

## Discussion Questions

### Black Holes and Telescopes

1. What year did Chandrasekhar move to England?
  - a. 1930
2. How many universities did Chandrasekhar work for?
  - a. One, University of Chicago.
  - b. He lectured at Harvard for a few months before going to Chicago's Yerkes Observatory
3. How did the conflict with Eddington affect Chandrasekhar's career? What sparked the conflict?
  - a. He didn't get the Nobel until decades later for something he should have gotten in the 1940s
  - b. He had to move on to a different research area
  - c. Eddington could not believe Chandra's math because it led to an object of radius zero and infinite mass
4. Who coined the term "black holes"? When did this happen?
  - a. John Wheeler
  - b. At a NASA conference in 1967
5. What company published the first article about black holes?
  - a. *Science News Letter* now *Science News*
6. When was the Chandra X-Ray Telescope launched?
  - a. July 23<sup>rd</sup>, 1999
7. What are the main uses of the Chandra X-Ray Telescope?
  - a. To observe hot gases, exploding stars, and young stars that have very active surfaces
  - b. Space material that is too hot to be seen with visible light
  - c. To observe supernovas
8. What is the mass limit of a White Dwarf? What is the mass limit of a Black Hole?
  - a. 1.4 solar masses or less a star dies as a White dwarf
  - b. 8 or more solar masses a star dies as a Black hole
9. How does the Chandra X-Ray Telescope detect black holes?
  - a. The telescope detects the super-hot gas and dust that is swirling around the black hole.
10. How often do Supernova occur?
  - a. About every fifty years in our galaxy
11. When was the first picture of a black hole taken? With what type of telescope was it taken with?
  - a. 2019
  - b. Radio Telescopes
12. What elements are created in a Supernova?
  - a. Gold
  - b. Titanium
  - c. Uranium
13. How long was Chandrasekhar working at Yerkes Observatory?
  - a. 15 years

14. Why are scientists interested in studying young stars?
  - a. Because scientists would like to understand how when our sun was young the sun flares effected the Earth
15. Why do we have to use satellites to observe the X-Rays from space?
  - a. Earth's atmosphere absorbs X-Rays so we can't detect this data on earth's surface.