Name _____

The Cosmic Giants: How Big Can a Black Hole Be?

Short Answer Key

1. Stellar-mass black holes form from the remnants of massive stars that have undergone a supernova explosion. Their typical mass range is three to twenty times that of our sun.
2. Intermediate-mass black holes have masses ranging from hundreds to thousands of times that of our sun. They are larger than stellar-mass black holes but smaller than supermassive black holes. Their formation is still under investigation.
3. Accretion plays a vital role in the growth of supermassive black holes. Over time, these black holes accumulate matter from their surroundings, such as gas, dust, and even other stars, contributing to their increase in size.
4. The Eddington limit is a threshold beyond which a black hole's radiation pressure becomes too intense for it to accrete more matter. It sets a limit on the maximum growth rate of a black hole, preventing it from growing indefinitely.
5. No, a black hole cannot grow indefinitely. The Eddington limit, radiation pressure, and the availability of surrounding matter all influence the growth of a black hole, limiting its size.