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## Geography 12 Final Examination

Before you begin, write your name and perm # on this page. Answer all questions. Darken or cross out the answer on the question list on the left hand side of this first page. Use a pencil and erase incorrect answers. Make sure to also put you name and perm number on this page. You may use a calculator. For the last two questions, worth 4 points each, include all of your working.

**1. The diagram on your map shows you that magnetic declination is 5 degrees West. You read a compass bearing as 47 degrees. Corrected for true North, the bearing is:**

- a. 47 degrees
- b. 42 degrees
- c. 52 degrees
- d. 6 degrees of separation
- e. 98.6 degrees

**2. Using distance traveled and bearings for navigation is called:**

- a. Compass
- b. Loran
- c. GPS
- d. Pacing
- e. Dead Reckoning

**3. For an aircraft, bearings from true north for flying along are called:**

- a. Frequent Flier Lines
- b. Approaches
- c. Vectors
- d. Lorans
- e. Gyrocompasses

**4. The components of a map, such as the title, legend and neat line are collectively called:**

- a. the figure
- b. the balance
- c. cartographic elements
- d. map types
- e. data scaling

**5. Which is an example of a cartographic symbol hierarchy?:**

- a. Land cover
- b. Place names
- c. The sequence of symbols used for highways and trails
- d. The text placement rules
- e. A graticule

**6. Map visual balance is impacted by:**

- a. The choice of map colors.
- b. The placement of the figure on the ground..
- c. the weights of the lines used for line features
- d. The orientation of the map, e.g. landscape or portrait
- e. All of the above.

**7. In the HSI color model, HSI stands for:**

- a. Handling, separation and insignificance.
- b. Heat, simultaneous contrast, and iconification
- c. Hue, saturation and intensity
- d. These are the primaries for subtractive color.
- e. These are the primaries for additive color.

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**8. A map that shows a single layer of information for an area is called:**

- a. Reference.
- b. Monocartographic.
- c. Dasymetric.
- d. Choroplethic
- e. Thematic.

**9. NOMINAL data are data that enumerate only:**

- a. Type or class
- b. Ranking
- c. Absolute Numerical value
- d. Relative Numerical Value
- e. Identity

**10. This sort of map shows information collected for areas by grouping the data into classes and shading the classes by shade density of color:**

- a. Dasymetric
- b. Hypsometric
- c. Choroplethic
- d. Plethometric
- e. Isoline

**11. This sort of map shows line connecting equal value on an interval or ratio scale:**

- a. Perspective View
- b. Isoline
- c. Thematic
- d. Hill Shaded
- e. Choroplethic

**12. Taking measurements from a map to get information about the features as they exist in the real world is called:**

- a. Geodesy
- b. Geometry
- c. Cartometry
- d. Navigation
- e. Cheating

**13. For two points with coordinates  $(x_1, y_1)$  and  $(x_2, y_2)$  the distance between them is:**

- a. Half the distance from the pole to the equator.
- b.  $(x_1 + x_2) - (y_1 + y_2)$
- c.  $(x_2 - x_1) + (y_2 - y_1)$
- d.  $(x_2 - x_1)^2 + (y_2 - y_1)^2$
- e.  $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

**14. For two points one hundred kilometers apart on a map, the actual distance to travel between them would be:**

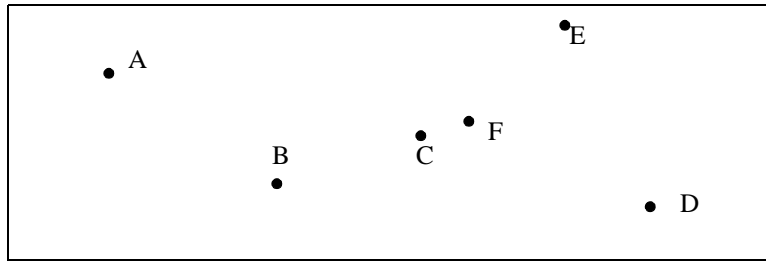
- a. Less than 100 km
- b. Exactly 100 km
- c. More than 100 km due to the earth's curvature
- d. More than 100 km because of the earth's topography
- e. Both c and d

**15. The purpose of quadrat analysis is:**

- a. To compute the nearest neighbor statistic.
- b. To tell how far features are apart.
- c. To measure distances and bearings.
- d. To test point distributions for clustering.
- e. To analyze the variation from the datum.

16. The “nearest neighbor” to point F is:

- a. b. c. d. e.

