

Exercises for Unit 7: Astrophysics

Lesson 2: Astronomy Exercises

1. If a mad scientist pointed his alpha particle gun straight at you, what would be your best defense?
2. Did Pluto get smacked out of existence, or is it still there? What other 'planet' did this happen to?
3. How accurate is the main idea in the 2007 movie "Sunshine", where the mission was to reignite the sun?
4. How do you make a black hole?
5. How can you detect a black hole?
6. What happens if your car zooms at nearly the speed of light and turn on your headlights?
7. What's your favorite part about Jupiter?
8. Which planet is NOW your favorite (after listening to the astronomy teleclass)?
9. What happened to the stars in the slideshow/teleclass?
10. Which stars don't twinkle?
11. How many moons can you see with binoculars?

Answers to Astronomy Exercises

1. Hold up a sheet of paper between you and the gun.
2. Pluto was once considered one of the planets, but in recent years was demoted to 'dwarf planet' status and is now part of the Kuiper Belt Objects. Ceres underwent the same sort of thing in the 1800s, and now belongs to the asteroid belt between Mars and Jupiter.
3. The sun is not on fire, like a candle. You can't blow it out or reignite it. The nuclear reactions deep in the core transforms 600 million tons per second of hydrogen into helium using a chemical processes called the proton-proton chain.
4. When a star uses up its fuel, the way it dies depends on how massive it was to begin with. Large stars can go supernova and collapse in on themselves indefinitely, forever.
5. By looking at oddball things that happen around the black hole. For example, light getting distorted and forming streaks and multiple images where there should be only one object, or watching an object get yanked about without anything visible around to the pulling, x-rays and gamma ray jets, or the accretion disk ring lighting up.
6. You would see white headlights coming from the front of your car, but a friend sitting on the ground miles ahead of you, watching you race toward them would see you turn on blue headlights.
7. Take your pick: MASERs shooting out of the poles of Jupiter; the way Jupiter shocks Io with 3 million amps every time it crosses its magnetic fields; Io belching itself inside-out; needing windshield wipers if you stay in orbit around Io... the list goes on and on.
8. Most people settle their focus on Neptune and/or Venus after the teleclass.
9. Barnard 68 is an example of a dark nebula. It absorbs all light (energy) and is the coldest spot we've ever found out there in the universe. The stars are still there, but behind the dark cloud.
10. Planets don't twinkle, but stars do. It's an easy way to spot Jupiter, Saturn, Venus, and Mercury.
11. You can see our Moon, four moons of Jupiter (Ganymede, Io, Europe, and Callisto), and four of Saturn.