Period _____

Video – The Universe: Cosmic Collisions

- 1. Why do all the members of a collisional family have the same composition?
- 2. Explain why the Kuiper belt object 2003EL61 is shaped like an elongated football.
- 3. Why is it believed that 2003EL61 is so bright?

- 4. Comets are believed to be objects that have been knocked out of the
- 5. 2003EL61 is ______ times larger than comet Shoemaker-Levy 9 which struck Jupiter in 1994!
- At the end of the Heavy Bombardment period of the solar system, which ended
 3.8 billion years ago, objects that were too small to form planets ended up in two locations:
 - a.
 - b.

- 7. The Baptistina Family of collisional objects from the asteroid belt formed from an object the size of _______. Some of these have likely hit Earth in the past. One of them may have been responsible for ______
 - _____ <u>_____</u>.
- The impact that happened 65 million years ago in the Yucatan Peninsula released 65 million megatons of energy which is equivalent to 1 Hiroshima bomb exploding per second for _____ years!
- The extinction of the dinosaurs happened at the boundary of the Cretaceous and Tertiary periods of geologic history. This is also known as the ______ extinction or boundary.
- 10. Explain why the evidence of shocked quartz at Meteor Crater finally convinced scientists that it was an impact crater.
- 11. Explain how the presence of iridium at the K-T boundary really convinced scientists that the extinction of the dinosaurs was due to an astronomical event.
- 12. Residue from the Yucatan Peninsula crater revealed the impactor to be a carbonaceous chondrite, a type of primitive rock much like the asteroids of the Baptistina Family. Why should we be concerned about their orbits?
- 13. Explain what the Yarkovsky Force is and how it pertains to the Baptistina Family of asteroids.

- 15. Give one great positive outcome of the Chicxulub impact.
- 16. The dinosaurs evolved after the Permian-Triassic extinction, also known as the Great Dying. The Great Dying happened during the time of Pangea. Explain why the presence of only one continent and one ocean greatly increased the risk of a mass extinction.
- 17. Meteor debris has been found in the 250 million year old rocks from the time of the extinction, but what evidence that was found at the K-T boundary has not been found at the boundary of this extinction? Why does its absence not concern the scientist doing the research?
- 18. Besides the meteor debris, what other strong piece of evidence is convincing this scientist that the extinction was the result of an asteroid impact?

19. List three facts that lead astronomers to believe that Blue Straggler stars may be the result of stellar collisions.