is challenging to study because it is hidden within the black hole, and our current theories cannot fully describe what happens there.
5. Black holes influence the structure and behavior of galaxies through their powerful gravitational pull. Supermassive black holes at galaxy centers play a key role in holding galaxies together and affecting the motion of stars and gas within them.

