

Chapter: Chapter 1: The Earth as a Rotating Planet

Multiple Choice

1. The Sun's rays are directly overhead at 90 degrees at the _____ on December, 22.
- A) Tropic of Cancer
 - B) Equator
 - C) Tropic of Capricorn
 - D) Arctic Circle
 - E) Antarctic Circle

Ans: C

Difficulty: easy

Link to Text: The Earth's Revolution around the Sun

2. The Earth's axis is always tilted at an angle of _____ degrees to the perpendicular.
- A) 15
 - B) 23.5
 - C) 33.3
 - D) 66.5
 - E) 90

Ans: B

Difficulty: easy

Link to Text: The Earth's Revolution around the Sun

3. In the Southern Hemisphere, the vernal equinox occurs on or around:
- A) June 22
 - B) December 22

- C) March 21
- D) September 23
- E) January 4

Ans: D

Difficulty: easy

Link to Text: [The Earth's Revolution around the Sun](#)

4. Latitude:

- A) describes the east-west locations on the globe
- B) is a measure of the rotation of the Earth
- C) lines are all the same length
- D) lines include the Equator
- E) lines include the International Date Line

Ans: D

Difficulty: easy

Link to Text: [The Geographic Grid](#)

5. The Meridian at 0 degrees is:

- A) the Prime Meridian
- B) the Equator
- C) the Arctic Circle
- D) the Antarctic Circle
- E) the International Date Line

Ans: A

Difficulty: easy

Link to Text: [The Geographic Grid](#)

6. When the Sun is at its maximum inclination in the Northern Hemisphere it is:

- A) the summer solstice
- B) the winter solstice
- C) the autumnal equinox
- D) the vernal equinox
- E) the spring equinox

Ans: A

Difficulty: easy

Link to Text: The Earth's Revolution around the Sun

7. At the Vernal Equinox in the Northern Hemisphere:

- A) more solar radiation reaches the Northern Hemisphere
- B) more solar radiation reaches the Southern Hemisphere
- C) equal amounts of solar radiation reach both Hemispheres
- D) regions north of the Arctic Circle receive 24 hours of daylight
- E) regions north of the Arctic Circle receive 24 hours of night

Ans: C

Difficulty: easy

Link to Text: The Earth's Revolution around the Sun

8. The point on the Earth's surface where the Sun is directly overhead is:

- A) subsolar point
- B) circle of illumination
- C) great circle
- D) small circle
- E) arctic circle

Ans: A

Difficulty: easy

Link to Text: The Earth's Revolution around the Sun

9. At the moment of the aphelion, the earth's position is _____.

- A) directly between the plane of the ecliptic and the Tropic of Capricorn
- B) farthest from the Sun
- C) closest to the Sun
- D) farthest from the Moon
- E) closest to the Moon

Ans: B

Difficulty: easy

Link to Text: The Earth's Revolution around the Sun

10. What forces cause the Earth to assume the shape of an oblate ellipsoid?

- A) Gravity
- B) Earth's rotation on its axis
- C) Earth's revolution around the Sun
- D) Tectonic forces
- E) Gravitational influence of the Moon

Ans: B

Difficulty: easy

Link to Text: [The Shape of the Earth](#)

11. On which of the following projections does a straight line represent a true and constant compass bearing?

- A) conic
- B) cylindrical
- C) isarithmic
- D) equal-area
- E) Mercator

Ans: E

Difficulty: easy

Link to Text: [Map Projections](#)

12. Which of the following statements is incorrect?

- A) The earth rotates on its axis in a west-to-east direction.
- B) The contrast between the force of rotation at or near the poles, and at or near the equator, accounts for the earth's shape.
- C) The distance traveled during a complete rotation of the earth by a person standing on one of the poles is approximately the same as someone else standing at the equator.
- D) The rotation of the earth on its axis determines the length of a calendar day
- E) The lines of longitude converge at the poles

Ans: C

Difficulty: easy

Link to Text: [Global Time](#)

13. Which of the following associations in the Southern Hemisphere is incorrect?

- A) autumnal equinox -- March 21
- B) spring equinox -- September 23
- C) summer solstice -- December 22
- D) winter solstice -- June 22
- E) vernal equinox -- March 21

Ans: E

Difficulty: easy

Link to Text: The Earth's Revolution around the Sun

14. Passengers traveling by air from Tokyo to San Francisco hear the pilot announce that the plane is about to cross the international date line. Their watches at that moment indicate that the correct local time is 2:00 p.m. on Monday. Upon crossing the date line they should _____.

