

Name _____

Period _____

Video – How the Universe Works: Supernovas (Discovery Channel 2010)

1. If a supernova occurred within a few dozen lightyears of earth, how would it affect life on our planet?
2. Why don't we need to worry about the sun becoming a supernova?
3. When the energy production of a star stops, what does gravity do to it?
4. When our sun dies, it will leave behind a white dwarf star composed of the elements _____ and _____.
5. Since most stars orbit in pairs, if one of the stars is a white dwarf, it can steal material from the other star and explode as a Type _____ supernova.
6. Where does most of the iron in the universe come from?
7. Why does the core of a massive star collapse once iron is created? (this collapse happens in a millisecond at nearly 1/3 the speed of light!)
8. Why are so few atoms heavier than iron created in a single, massive star supernova?
9. When massive stars go supernova, they can leave behind a neutron star. These stars are so dense that a teaspoon of their material would weigh _____ million tons!
10. Neutron stars also rotate very rapidly. We call these _____.
11. The Crab Nebula is an example of a _____. It rotates 30 times per second and will continue doing that for _____ of years.

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12. Stars 100 times more massive than our sun explode as hypernovas. A hypernova results from gravity crushing the core of the star into a _____.
13. How does a gamma ray burst result from a hypernova?
14. What was significant about detecting neutrinos from supernova 1987A?
15. Why are Type Ia supernovas perfect for allowing us to measure distances to distant galaxies?
16. Using Type Ia supernovas, in 1998, astronomers discovered that the expansion of the universe was _____.