

ES104 – Video Exercise
The Learning Channel – Solar Empire I
A Star is Born – A Tour Through the Earth’s Solar System

Name _____
Lecture Section _____

Watch the video and answer the following review questions (~50 minutes):

1. What is the name of the star that is closest to the Earth? What is our planetary star called?
2. How long has our star been “alive”? How long ago did it form?
3. What is the name of the space telescope that is used by U.S. scientists to study stars?
4. Why is a space telescope necessary to investigate distant stars, what is the advantage over “land-based” telescopes?
5. What will happen to the star “Icarus” in the near future? How do we know?
6. What are diffuse stellar clouds of gas and dust called?
7. Why are “blast waves” important at the galactic scale? What is the common cause of stellar blast waves in space?
8. What is the primary element that forms the basis of stars? What pulling force is responsible for sorting cosmic debris into planetary solar systems?
9. True or False: the planets of our solar system were formed by gravitational collisions, impact, and amalgamation of cosmic space debris.
10. True or False: The rate of gravitational collisions and cosmic impacts in the solar system has systematically increased over time, since the origin of our solar system.
11. What is the dominant force that holds our solar system in place, with planets orbiting the sun?
12. True or False: Beta Pictoris is an example of a star, similar to our sun that has well-documented planets orbiting around it.
13. True or False: The Hubble Space Telescope is used to directly observe and find distant planets, in distant solar systems beyond our own.
14. What is the general name applied to the inner planets surrounding our sun made out of rock material?
15. What is the general name applied to the outer planets surrounding our sun, made out of frozen gases?
16. List two unique properties associated with the surface of Mercury.
17. What is the average night-time temperature on mercury in degrees F?
18. What is the average day-time temperature on mercury in degrees F?
19. What planet is known as the “twin” planet of the earth?

20. True or False: Venus and Earth rotate on their axis in the same direction.
21. True or False: Venus is associated with no atmosphere or cloud cover.
22. What is the surface of Venus composed of? rock material, ice, or metal?
23. True or False: the earth is the only planet in the solar system that is associated with volcanic eruptions, both in the present and past.
24. What is the atmosphere of Venus composed of primarily?
25. What is the average surface temperature of Venus in degrees F?
26. True or False: Venus is associated with liquid ocean water, similar to Earth.
27. Why is the Earth referred to as the “blue planet”, what is unique about earth in the solar system?
28. True or False: Mars has an extensive atmosphere composed of gas, presently?
29. True or False: Mars lacks any evidence of past surface water.
30. What cosmic feature is located in the orbital pathway between Mars and Jupiter.
31. True or False – Jupiter is the largest planet in the solar system.
32. What is the “great red spot” of Jupiter?
33. How many moons does Jupiter have? Why does it have so many?
34. What is the name of Jupiter’s largest moon called?
35. How many moons does Saturn have?
36. What is the most distinguishing physical characteristic of the planet Saturn?
37. What famous “body-part” planet did the Englishman Hirschel discover?
38. True or False: Uranus has rings of cosmic dust and debris encircling it’s equator, similar to Saturn.
39. What planet did the “Voyager II” space probe visit in 1989?
40. True or False: Scientist Heidi Hammel is the goofiest girl I’ve ever seen studying a planet in my life.
41. Which planet is Heidi Hammel studying?
42. What planet was formerly known as “planet X”. Why is the planet now known as the “loser” planet?
43. What is the name of the moon that orbits around the loser planet?
44. True or False: the sun’s daylight burns as bright on Pluto as it does on Earth.

45. In what cosmic body of our solar system does 99.9% of the mass reside?
46. What native people call themselves “worshippers of the sun”?
47. True or False: all of our electricity that we use in the U.S. is ultimately derived from the sun’s energy.
48. How approximately old is our sun?
49. How much longer is our sun projected to exist?
50. What element is the basic building block of the universe?
51. How hot is the core of the sun in degrees F?
52. How long does it take sun light to travel from the surface of the sun to the Earth?
53. True or False: the sun is on “fire”, with flames, similar to a camp fire on Earth.
54. Define the term “solar eclipse”, how does it occur?
55. Define the term “corona” as applied to the sun (not the all-grain Mexican beverage).
56. True or False: the magnetic field of the sun is very constant and unchanging over time.
57. True or False: Sunspots represent cooler patches of the Sun surface that cycle over millions of years.
58. True or False: solar flares represent the sudden release of magnetic energy that blast radiation into space.
59. True or False: Earth communication and electronics systems are subject to damage by radiation associated with solar flares and magnetic storms from the sun.
60. True or False: there are professional scientists, with thick glasses and pocket protectors, who get paid vast sums of tax dollars to watch the sun everyday, analyze it’s physics, and warn the public about solar-magnetic storms.
61. True or False: the absence of sun spot activity can result in decreased surface temperatures and prolonged winters on Earth.
62. True or False: stars that have massive gas ejections are interpreted to be in the early stages of their formation (i.e. baby stars).
63. What will happen to our sun as it runs out of hydrogen fuel? Explain the steps related to the process of a dying star.
64. True or False: our sun is scheduled to expend all of its hydrogen fuel sometime in the next 10 years, we will all freeze to death, and subsequently be eaten as TV dinners by hostile space aliens.
65. True or False: there is a giant spaghetti monster living under your bed, not to be confused with the evil monkey that lives in your closet.