- A) change their watches to 3:00 p.m. on Monday
- B) change their watches to 1:00 p.m. on Monday
- C) change their watches to 2:00 p.m. on Tuesday
- D) change their watches to 2:00 p.m. on Sunday
- E) change their watches to 3:00 p.m. on Tuesday

Ans: D

Difficulty: easy

Link to Text: Global Time

15. The boundary between the half of the Earth in sunlight and the half of the Earth in darkness is the _____.

- A) solar zenith
- B) international dateline
- C) arctic circle
- D) plane of the ecliptic
- E) circle of illumination

Ans: E

Difficulty: easy

Link to Text: The Earth's Revolution around the Sun

16. The earth's axis is always tilted at an angle of _____ degrees to the plane of the ecliptic.

- A) 15
- B) 23.5
- C) 33.3
- D) 66.5
- E) 90

Ans: D

Difficulty: easy

Link to Text: [The Earth's Revolution around the Sun](#)

17. At the moment of the perihelion, the earth's position is _____.

- A) directly between the plane of the ecliptic and the Tropic of Capricorn
- B) farthest from the Sun
- C) closest to the Sun
- D) farthest from the Moon
- E) closest to the Moon

Ans: C

Difficulty: easy

Link to Text: [The Earth's Revolution around the Sun](#)

18. The summer solstice in the Northern Hemisphere occurs approximately on which of the following dates?

- A) March 21
- B) June 22
- C) July 23
- D) August 24
- E) September 25

Ans: B

Difficulty: easy

Link to Text: [The Earth's Revolution around the Sun](#)

19. When a plane passing through the center of the Earth intersects the Earth's surface, the

result is a

- A) line of longitude
- B) line of latitude
- C) great circle
- D) small circle
- E) meridian

Ans: B

Difficulty: easy

Link to Text: [The Geographic Grid](#)

20. Which of the following statements about meridians is true?

- A) They originate at the equator at 0 degrees and reach the poles both north and south at 90 degrees
- B) They originate at the equator at 90 degrees and reach the poles both north and south at 0 degrees
- C) They originate at 0 degrees longitude and reach a location approximately at the International Date Line at 180 degrees longitude
- D) They originate at 180 degrees longitude and reach a location approximately at the International Date Line at 0 degrees longitude
- E) Meridians divide the Earth into hemispheres

Ans: C

Difficulty: easy

Link to Text: [The Geographic Grid](#)

21. North America is centered approximately at the following latitude/longitude coordinates?

- A) 100 degrees North 40 degrees West
- B) 60 degrees North 60 degrees West
- C) 40 degrees North 100 degrees West
- D) 100 degrees North 100 degrees West
- E) 40 degrees North 40 degrees West

Ans: C

Difficulty: easy

Link to Text: [The Geographic Grid](#)

22. How many degrees separate each time zone?

- A) 1 degree
- B) 2 degrees
- C) 5 degrees
- D) 10 degrees
- E) 15 degrees

Ans: E

Difficulty: easy

Link to Text: [Global Time](#)

23. Which of the following associations in the Northern Hemisphere is incorrect?

- A) Winter Solstice – December 22
- B) Summer Solstice – June 22
- C) Spring Equinox – March 21
- D) Autumnal Equinox – October 23

Ans: D

Difficulty: easy

Link to Text: [The Earth's Revolution around the Sun](#)

24. When do regions north of the Arctic Circle experience 24 hours of daylight?

- A) Winter Solstice
- B) Summer Solstice
- C) Spring Equinox
- D) Autumnal Equinox

Ans: B

Difficulty: easy

Link to Text: [The Earth's Revolution around the Sun](#)

25. What is the declination of the Sun at the equinoxes?

- A) 90 degrees
- B) 66.5 degrees
- C) 45 degrees
- D) 23.5 degrees
- E) 0 degrees

Ans: E

Difficulty: easy

Link to Text: [The Earth's Revolution around the Sun](#)

26. 1 degree of latitude is approximately how many kilometers in distance?

- A) 100
- B) 110
- C) 111
- D) 122
- E) 101

Ans: C

Difficulty: easy

Link to Text: [Latitude and Longitude](#)

27. Given you are at a latitude that is between the Arctic and Antarctic circles: What change in degree's of the sun's angle will you notice between the summer and winter solstice?

