

Name \_\_\_\_\_

Review

### Study Guide: Sun, Earth and Moon Relationship Assessment

**Indicator — I can describe why we experience days and years due to the rotation and revolution of the Earth around the sun.**

1. **What is an axis?** It is the imaginary line that runs from a planet's north pole to the south pole on which the planet rotates.

2. **What is rotation?**

A rotation is the act of turning or spinning on an axis

3. **What is a day and how long is it?**

A day is the length of time for a planet to complete one rotation. One Earth day is 24 hours long.

4. **What is revolution?**

A revolution is the act of moving in a curved path or orbit around another object.

5. **What is a year and how long is it?**

A year is the length of time it takes for a planet to make one complete revolution around the Sun. On Earth a year is 365.25 days.

**Indicator — I can recognize that the tilt of the Earth is responsible for the seasons due to direct and indirect sunlight.**

6. **What is the tilt of the Earth's axis?**

The tilt of the axis is 23.5 degrees

7. **How does the angle of the sun's rays make the solar radiation more intense?**

Direct sunlight strikes the Earth's surface at angles greater than 45 degrees and is more intense. Indirect sunlight strikes the Earth's surface at less than 45 degrees and is less intense.

8. **Rank the letter for the amount of solar radiation that hits a square centimeter of the earth's surface. Use the diagram to the right.**

The rank is A is most, then B and the least is C



9. **Where do the direct sun's rays hit during the summer solstice?**

During summer solstice in the northern hemisphere, the sun's rays strike directly at the Tropic of Cancer.

10. **Where do the direct sun's rays hit during the winter solstice?**

During the winter solstice in the northern hemisphere, the sun's direct rays strike the Tropic of Capricorn

11. **Where do the direct sun's rays hit during the spring and fall equinox?** on the equator

12. **What season has the shortest day in the Northern Hemisphere?** Winter (Dec. 21)

13. **What season has the longest day in the Northern Hemisphere?** Summer (June 21)

14. **What seasons have equal days and nights in the Northern Hemisphere?**

Fall (Sept. 22-Autumnal Equinox) and Spring (March 21-Vernal Equinox)

15. **What season and what is the term when Earth is the farthest from the Sun?**

16. **What season and what is the term when Earth is the closest from the Sun?**

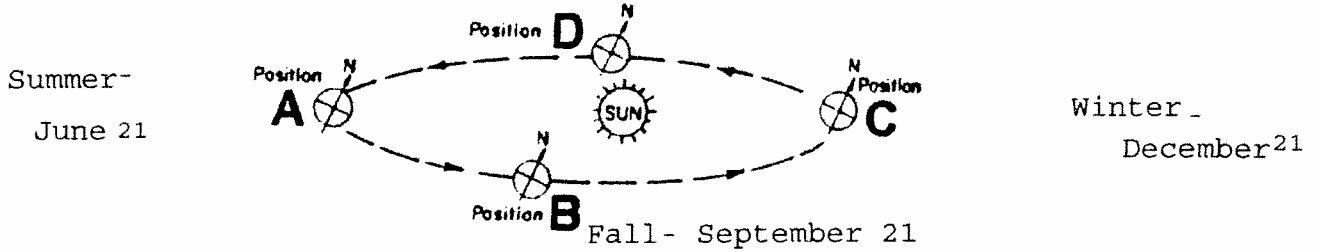
\* optional ☺

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17. Label and date the diagram below for each of the Earth's positions in the Northern Hemisphere.  
Spring March 21



18. Using the diagram above, write the letter and date for each of the seasons in the Southern Hemisphere:

Summer solstice C

Winter solstice A

Fall equinox D

Spring equinox B

19. Why do we have seasons? We have seasons because the Earth's axis is tilted as it revolves around the sun. So the sun strikes the Earth at different angles causing one hemisphere to receive more direct sunlight than the other at different times during the year.

20. If the tilt of the Earth's axis increased, how would that effect seasons?

Summers would be longer and hotter and winters would be longer and colder.

Indicator - I can identify the eight phases of the moon as it revolves around the Earth.

21. Why can we see the moon at night even though it does not produce any light?

We are seeing the sun's reflection on the moon.

22. What is a moon phase?

Moon phases are the appearance of the illuminated portion of the moon as seen by an observer on Earth.

