

Name _____

Date _____

Study Guide for the Movie *The Core*

Directions: Answer the questions as you watch the movie. You will be able to use what you write on this sheet when you take a quiz on *The Core* next week.

1. At what time did the man's watch stop?

2. What also happened right around that time? List at least 2 things.
 - a.
 - b.

3. Where does the professor, Dr. Joshua Keys work?

4. When Dr. Keys got to Washington D.C., he met up with Serge. What were they shown there?

5. What did every person who died at 10:30 am have in common?

6. What do Serge and Dr. Keys think caused all the deaths?

7. What happened in Trafalgar Square, London?

- 8. How do birds navigate over long distances?**

9. What happened in mission control just before the Space Shuttle Endeavor was supposed to land?

10. When the shuttle reappeared on Radar, what was the problem?

- 11. Why does the shuttle look like it is burning up as it moves through the atmosphere?**

12. What was Rebecca worried about while she was waiting to be called in to her meeting? Why?

13. What does the man Rebecca is talking to think is going to happen to her career with the Air Force?

14. **The Aurora Borealis is caused by high altitude static discharge, (from charged particles given off by the sun),** what color are the Aurora Borealis lights in the sky?

15. What is the bad news that Dr. Keys and Dr. Zimsky have to give the government officials?

16. What does the Earth's magnetic field protect us from?

17. The Earth's rotating core and magnetic field gives us our _____ north and south poles.

18. What fruit does Dr. Keys use to illustrate the Earth's layers?

19. Describe the two parts of the Earth's core.

a. Inner Core –

b. Outer Core –

20. Why is the Earth's magnetic field collapsing?

21. According to Dr. Keys, what are some of the consequences of the magnetic field collapsing?

a. _____ will start falling from the sky.

b. Hundreds of _____ will be released by super magnetic storms.

c. All electronics will be _____.

- d. _____ radiation will come in and 'cook' our planet.
22. How could the magnetic field be repaired?
23. Why does Dr. Keys think that doing this repair is impossible?
24. About what planet is the same size as our planet's core?
25. In the Salt Flats of Utah, Dr. Braselton has been working on a "legendary ship" that uses _____ waves to bore a smooth hole through solid rock.
26. The matrix Dr. Braselton used to make his ship out of was made from the elements tungsten and titanium. What name did he give this alloy he created?
27. The material the ship is made of can take heat and pressure and convert it into energy to _____ the shielding material.
28. What job is assigned to Theodore Brad Finch, "Mr. Rat"?
29. Instead of astronauts, what will the crew of this ship be called? Why is this an appropriate name?
30. Why do **YOU** think the crew keeps failing on the simulator?
31. Dr. Zimsky calculated that an explosive charge of 1000 megatons is exactly the amount needed to restart the core. If the charge is too great the core would be destabilized. What could cause Zimsky's estimate of the amount of power needed to restart the core to be completely wrong?
32. What do **YOU** think this quote means: "Being a leader is not about ability, it's about responsibility.... You're not really a leader until you've lost."

33. What happened in Rome as a result of the failing electromagnetic field?
- 34. The scientists decided to launch their ship into the Marianas Trench.**
- a. What is the advantage of launching there?
 - b. What is the risk of launching there?
35. What sort of animal was swimming around the ship? Why?
36. What unexpected event threatened to stop the mission before the ship even entered the earth?
37. What does the ship use to break through the crust?
38. Anything the ship cannot pass through is shown as _____ on the navigation screen. What does static on the navigation screen mean? _____
39. What does the ship get stuck on?
- 40. Why are the crystals in the lower mantle so huge?**
41. What are the crew's suits designed to protect them from?
42. Does this seem realistic based on the construction of the suits?
43. Why are Josh's vitals dropping?
44. How does Bob Iverson die?

45. How does Serge die?

46. What observation led the crew to realize the outer core was much less dense than expected?

47. What major problem does this lower density pose for the mission?

48. What is Project Destiny?

49. When the microwaves got through the atmosphere over San Francisco, what damage did they cause? List at least 3 consequences.

a.

b.

c.

50. How does the crew decide it can compensate for the lower density of the outer core so they can still restart the spinning with the bombs they have? Be specific.

51. Why does someone need to go into the 9000 degree crawl space? What will happen to them there?

52. How does Dr. Braselton die?

53. Dr. Zimsky messed up his calculation AGAIN, how can they correct for this with only one bomb left?

54. How does Dr. Zimsky die?

55. What crisis is the ship facing now that the core has been restarted?

56. What is scientifically incorrect about this statement: “They found a space between tectonic plates near Hawaii”?

57. How does the ship get back up to the ocean floor?

58. Why does the ship stop moving as soon as it reaches the ocean floor?

59. How is the ship finally located?

60. Define “unsung heroes”.

Final Calculation: The crew expected to make it through the crust in 15 minutes, travel 24 hours through the mantle, and then 15 hours through the outer core until they reach the inner core/outer core boundary. Based on these estimates, what is their expected average speed through each layer? **Use the formula $\text{speed} = \text{distance} / \text{time}$** , and the hints below to answer... Show your work, include units, and round your answers to the nearest tenth.

a. According to the ESRT, how thick is the crust? _____

b. Calculate speed through the crust:

c. According to the ESRT, how thick is the mantle? _____

d. Calculate speed through the mantle:

e. According to the ESRT, how thick is the outer core? _____

f. Calculate speed through the outer core:

Fact vs. Fiction

The Space Shuttle cannot maneuver that quickly. Also, no sonic boom would be heard while the shuttle is flying at a low altitude, because the atmosphere is too thick at low altitudes for the shuttle to move faster than sound. An object must be moving faster than the speed of sound to make a sonic boom ('break the sound barrier').

Cosmic waves are deflected by earth's magnetic field, and can interfere with electronics and cause auroras. Microwaves are NOT actually deflected by earth's magnetic field because they are not charged particles. Microwaves could 'cook' the planet since they do heat things up like metal and foods; however very few microwaves reach the Earth since the Sun only emits a small amount of microwave radiation.

To stop Earth's magnetic field, the core does not need to completely stop spinning, and it is highly unlikely that anything could cause the core to stop spinning. However, if the spin became chaotic, the magnetic field could be disrupted. In fact, Earth's magnetic field changes its direction every 700,00 years or so.

The human body is less dense than water, and water is less dense than magma, so when someone dies and falls into lava they will NOT sink. A human body will float on magma until it melts or burns up.