

# Directed Reading 28.2 (EVEN)

## Section: Movements of the Moon

1. Why is there a discrepancy between the lunar day as measured by the rotation of the moon on its axis and the time between lunar sunrises?

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### THE EARTH-MOON SYSTEM

2. If you could observe Earth and the moon from space, what would you see?

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3. What do Earth and the moon form together?

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4. Where is the balance point of the Earth-moon system located?

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5. Why is the balance point of the Earth-moon system located where it is?

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6. What is the balance point called?

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7. Describe how the barycenter orbits the sun.

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8. Why does Earth's distance from the moon vary over the course of a month?

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Directed Reading *continued*

Use the terms from the list below to complete the sentences that follow. Each term may be used only once. Some terms may not be used.

- |      |          |            |
|------|----------|------------|
| moon | apogee   | revolution |
| axis | rotation | perigee    |

9. The moon is at \_\_\_\_\_ when it is farthest from Earth.
10. The moon is at \_\_\_\_\_ when it is closest to Earth.
11. The moon appears to rise and set at Earth's horizon because of Earth's rotation on its \_\_\_\_\_.
12. Because of Earth's rotation and the moon's \_\_\_\_\_, the moon rises and sets about 50 min later each night.
13. The moon completes a \_\_\_\_\_ on its axis only once during each orbit around Earth.
14. How often does the moon revolve around Earth relative to the stars?

15. Why do observers on Earth always see the same side of the moon?

16. As the moon orbits Earth, what appears to be changing?

17. What happens when the near side of the moon is NOT fully illuminated by the sun?

Directed Reading *continued*

**ECLIPSES**

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

- |                               |   |
|-------------------------------|---|
| _____ 18. eclipse             | a. the outer part of the shadow in an eclipse, where sunlight is partially blocked                  |
| _____ 19. umbra               | b. an event in which the moon passes between Earth and the sun and the moon's shadow falls on Earth |
| _____ 20. penumbra            | c. the inner, cone-shaped part of the shadow in an eclipse, where sunlight is completely blocked    |
| _____ 21. solar eclipse       | d. an event in which one celestial body passes through the shadow of another celestial body         |
| _____ 22. diamond-ring effect | e. the last bits of the sun's light visible before a total eclipse                                  |
| _____ 23. annular eclipse     | f. an eclipse in which a thin ring of sunlight is visible around the outer edge of the moon         |

24. What occurs during a total solar eclipse?

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25. What do observers who are located outside the umbra, but inside the penumbra, see during a solar eclipse?

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26. Describe the area of Earth covered by a total solar eclipse.

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27. What are some effects of a total solar eclipse visible on Earth?

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Directed Reading *continued*

28. What causes an annular eclipse?

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29. When does a lunar eclipse occur?

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30. What must happen for a total lunar eclipse to occur?

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31. Why is a totally eclipsed moon often reddish in color?

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32. About how many of each kind of eclipse occur during the calendar year?

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33. Why don't solar and lunar eclipses occur during every lunar orbit?

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34. Under what two conditions do solar eclipses occur?

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35. Under what two conditions do lunar eclipses occur?

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36. Where are lunar eclipses visible?

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Directed Reading *continued***PHASES OF THE MOON**

- \_\_\_\_\_ 37. Why does the moon shine?
- because it glows from internal sources
  - because its surface is molten
  - because it reflects light from the sun
  - because it reflects light from all the planets
- \_\_\_\_\_ 38. In astronomy, a phase is the change in the illuminated area
- of the sun as seen from Earth.
  - of the solar system as seen from outside it.
  - of Earth as it rotates on its axis.
  - of one celestial body as seen from another celestial body.
- \_\_\_\_\_ 39. Phases of the moon are caused by the
- change in seasons.
  - revolution of Earth on its axis.
  - revolution of the moon on its axis.
  - changing positions of the sun, moon, and Earth.
- \_\_\_\_\_ 40. During this phase of the moon, the near side is dark, and no lighted area of the moon is visible on Earth.
- dark moon
  - new moon
  - near moon
  - full moon
- \_\_\_\_\_ 41. When the size of the lighted part of the moon is increasing, the moon is said to be
- waxing.
  - revolving.
  - waning.
  - spinning.
- \_\_\_\_\_ 42. The waxing phases of the moon are
- waxing, growing, completing.
  - crescent, half, whole.
  - first quarter, second quarter, third quarter.
  - waxing crescent, first quarter, waxing gibbous.
- \_\_\_\_\_ 43. At what stage is the entire near side of the moon illuminated by the sun, because Earth is between the sun and moon?
- whole moon
  - luminous moon
  - new moon
  - full moon

Directed Reading *continued*

- \_\_\_\_\_ 44. When the lighted part of the near side of the moon appears to decrease in size, the moon is
- a. waxing.
  - b. shrinking.
  - c. waning.
  - d. decreasing.
- \_\_\_\_\_ 45. The waning phases of the moon are
- a. waning gibbous, third quarter, waning crescent.
  - b. waning crescent, last quarter, full.
  - c. second quarter, third quarter, fourth quarter.
  - d. waning, last quarter, sliver.
- \_\_\_\_\_ 46. What is sunlight that is reflected off Earth and then off the moon called?
- a. moonshine
  - b. sunshine
  - c. earthshine
  - d. moonlight
- \_\_\_\_\_ 47. The period from one new moon to the next is
- a. 27.3 days.
  - b. 30 days.
  - c. 29.5 days.
  - d. 31 days.
- \_\_\_\_\_ 48. The position of the moon in each new-moon phase is
- a. behind the sun.
  - b. directly between Earth and the sun.
  - c. in line with, and behind Earth.
  - d. directly in front of the sun.

**TIDES ON EARTH**

49. \_\_\_\_\_ form because the moon's gravitational pull on Earth decreases with distance.
50. The ocean on Earth's near side is pulled toward the moon with the greatest \_\_\_\_\_.
51. Because Earth \_\_\_\_\_, tides occur regularly at any given point on the surface each day.

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**Directed Reading** *continued*

52. Why is the sun's effect on tides less than the moon's effect?

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53. When do especially strong tides occur?

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