- A) 23.5
- B) 66.5
- C) 90
- D) 47
- E) 0

Ans: D

Difficulty: moderate

Link to Text: [Solstice Conditions](#)

28. When the Earth is in “aphelion”, it is said to be:

- A) closest to the sun
- B) farthest from the sun
- C) closest to the moon
- D) farthest from the moon
- E) has brighter days

Ans: B

Difficulty: moderate

Link to Text: [The Earth's Revolution Around the Sun](#)

29. At which time of the year is the Earth at “perihelion”?

- A) Spring Equinox
- B) Fall Equinox
- C) Summer Solstice
- D) Winter Solstice
- E) Ground hog day

Ans: D

Difficulty: moderate

Link to Text: [The Earth's Revolution Around the Sun](#)

True/False

30. If you were to look down on Earth from above the North Pole the Earth would be seen to be rotating in a clockwise direction.

Ans: False

Difficulty: easy

Link to Text: [Earth Rotation](#)

31. The Earth equatorial diameter is slightly larger than the polar diameter.

Ans: True

Difficulty: easy

Link to Text: [The Shape of the Earth](#)

32. The Coriolis effect causes flows in the Northern Hemisphere to be deflected to the left.

Ans: False

Difficulty: easy
Link to Text: [Earth Rotation](#)

33. Tides are the result of the gravitational attraction of the Moon and Sun.

Ans: True
Difficulty: easy
Link to Text: [Earth Rotation](#)

34. The ratio that relates distance on a map to distance on the Earth's surface is the scale fraction.

Ans: True
Difficulty: easy
Link to Text: [Map Projections](#)

35. The Goode Projection is an example of a cylindrical map projection.

Ans: False
Difficulty: easy
Link to Text: [Map Projections](#)

36. An isohyet is an example of an isopleth used to describe altitude.

Ans: False
Difficulty: easy
Link to Text: [Map Projections](#)

37. In a polar projection, the meridians are shown parallel to each other.

Ans: False

Difficulty: easy

Link to Text: [Map Projections](#)

38. A straight line drawn on a Mercator projection shows the line of compass bearing though it does not necessarily provide the shortest distance between two points.

Ans: True

Difficulty: easy

Link to Text: [Map Projections](#)

39. The declination of the Sun is the angle of the Sun measured at solar noon.

Ans: False

Difficulty: easy

Link to Text: [Global Time](#)

40. 180 degrees of Latitude and 360 degrees of Longitude geographically covers the entire Earth.

Ans: True

Difficulty: easy

Link to Text: [The Geographic Grid](#)

41. Theoretically, the Earth is divided into 24, 15 degree wide time zones.

Ans: True

Difficulty: easy

Link to Text: [Global Time](#)

42. During Daylight Savings Time (DST) the Earth's rotation is slowed by one hour to lengthen the day by 1 hour.

Ans: False
Difficulty: moderate
Link to Text: [Global Time](#)

43. The Earth's rotation is the annual journey around the sun and gives us the calendar year.

Ans: False
Difficulty: easy
Link to Text: [The Earth's Revolution Around the Sun](#)

Short Answer

44. Describe and explain the length of daylight at your current location at the solstices and the equinoxes.

Ans:

Difficulty: easy
Link to Text: [The Earth's Revolution Around the Sun](#)

45. Using a map of your campus, identify the point, line and area symbols used. What scale is used for the map?

Ans:

Difficulty: moderate
Link to Text: [Map Projections](#)

46. Identify the precise latitude and longitude of some local landmarks using a local mapsheet.

Ans:

Difficulty: easy

Link to Text: [Map Projections](#)

47. For further research, identify the precise latitude and longitude of some famous landmarks. For example, the Empire State Building in New York, the CN Tower in Toronto, Buckingham Palace in London, or the Opera House in Sydney.

Ans:

Difficulty: easy

Link to Text: [Map Projections](#)

48. Compare and contrast the polar, Mercator and Goode map projections. Using examples of different map functions, which map would be most suitable for what task (e.g. navigating the Arctic, representing areas of vegetation etc)?

Ans:

Difficulty: easy

Link to Text: [Map Projections](#)

49. Calculate the current time (or time closest to the nearest hour) at a variety of major cities (for example, London, Paris, New York, Houston, Rio de Janeiro, Calgary).

Ans:

Difficulty: easy

Link to Text: [Global Time](#)

50. Using a well known example of a highway (for example, Route 66 from Chicago to California, the Pacific Coast highway from Seattle to Monterey, or Highway Number 1 across Canada) identify time zone changes and changes in the length of day light for a specific time of year.

Ans:

Difficulty: easy

Link to Text: [Global Time](#)

51. Explain the Sun's “sub-solar” point during the 4 seasons of the year.

Ans:

Difficulty: moderate

Link to Text: The Earth's Revolution Around the Sun

52. Explain the difference between a “high sun angle” season and a “low sun angle” season.

Ans:

Difficulty: moderate

Link to Text: The Earth's Revolution Around the Sun