

Name _____

Can We See Black Holes, or Are They Invisible?

Short Answer Key

1. Black holes are often described as "black" because they do not emit or reflect any visible light. They are invisible because they trap all forms of electromagnetic radiation, including visible light.
2. Astronomers use the motion of nearby objects, such as stars, to detect the presence of a black hole by observing irregular orbits or high speeds, which can be indicative of a massive, unseen companion.
3. Gravitational lensing is the bending of light by massive objects, and it can help astronomers detect black holes by observing the distortion and magnification of background objects caused by the black hole's gravity.
4. An accretion disk is a swirling disk of superheated gas and dust that forms around a black hole when it siphons off material from a companion star. The emissions from this disk, including X-rays, help astronomers study black holes indirectly.
5. The first-ever image of a black hole, captured in 2019, provided direct evidence of a black hole's presence and allowed scientists to study its properties. It was achieved by creating a virtual telescope using Very-Long-Baseline Interferometry (VLBI).