23. What is a month?

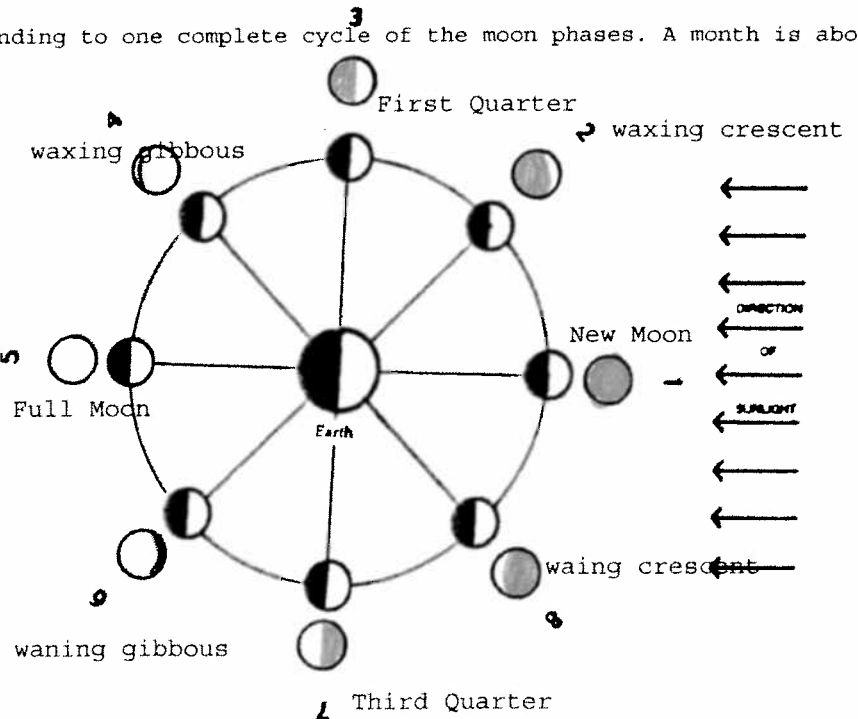
A month is the unit of time corresponding to one complete cycle of the moon phases. A month is about 28 days.

24. How many days is a complete moon cycle? 28-30 days

25. What does a waxing moon phase mean? the moon is gaining light

26. What does a waning moon phase mean? the moon is losing light

27. Label the diagram with the correct moon phase name and shade each phase correctly as seen from earth.



## Study Guide: Sun, Earth and Moon Relationship Assessment

**Indicator - I can diagram the positions of the Earth, sun and moon during a solar and lunar eclipse.**

28. What is a shadow? A shadow is an area where direct light from a light source is blocked by an object.

29. What is an eclipse?

An eclipse is when a celestial body is blocking light and a shadow is cast. Eclipse

30. What is an umbra?

means, "to leave"

the darkest part of the shadow in a total eclipse

31. What is a penumbra?

the area of the shadow where a partial eclipse occurs

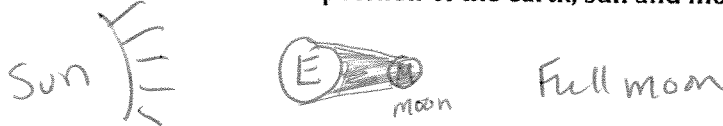
32. What moon phase does a lunar eclipse occur in? Full Moon

33. What moon phase does a solar eclipse occur in? New Moon

34. What occurs when the moon blocks the earth from the sun? Solar Eclipse

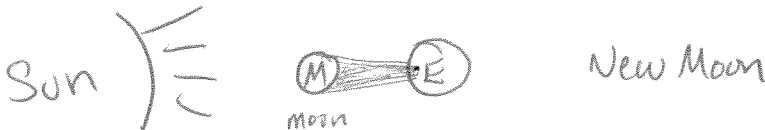
35. What occurs when the earth casts a shadow on the moon? Lunar Eclipse

32. Sketch the correct position of the earth, sun and moon during a lunar eclipse.



Full Moon

33. Sketch the correct position of the earth, sun and moon during a solar eclipse.



New Moon

34. Why don't we have an eclipse every full or new moon?

The plane in which the moon orbits the Earth is tilted from that of the moon. An eclipse can only happen when the Earth moon and sun light up.

**Indicator - I can describe how neap and spring tides are the result of the moon's gravitational pull on the surface of the Earth**

34. How many high and low tides occur in one day? two high tides and 2 low tides

35. How many hours are between each high tide and low tide? About 6 hours pass between a high and low tide

36. What is a high tide? High tide is when ocean water reaches its highest level

37. What is a low tide? Low tide is when ocean water reaches its lowest level

38. What type of tide occurs when the sun and moon's gravity are working together? Spring Tides

39. What type of tide occurs when the sun and moon's gravity are working against each other? Neap Tides

40. What is a spring tide? A Spring Tide is when the high tides are higher and low tides are lower than normal as a result of the Earth, Moon and Sun being in line causing a stronger gravitational pull.

