

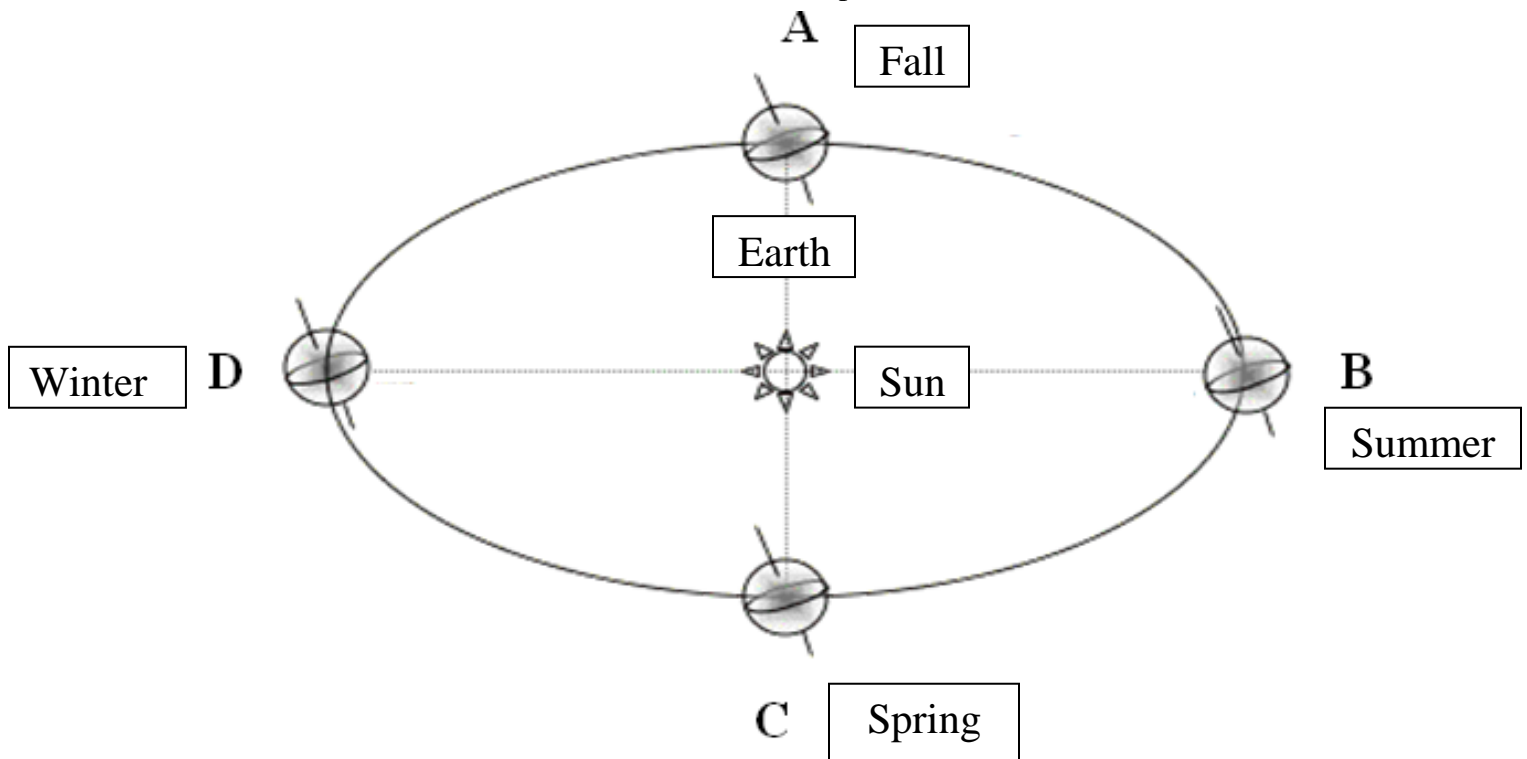
Name:

Date:

Pd:

rites QUEST 2011 Review Sheet: Seasons, Phases of the Moon, and Tides

1. Define rotation. *The spinning motion of a planet on its axis. (Ex: The movement of the Earth on its axis.)*
2. Define revolution. *The movement of an object around another object. (Ex: The movement of the Earth around the sun traveling in an ellipse.)*
3. Draw a diagram of the Earth revolving around the sun. Draw arrows to represent this movement. Label each object: sun and Earth. Place the Earth in four positions around the sun. Draw the axis and equator on each of the four Earth's. Label the four seasons, spring, summer, winter, and fall for the Northern Hemisphere on each Earth.



4. At which point is the sun directly overhead at 23.5°N latitude? Point B
5. At which point is the sun directly overhead at 23.5°S latitude? Point D
6. Explain why summer is warmer than winter. Use scientific evidence to support your explanation.
Summer is warmer than winter in the Northern Hemisphere for various reasons. The first reason is due to the tilt of the Earth's axis. When the Earth is tilted, the Northern Hemisphere is tilted toward the sun, thus causing summer. During summer, the sun is directly over head and the Earth is receiving direct sunlight. A misconception is the sun is closest to the Earth distance-wise during summer. THIS IS NOT TRUE!!!

