

# Apollo 13 Worksheet

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

1. In which month and year did a human first walk on the moon? \_\_\_\_\_
2. What words did Neil Armstrong utter as he stepped onto the moon? \_\_\_\_\_  
\_\_\_\_\_
3. What was the lunar module (the LEM, Aquarius) built for? \_\_\_\_\_
4. It's mentioned that out in space there's a 400° F difference between sunlight and shadow. Explain why this is so. \_\_\_\_\_
5. How many days does it take to get to the moon from Earth? \_\_\_\_\_
6. Who was the flight commander for Apollo 13? \_\_\_\_\_
7. In what city and state do the astronauts train? \_\_\_\_\_
8. Why is Ken Mattingly dropped from the Apollo 13 mission? \_\_\_\_\_  
What problems could astronauts who travel to Mars face? (The estimate is 1.5 years to get to Mars.) \_\_\_\_\_
9. Name the NASA project whose goal it was to put a human on the moon. \_\_\_\_\_
10. Name the three astronauts on the Apollo 13 mission. \_\_\_\_\_  
\_\_\_\_\_
11. Some people believe that the number 13 is unlucky. What happens to Marilyn Lovell the day of the launch? \_\_\_\_\_
12. Is there any scientific evidence (data) that indicates the number 13 is unlucky? (Yes, no, I don't know). Could you devise an experiment to test the idea that "The number 13 is unlucky?" Could you use the scientific method? Explain. \_\_\_\_\_  
\_\_\_\_\_
13. There are hoses going into the space suits. What do they supply the astronauts with? \_\_\_\_\_  
What else other environmental conditions does the space suit address? \_\_\_\_\_  
How long do you think it takes to put on a space suit? \_\_\_\_\_
14. Why are the rockets launched from Kennedy Space Center (east coast of Florida) rather than Houston, Texas? \_\_\_\_\_

15. You can see the families sitting out in the sun in bleachers watching the launch. How far from the launch pad do you think the bleachers are? \_\_\_\_\_
16. Stages (engine with fuel tanks) break off the rocket shortly after launch. What do you think happens to these stages? \_\_\_\_\_
17. Who is Gene Krantz? \_\_\_\_\_
18. Once the space ship is no longer influenced by the earth's gravity, what happens inside the command module? (The command module and service module are known as Odyssey). \_\_\_\_\_
19. What happens to Fred Haise? \_\_\_\_\_
20. What is the "bar-be-cue roll" \_\_\_\_\_. What's its purpose?  
\_\_\_\_\_
21. How do the astronauts dispose of their waste products \_\_\_\_\_
22. Is it possible such waste products could be recycled? \_\_\_\_\_ Could you think of a circumstance in which it would be beneficial? \_\_\_\_\_
23. Why is the "skin" on the lunar module (LEM, Aquarius) so thin? \_\_\_\_\_  
\_\_\_\_\_
24. What are the 2 purposes of the liquid oxygen? \_\_\_\_\_  
\_\_\_\_\_
25. Why is liquefied oxygen (it's actually a very cold, cryogenic, slushy oxygen) onboard rather than gaseous oxygen? \_\_\_\_\_
26. When Siwgert stirs the oxygen tank, several things happen. What evidence do the astronauts have that a serious problem exists?
- a.
  - b.
  - c.
  - d.
27. What does Jim Lovell report to Houston? " \_\_\_\_\_ "
28. What does Jim Lovell think is venting to space? \_\_\_\_\_
29. How do the astronauts know that they haven't been hit by a meteor? \_\_\_\_\_  
\_\_\_\_\_

30. When Lovell gives the mission control engineers some numbers, why don't they check his answers using a calculator? \_\_\_\_\_
31. What's a "burn", and what is its purpose? \_\_\_\_\_
32. Why did the mission control engineers veto the option to abort the mission and instead proceed to the moon? \_\_\_\_\_
33. What is Gene Krantz referring to when he says: "This will give the guys 45 hours?" \_\_\_\_\_
34. Why does mission control tell the astronauts not to make any more waste dumps? \_\_\_\_\_
35. Name some systems on the Odyssey (command module) that require power. \_\_\_\_\_
36. What do the engineers at mission control need to design? \_\_\_\_\_
37. What happens if the CO<sub>2</sub> level rises above 15? \_\_\_\_\_
38. What is the purpose of the LiOH (lithium hydroxide)? \_\_\_\_\_  
(Recall: CO<sub>2</sub> added to water (think of the atmosphere) makes the water more acidic. )
39. Write the equation for the reaction of CO<sub>2</sub> with LiOH. \_\_\_\_\_
40. How could condensation (water condensing out of the atmosphere as the temperature decreases) on the control panels be problematic? \_\_\_\_\_
41. What is Ken Mattingly trying to do in the flight simulator? \_\_\_\_\_
42. At one point Lovell rips off his biomedical sensors. What is the purpose of the sensors? \_\_\_\_\_ Do you think they're necessary? \_\_\_\_\_
43. The command module's entry corridor is 2.5 degrees wide. It is mentioned that if the astronauts descent into the atmosphere is too steep they will incinerate; too shallow and they'll ricochet off into space. Explain why. \_\_\_\_\_

44. The engineer from Gumann says the LEM (lunar module) is not designed to do a “burn”; it’s not for course correction. What was the LEM’s engine designed for? \_\_\_\_\_  
\_\_\_\_\_
45. Why can’t the astronauts enter the atmosphere in the LEM? \_\_\_\_\_
46. Why is mission control concerned about the command module’s heat shield \_\_\_\_\_  
\_\_\_\_\_
47. Why do the astronauts keep asking for the re-entry procedure? \_\_\_\_\_  
\_\_\_\_\_
48. Mission control expects the astronauts to lose contact with them for about 3 minutes.  
Why? \_\_\_\_\_
49. Where on earth does the space capsule land? \_\_\_\_\_