41. What moon phase(s) occurs during a spring tide? New and Full Moons

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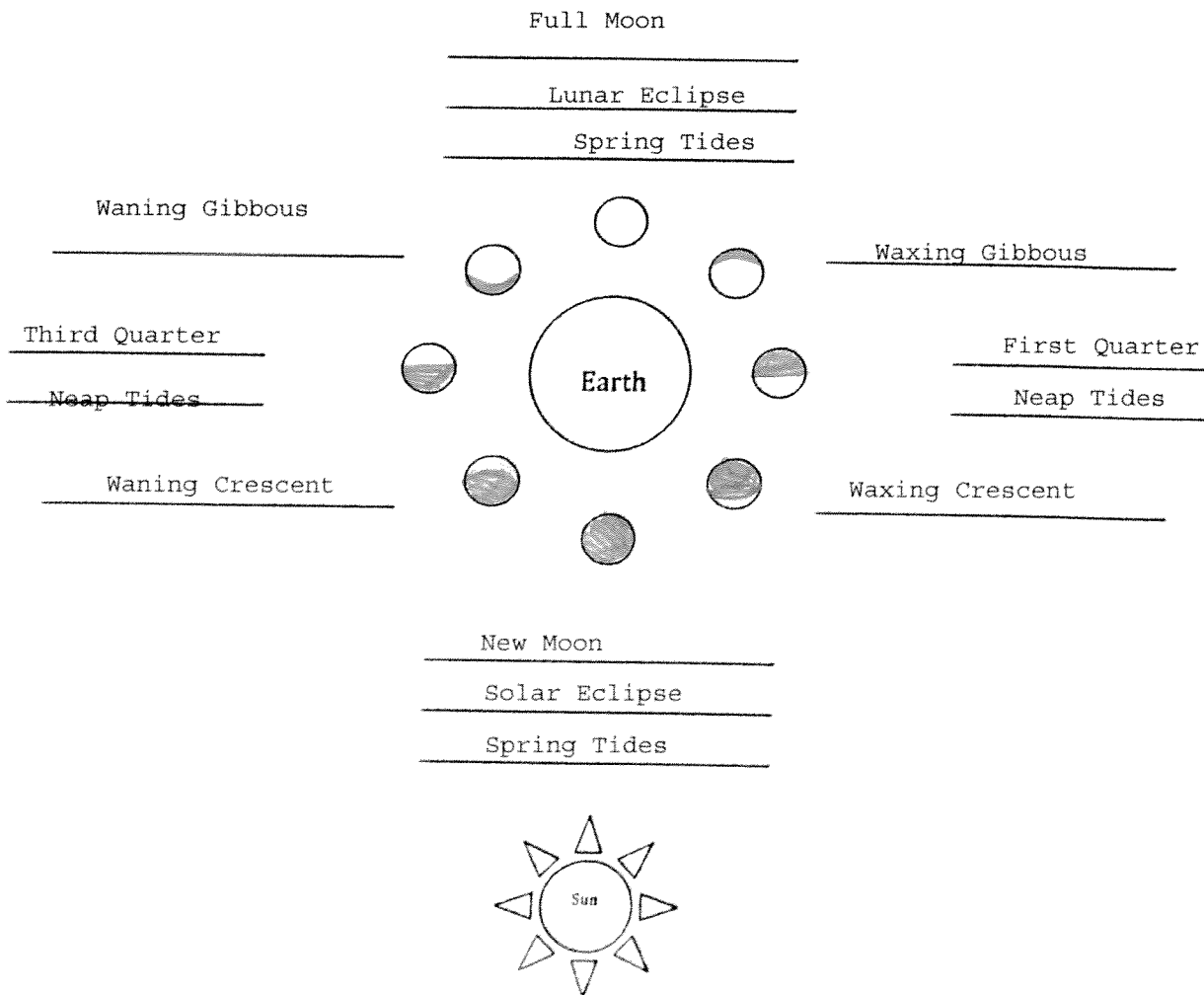
42. What is a neap tide? tides that are lower high tides and higher low tides due to the moon and sun being at right angles to the earth pulling in opposite directions
43. What moon phase(s) directions occurs during a neap tide?  
First Quarter and Third Quarter
44. Sketch the correct position of the sun, earth and moon during a neap tide.



45. Sketch the correct position of the sun, earth and moon during a spring tide.



46. **Put it all together.** Fill in the following steps correctly on the diagram below.
- Label and shade the appropriate moon phases as seen from earth.
  - Lunar and Solar Eclipses
  - Spring and Neap Tides



47. What is a sundial? A sundial is an instrument used to show time of day by casting a shadow on a horizontal plate or cylindrical surface.

48. We can see many of the Moon's surface features with our eyes or simple telescope. What are the darker areas of the moon? What are the lighter areas of the moon?

The dark areas are smooth, flat plains called maria.

The light areas are hills and mountains called highlands.

49. Name the planets in order out from the Sun?

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto

**Vocabulary-** If you are missing any of the definitions of the vocabulary listed below, refer to the Glossary on page 24 of the "Earth, Moon and Sun" booklet.

1. Rotation
2. Axis
3. Revolution
4. Orbit
5. Atmosphere
6. Lunar
7. Moon phase
8. Gravity
9. Tides
10. Spring tide
11. Neap tide
12. Eclipse
13. Lunar eclipse
14. Solar eclipse
15. Partial eclipse
16. Total eclipse
17. Umbra
18. Penumbra
19. Direct sunlight
20. Indirect sunlight
21. Equinox
22. Solstice
23. Planet
24. Solar system
25. Star
26. Natural satellite
27. Artificial satellite
28. Mare/Maria
29. Sundial
30. Gnomon