37 The Earth, Sun and Moon

Review Questions

1. What is the correct alignment during a solar eclipse?

(a) Sun – Moon – Earth ☐
(b) Earth – Mars – Moon ☐
(c) Sun – Earth – Moon ☐
(d) Moon – Sun – Earth ☐

2. Tides on Earth are affected by the gravitational force(s) of:

(a) The moon only ☐
(b) The moon and the sun only ☐
(c) Earth, the moon and the sun ☐
(d) Earth and the moon only ☐

3. What term is used to describe the moon when the illuminated area appears to be increasing?

_____

4. What term is used to describe the moon when the illuminated area appears to be decreasing?

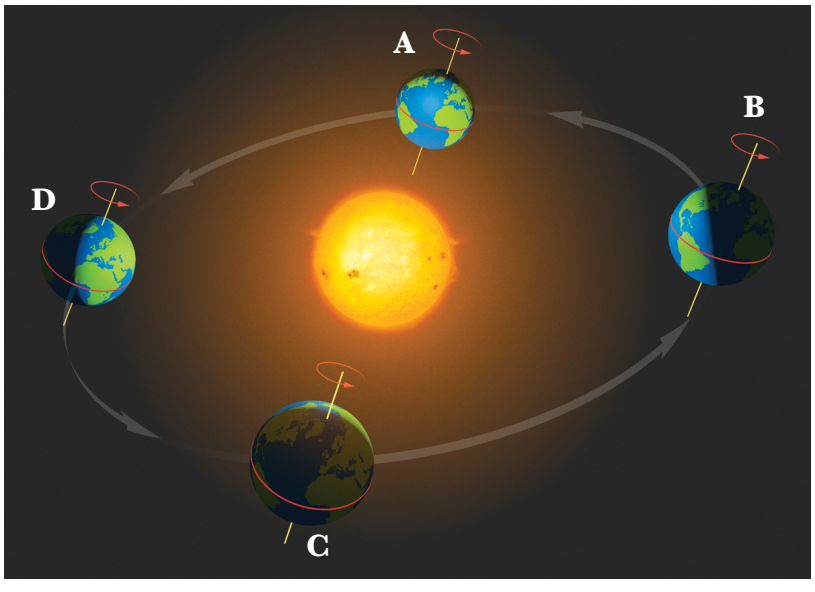
_____

5. Earth rotates as it revolves around the sun. Explain the difference between the underlined terms. _____

_____

6. The image below shows Earth at four different positions in its annual orbit of the sun. Which season would be experienced in the northern hemisphere when Earth is in position:

