

Background Research

Part 1- The spacecraft- Use the following website to learn about the parts of the Apollo spacecraft. Describe the function of each part.
<https://www.dkfindout.com/us/space/moon-landings/apollo-spacecraft/>

1. Command Module-

2. Thrusters-

3. Service Module-

4. Engine Nozzle-

5. Docking tunnel-

6. Lunar module (ascent stage)-

7. Descent Engine-

8. Lunar module (descent stage)-

9. Landing Pad-

10. Sensing Probe-

Part 2- Vocabulary- Define the following Vocabulary words used in the movie:

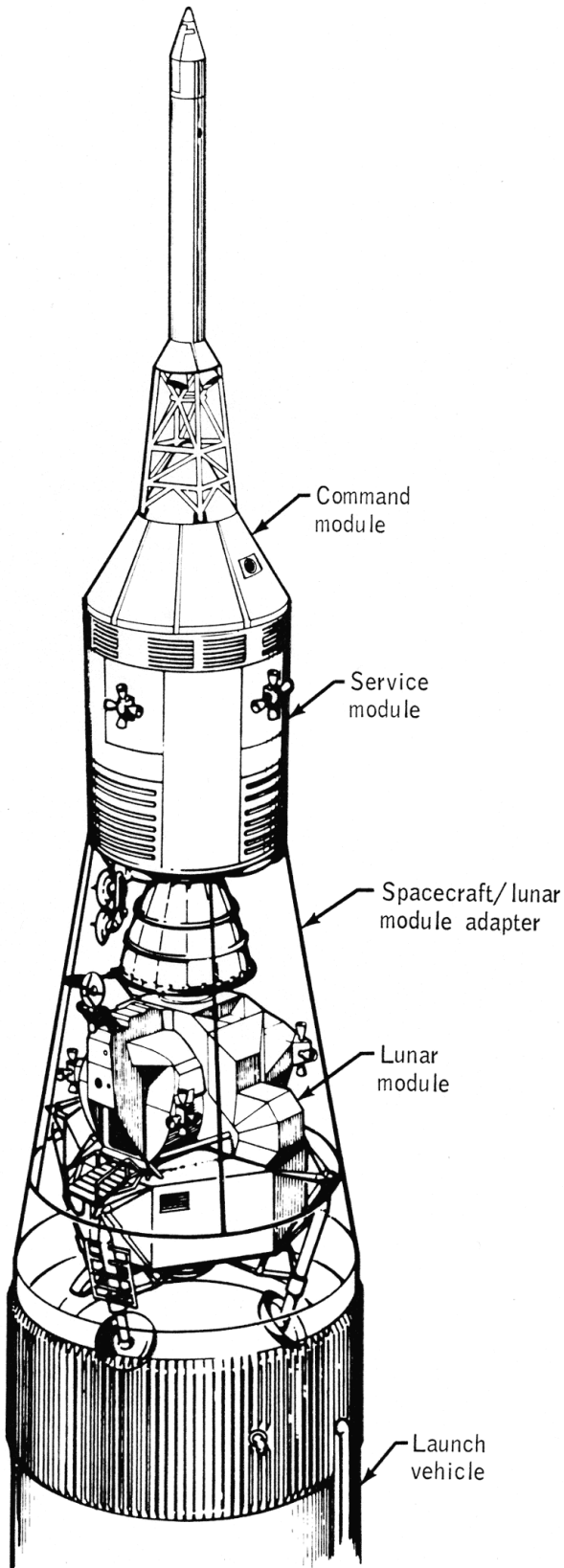
11. Filter –

12. Trajectory –

13. Asphyxia –

14. Heat shield –

15. Re-entry –



Part 3- The astronauts & Mission- https://www.nasa.gov/mission_pages/apollo/missions/apollo13.html or <https://airandspace.si.edu/explore-and-learn/topics/apollo/apollo-program/landing-missions/apollo13-facts.cfm> <https://airandspace.si.edu/explore-and-learn/topics/apollo/apollo-program/landing-missions/apollo13-facts.cfm>

16. What is a famous quote from the mission?

17. What was the mission objective?

18. Who was the crew of the mission and what was their job?

Crew Member	Job Title

19. What was the launch date?

20. What was the landing date?

21. How long was the mission duration?

22. Why did Mattingly not go on the mission?

23. Which astronaut had the most experience?

24. Who was the back up crew for the mission?

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25. Where was the spaceship supposed to land?

