

***Introduction to Geographic Information Systems 9th
edition Chang Test Bank***

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Introduction to Geographic Information Systems, 9e (Chang)
Chapter 2 Coordinate Systems

- 1) What is a map projection?
- 2) How does an ellipsoid differ from a sphere in approximating the shape and size of the Earth?
- 3) What does it mean by "reprojection"?
- 4) Explain the difference between the standard line and the central line.
- 5) What is a horizontal datum?
- 6) How can "datum shift" affect GIS work?
- 7) List the four types of map projections by the preserved property.
- 8) Name the ellipsoids that are the basis for NAD27, NAD83, and GPS, respectively.
- 9) Explain the difference between NAD83 and NAD83(HARN)
- 10) Briefly explain how a UTM zone is defined in terms of its central meridian, standard meridian, and scale factor.
- 11) Illustrate with a specific example the importance of map projection/coordinate system in GIS operations.
- 12) What is Web Mercator?
- 13) ArcGIS offers the following three methods for defining a coordinate system: select, import, or create a coordinate system. Explain the difference between select and import a coordinate system.
- 14) Describe how on-the-fly projection works.
- 15) All layers to be used together in a GIS operation must align spatially.

Answer: TRUE

- 16) A map projection transforms the geographic coordinates on an ellipsoid into locations on a plane.

Answer: TRUE

17) A conformal projection preserves the property of:

- A) relative size
- B) local shapes
- C) distances
- D) none of these is correct

Answer: B

18) Which of the following statements is true about North American Datum (NAD)?

- A) NAD83 is a newer datum than NAD27.
- B) NAD83 is based on a satellite-determined spheroid.
- C) Maps based on NAD83 can register spatially with maps based on NAD27.
- D) All of these are correct
- E) Both NAD83 is newer and NAD83 is based on.

Answer: E

19) When converted from NAD27 to NAD83, horizontal shifts of point positions in the conterminous United States can be as much as 100 meters (328 ft).

Answer: TRUE

20) Which of the following statements is not true about a meridian with a scale factor of 1?

- A) The meridian must be a standard meridian.
- B) There is no projection distortion along the meridian.
- C) The meridian must be the line of 0° longitude.
- D) None of these is correct

Answer: C

21) The center of a map projection is determined by the:

- A) standard parallel and standard meridian
- B) standard parallel and central meridian
- C) standard meridian and central parallel
- D) central parallel and central meridian

Answer: D

22) The secant case means that a cylindrical projection has _____ line(s) of tangency:

- A) 1
- B) 2
- C) 3

Answer: B

- 23) Which of the following spheroids is ground-measured, rather than satellite-determined?
- A) Clarke1866
 - B) WGS84
 - C) GRS80

Answer: A

- 24) The longitude reading of a point in Oregon should be entered as a _____ value in a GIS package:
- A) positive
 - B) negative

Answer: B

- 25) Which of the following statements is true?
- A) A coordinate system is based on a map projection.
 - B) A map projection is based on a coordinate system.
 - C) Map projection and coordinate system are unrelated.

Answer: A

- 26) Each UTM zone covers _____ degrees in longitude:
- A) 4
 - B) 5
 - C) 6
 - D) 7

Answer: C

- 27) The two common map projections used for the SPC (State Plane Coordinate) system are:
- A) transverse Mercator and Albers conic equal-area
 - B) transverse Mercator and Lambert conformal conic
 - C) Lambert conformal conic and Albers conic equal-area

Answer: B

- 28) The central meridian of a UTM zone has a scale factor of:
- A) 1
 - B) 0.9996
 - C) 0.9
 - D) None of these is correct

Answer: B

29) An X-shift of -500,000 means you add 500,000 to the original X coordinate value.

Answer: FALSE

30) When converted from DMS to DD units, 46°30'00" will read:

- A) 46.3°
- B) 46.5°
- C) 46.7°
- D) None of these is correct

Answer: B

31) Which coordinate does a false easting apply to?

- A) X
- B) Y

Answer: A

32) The Geographic Coordinate Data Base (GCDB) is a database based on the:

- A) UTM (Universal Transverse Mercator) Grid system
- B) SPC (State Plane Coordinate) system
- C) PLSS (Public Land Survey System)
- D) None of these is correct

Answer: C

33) Which of the following coordinate systems is treated as a predefined coordinate system in ArcGIS?

- A) UTM (Universal Transverse Mercator)
- B) STP (State Plane)
- C) IDTM (Idaho Transverse Mercator)
- D) all of these are correct
- E) Both UTM and STP

Answer: E

34) Which of the following statements is true?

- A) Meridians are lines for measuring location in the E-W direction, and parallels are lines for measuring location in the N-S direction.
- B) Meridians are lines for measuring location in the N-S direction, and parallels are lines for measuring location in the E-W direction.
- C) Meridians are points for measuring location in the E-W direction, and parallels are points for measuring location in the N-S direction.
- D) Meridians are points for measuring location in the N-S direction, and parallels are points for measuring location in the E-W direction.

Answer: A

35) Which datum are GPS readings based on?

- A) NAD27
- B) NAD83
- C) WGS84
- D) CORS96

Answer: C

36) Which of the following is the standard projection for online mapping?

- A) Mercator
- B) Web Mercator
- C) Lambert conformal conic
- D) Equidistant conic

Answer: C