

Directed Reading

28.3 (ODD)

Section: Satellites of Other Planets

1. What did Galileo discover in 1610?

2. Which two planets do not have moons?

3. What do Saturn, Jupiter, Uranus, and Neptune each have in addition to moons?

MOONS OF MARS

4. Name the moons of Mars and describe their orbits.

5. Describe the physical appearance of Mars's moons.

6. Why do astronomers think that the moons of Mars are fairly old?

Directed Reading *continued***MOONS OF JUPITER**

- _____ 7. What are the four largest moons of Jupiter called?
- Galilean moons
 - Cassini satellites
 - gas-giant moons
 - king's satellites
- _____ 8. How do Jupiter's four largest moons compare with Earth's moon?
- Two are larger.
 - One is smaller.
 - Three are larger.
 - They all are smaller.
- _____ 9. The innermost of Jupiter's four large moons is
- Ganymede.
 - Io.
 - Callisto.
 - Europa.
- _____ 10. An engineer examining images from the *Voyager* spacecraft discovered
- another large moon.
 - a crust of ice on Io.
 - volcanoes on our moon.
 - volcanoes on Io.
- _____ 11. The lava on Io is much hotter than that on Earth because the lava there has more
- hydrogen and iron.
 - magnesium and magma.
 - nickel and sulfur.
 - magnesium and iron.
- _____ 12. Why do scientists think that Io's volcanic material is mostly sulfur and sulfur dioxide?
- because parts of Io's surface are dark and smooth
 - because most of Io's surface is covered by craters
 - because parts of Io's surface are yellow-red
 - because most of Io's surface is covered by ice
- _____ 13. Io moves inward and outward in its orbit around Jupiter because of
- the gravitational pull of Jupiter's other moons.
 - the force of its own inertia.
 - Jupiter's gravitational pull.
 - Jupiter's magnetic field.

Directed Reading *continued*

- _____ 14. The inward and outward movements produce the differences in gravitational pull on opposite sides of Io called
- ionic forces.
 - gravitational forces.
 - tidal forces.
 - magnetic forces.
- _____ 15. The forces that pull Io back and forth cause its surface to also
- develop craters.
 - move in and out.
 - revolve more slowly.
 - attract other moons.
- _____ 16. The flexing of Io's surface causes friction that heats and melts Io's interior, leading to
- inertia.
 - volcanism.
 - tidal forces.
 - magnetism.
- _____ 17. Data from the *Galileo* spacecraft show that Io has a(n)
- iron core and a polar ice cap.
 - magnetic field and an icy crust.
 - giant iron core and perhaps a magnetic field.
 - magnetic field and perhaps a rock core.
- _____ 18. What is Europa?
- the moon closest to Jupiter
 - the second closest Galilean moon to Jupiter
 - the third closest Galilean moon to Jupiter
 - the fourth closest Galilean moon to Jupiter
- _____ 19. How does this moon compare with Earth's moon?
- It is about the same size but denser.
 - It is smaller and much less dense.
 - It is bigger and denser.
 - It is about the same size and slightly less dense.
- _____ 20. Scientists think Europa has a rock core that is covered with
- a thick layer of ice.
 - oceans and seas.
 - a thick crust of rock.
 - rivers of lava.

Directed Reading *continued*

- _____ 21. What do scientists think might exist under Europa's crust?
- a. petroleum and perhaps coal
 - b. liquid water and perhaps petroleum
 - c. coal and perhaps simple forms of life
 - d. liquid water and perhaps simple forms of life
22. The third Galilean moon from Jupiter is _____.
23. Why does the third Galilean moon have a relatively small mass even though it is the largest moon in the solar system?
- _____
24. What are three features that appear on images of Ganymede's surface?
- _____
- _____
- _____
25. What do Io and Ganymede possess that the other two Galilean moons do not?
- _____
26. The farthest Galilean moon from Jupiter is _____.
27. In what ways is Callisto similar to Ganymede?
- _____
- _____
28. Callisto has a surface covered with _____ that are the result of collisions that occurred early in the history of the solar system.

MOONS OF SATURN

- _____ 29. How many moons does Saturn have?
- a. 15
 - b. more than 75
 - c. dozens
 - d. less than 100
- _____ 30. Only Jupiter's moon Ganymede is larger than Saturn's largest moon, which is
- a. Olympus.
 - b. Janus.
 - c. Titan.
 - d. Io.

Directed Reading *continued*

- _____ 31. Unlike any other moon in our solar system, Titan has
 a. a thick atmosphere made of nitrogen.
 b. a thick atmosphere made of oxygen.
 c. oceans filled with water.
 d. a core made of water.
- _____ 32. Titan's surface may contain lakes or oceans of
 a. liquid water.
 b. solid lava.
 c. liquid methane.
 d. frozen gases.
- _____ 33. What shape characterizes Saturn's smaller moons?
 a. round
 b. elliptical
 c. irregular
 d. elongated
- _____ 34. In 2005, what space probe gathered information about Titan's atmosphere?
 a. *Galileo*
 b. *Apollo*
 c. *Cassini*
 d. *Huygens*

MOONS OF URANUS AND NEPTUNE

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|-------------------|--|
| _____ 35. Triton | a. the fifth of Uranus's moons to be discovered |
| _____ 36. Miranda | b. one of Uranus's largest moons |
| _____ 37. Uranus | c. planet with a moon named Triton |
| _____ 38. Oberon | d. Neptune's icy moon, which travels in a retrograde orbit |
| _____ 39. Neptune | e. planet with at least 24 moons |

PLUTO'S MOONS

40. What size is Pluto's moon Charon, compared with Pluto?

Directed Reading *continued*

41. Why does one side of Pluto always face Charon?

42. What are the names of Pluto's other two known moons?

RINGS OF THE GAS GIANTS

43. When was Saturn's set of rings discovered?

44. Describe Saturn's rings. What are they composed of?

45. What was the early theory about the origin of Saturn's rings?

46. What is the current theory about the origin of Saturn's rings?

Directed Reading *continued*

47. Describe Jupiter's single ring.

48. How many rings does Uranus have?

49. Describe Neptune's rings.