7. Explain why the seasons occur on Earth. Use scientific evidence to support your explanation.

The reason why the seasons occur on Earth is due to the tilt of the Earth on its axis. For example, when the Northern Hemisphere is tilted toward the Earth, the sunlight is direct and the season would be summer. When the Northern Hemisphere is tilted away from the sun, the sunlight is indirect and the season would be winter. In order for fall and spring to occur, the Earth is neither tilted toward or away from the sun. During fall and spring, equinoxes occur, 12 hour day and 12 hour night.

8. Explain how solar intensity varies at the poles, the equator, and Rhode Island throughout the year.

Solar intensity varies at the poles, the equator and Rhode Island throughout the year. This variation occurs from the angle of the sunlight, due to the tilt of the Earth's axis. At the equator, changes in the solar intensity is minimal and it remains very consistent throughout the year. In Rhode Island, during summer, the solar intensity is the greatest and in winter, the lowest. At the north pole (90°N, the intensity is at a minimal from January through March, at which point it increases to its maximum at June. Beginning in July, it begins to decrease back to a minimal in October. The minimum will continue through December.

9. Label the diagram with the proper phase of the moon.



direct sunlight

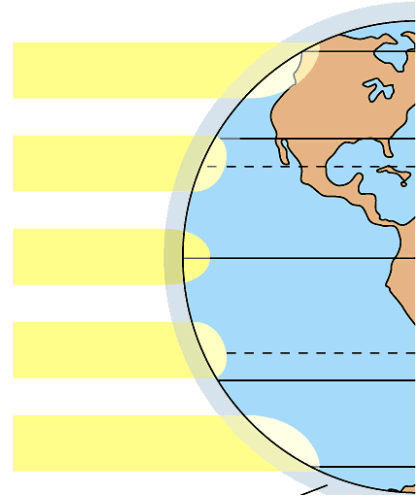
indirect sunlight

indirect sunlight

Indirect sunlight

Direct sunlight

Indirect sunlight

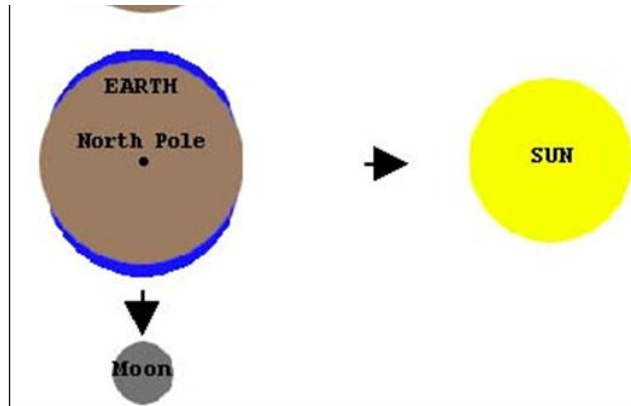


11. What causes the tides on Earth?

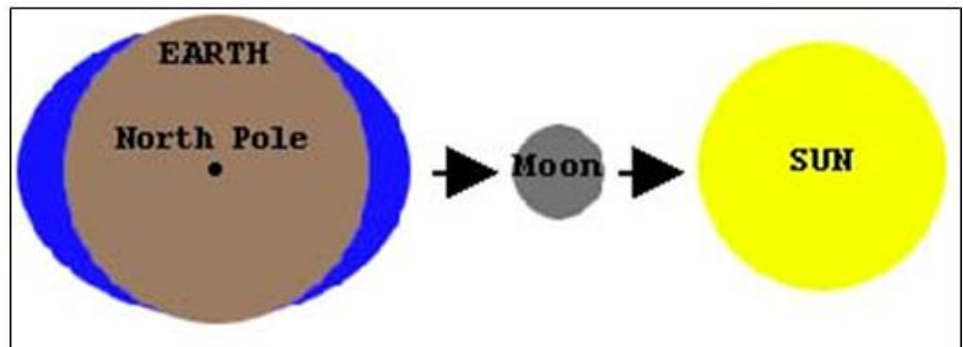
The tides are caused by the gravitational force (gravity) between the moon and Earth.

12. In each of the boxes below, draw the correct position of the moon, Earth, and sun to represent a neap tide and a spring tide. Be sure to label the moon, Earth and sun in your diagram.

Neap Tide



Spring Tide



13. What are tides caused by?
The tides are caused by the gravitational force (gravity) between the moon and Earth.
14. Which exerts a stronger gravitational pull on earth, the sun or the moon?
The sun.
15. What happens when the moon faces one side of the earth?
High tide will occur.
16. What is a spring tide?
A spring tide shows the greatest difference between consecutive tides. Also, the sun, moon, and Earth are positioned in a straight line.
17. What is a neap tide?
A neap tide shows the least difference between consecutive tides. Also, the sun, moon, and Earth are positioned at a right angle.
18. What position do the sun, moon, and earth have to be in to create a spring tide?
In a straight line.
19. What position do the sun, moon and earth have to be in to create a neap tide?
In a right angle.
20. In most places on earth, how often do high and low tides occur?
Every 12.5 hours per day.
21. At which phase of the moon is there the greatest difference between high and low tide?
At full moon.
22. How long does it take the moon to completely rotate around the earth?
29.5 days.
23. Explain why we always see the same side of the moon.
We see the same side of the moon because the rotation and revolution of the moon is equal.