(A) _____
(B) _____
(C) _____
(D) _____

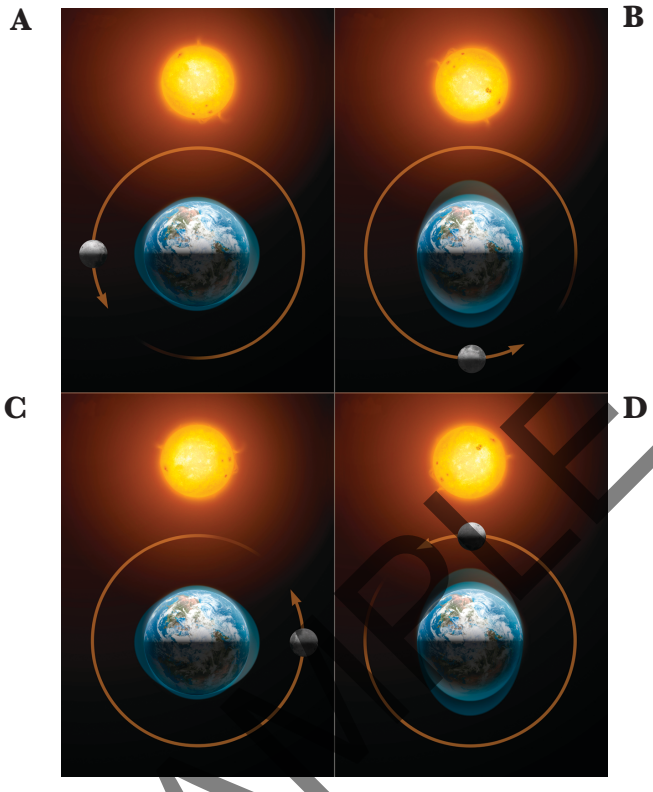


7. Which season would be experienced in the southern hemisphere when Earth is in position:

(A) _____
(B) _____
(C) _____
(D) _____

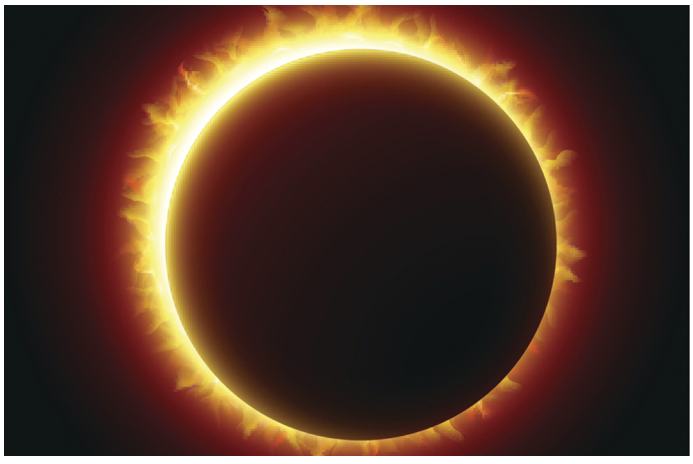
Knowledge and Understanding

1. Explain why night and day occur on Earth.
2. Draw a diagram to illustrate the shape of the orbit of Earth around the sun.
3. Explain how the tilt of Earth's axis causes the seasons in the northern hemisphere.



4. The image above illustrates the relative positions of Earth, the sun and the moon at four different stages in the lunar cycle. Which phase of the moon is represented by:
   A. _____
   B. _____
   C. _____
   D. _____
5. Spring tides occur when Earth, the moon and the sun are aligned. Which two diagrams in the image above represent the earth-sun-moon system during spring tides?
6. Neap tides occur when the sun and the moon are at a right angle to Earth. Which two diagrams represent the earth-sun-moon system during neap tides?
7. Tidal range is the difference between the height of the water at low tide and high tide. Which type of tide do you think gives the greatest variation: spring tides or neap tides? Give a reason for your answer.
8. What type of tides would you expect when there is a full moon? Give a reason for your answer.
9. What phase would you expect the moon to be in during neap tides? Give a reason for your answer.

A



B

10. The photographs A and B above show two types of solar eclipse: a **total** eclipse when the sun is completely blocked out and a partial eclipse when the sun is not completely blocked out.

(a) Which photograph represents the total eclipse?

(b) Which photograph represents the partial eclipse?

11. Day length is the amount of time between sunrise and sunset. The table below gives the times for sunrise and sunset in Belfast, Dublin and Cork on 21 June 2014:

	Sunrise	**Sunset**	**Day length**
Belfast	4.47 a.m.	21.04 p.m.	
Dublin	4.57 a.m.	21.57 p.m.	
Cork	5.14 a.m.	21.57 p.m.	

(a) Calculate the day length for each of the three cities

(b) List the three cities in increasing order of day length.

(c) Account for the differences in day length in these three cities.

(d) June 21 is the summer solstice in the northern hemisphere. It is often referred to as the longest day of the year. Do you think that this is a scientifically accurate way to refer to the solstice? Give a reason for your answer.

(e) Sydney, Australia is in the southern hemisphere. What do you think is the date for the winter solstice in Sydney? Give a reason for your answer.

(f) Draw a diagram of Earth and the sun on the day of the summer solstice in the northern hemisphere. Clearly indicate Earth's axis in your diagram. What is unique about the relative positions of Earth and the sun on this day?