Movie –  Apollo 13

26. Apollo 1 was launched January 27, year _____

27. At Jim Lovell's (Tom Hank) home, what important event is on TV?

28. Ken Mattingly will not be going on the Apollo 13 mission because _____

29. The launch date for Apollo 13 is _____

30. What is Apollo 13's first problem? _____

31. What is the "beautiful sight"? _____

32. Jack stirs the _____. This causes some kind of explosion.
33. So now the Service Module is venting _____ out into space.
34. The astronauts must move into the LEM because they are running out of _____, and they have only _____ minutes of oxygen left in the Command Module.
35. Another problem! Apollo 13 has lost all its _____
36. (Back at the Mission Control) They don't have enough power to land on the moon, so the new mission is "how do we get our people _____" One option is to use a Free-Return Trajectory - Using the moon's _____ to sling-shot them around.
37. The Odyssey's engines are _____, so they must use the LEM's engine.
38. When you go into the shadow of the moon, and the moon is between you and the _____, you see _____ that are more brilliant than anything you see on the clearest night on Earth.
39. Houston says: "We're picking you up at approximately _____ feet / second, at a distance from the moon of _____ nautical miles."
40. (Back at Mission Control)- At first they said that the astronauts have _____ hours of power in the LEM, but then discovered that there's not enough power. With everything on drawing _____ Amps, the battery will be dead in _____ hours. So they must reduce their power to _____ Amps.
41. The amount of power left on board is barely enough to power a coffeepot for _____ hours.
42. Another Problem!!! Not Enough CO₂ filters! [CO₂ is short for _____ dioxide]. There are 5 filters enough for _____ guys for _____ days only! Anything over _____ mmHg, the astronauts could get _____ out, make judgement errors, and get asphyxia.
43. (Day 5 on the LEM) Why is it so cold in the LEM module? _____
44. Another Problem: Jack says "We're coming in too _____. At this rate, we're gonna skip right out of the atmosphere and we'll never _____
45. Houston got the _____ for the crew to make a CO₂ filter.
46. After they had built the CO₂ filter, the level of CO₂ dropped back down to _____ mmHg.
47. Why is water condensing on the inside of the LEM? _____
48. (Day 6) New Problem! It's not the _____, it's the _____ They're still coming in too _____ (shallow or steep?)

49. Why do you think it's so difficult to control the spacecraft's direction? _____
- _____
50. (Cold Astronauts scene) Their entry angle is holding at _____ degrees.
Ken (in the simulator) says he's short _____ Amps of power. Where is Ken going to get the additional Amps he needs for re-entry? – From the _____ module before they cut it loose.
51. Did Ken get the measles? _____
52. There's so much water on these panels – the electricals might short out!
Jack says "it's like driving a toaster through the _____"
53. Another Problem!! They're coming in too shallow because they are not heavy enough!
Why are they "under-weight?" _____
54. They got rid of the Service Module – and saw that 1 whole side of the spacecraft is _____
55. On re-entry into earth's atmosphere, the heat will build up as much as _____ or _____ degrees F.
Worse, if the pyrotechnics (rockets) controlling the parachutes had been damaged, the chutes won't open, causing the spacecraft to hit the water **not** at a gentle _____ mph, but at a **suicidal** _____ mph.
56. They separated from the _____
57. The command module's velocity now is _____ feet / second (= approx. 24000 mph!!!)
58. How many minutes did command module "Odyssey" take to come out of "black-out"? _____
59. Their mission was called a successful _____
60. What NASA missions did Jim Lovell fly after Apollo 13?