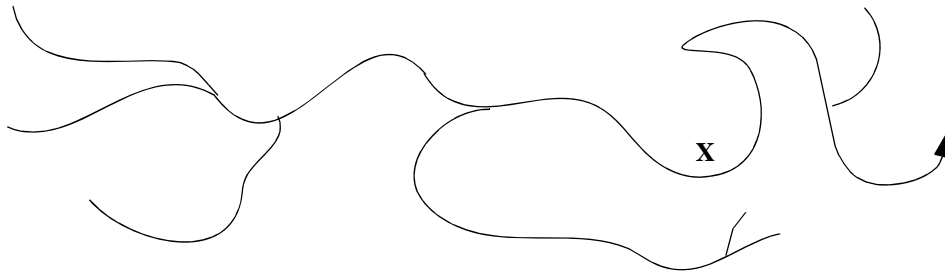


17. For points A-F above, and the area shown, what might be a good guess at the nearest neighbor statistic?:

- a. 100 b. 0 c. 0.1 d. 0.9 e. 2.1

18. What is the stream order of the stream segment pointed to by the X?:

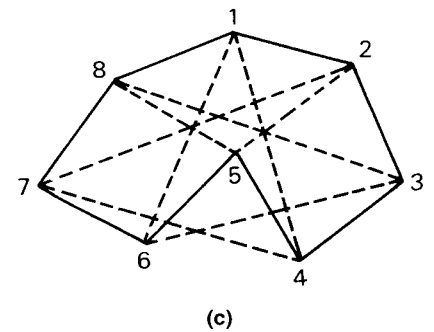
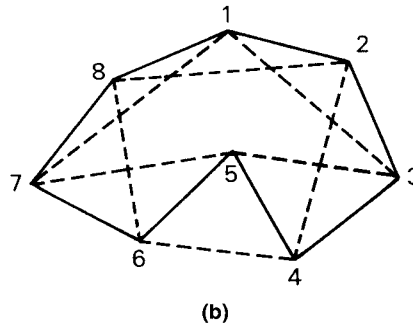
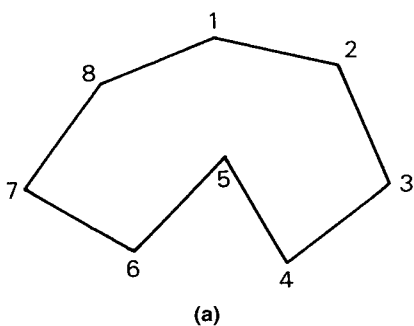
- a. 1. b. 2. c. 3 d. 4 e. Cannot be computed



19. What method might be used for calculating the area of a lake on a map?

- a. Use of a planimeter  
 b. Dot counting  
 c. Cell and edge counting  
 d. Decompose into geometric shapes, such as triangles and rectangles.  
 e. All of the above.

20. The diagram below illustrates which measure of geometric shape?:



- a. Boyce-Clark  
 b. Bunge  
 c. Motograter  
 d. Miller  
 e. None of these

**21. The original mapping of the geodetic control for NAD27 used:**

- a. Trilateration
- b. Differential GPS.
- c. Densification
- d. Triangulation
- e. Radar.

**22. An instrument for accurate measurement of horizontal and vertical angles along lines of sight is called a:**

- a. GPS receiver
- b. Laser ranger.
- c. Transit
- d. Level
- e. Theodolite.

**23. Agencies that provide maps in common use in the United States include:**

- a. United States Geological Survey
- b. National Oceanic and Atmospheric Administration
- c. The United States Bureau of the Census
- d. The National Imagery and Mapping Agency
- e. All of these and lots more.

**24. The digital library system we saw in lab, that allows searching for maps and map data is called:**

- a. Project MAPS
- b. Project MIL
- c. Project Alexandria
- d. Project Cairo
- e. Project EROS.

**25. The type of air photo best for detecting and mapping healthy vegetation is:**

- a. Visible
- b. Ultra-Violet
- c. Panchromatic
- d. Thermal
- e. Color Infra Red

**26. Photographs of the earth taken “straight down” are said to be::**

- a. Vertical
- b. Oblique.
- c. High oblique.
- d. Near Infra Red.
- e. Orthophotographic

**27. The first civilian land remote sensing satellite, launched in 1972 was renamed:**

- a. CORONA.
- b. Multispectral Scanning Satellite
- c. Telstar
- d. Glonass
- e. Landsat.

**28. The Thematic Mapper remote sensing instrument on Landsat has a ground resolution of :**

- a. 1 km
- b. 100 meters
- c. 30 meters
- d. 3 meters
- e. 3 centimeters

**29. Getting a map into the computer, other than downloading or scanning it involves:**

- a. Map layout
- b. Storage
- c. Digitizing.
- d. Topological control
- e. Buying an add-on slot for maps on the side of the computer.

**30. Some leading GIS packages do NOT include:**

- a. Arc/Info
- b. Map/Info
- c. ArcView
- d. SPCS.
- e. GRASS

**31. High frequency Ultra Violet wavelengths:**

- a. though not detectable to the human eye, are detectable by other animal species.
- b. are a colorless, tasteless, and odorless gas.
- c. are cosmic rays from distant galaxies.
- d. transmit radio signals.
- e. are emitted from Lava lamps.

**32. Light waves are:**

- a. the fluctuation of electrical and magnetic fields.
- b. visible to the human eye only at a narrow range of wavelengths and frequencies.
- c. detectable at numerous wavelengths and frequencies by a number of organic and man made sensors.
- d. all of the above.
- e. b and c, but not a.

**33. Electromagnetic energy is:**

- a. emitted by stars and radio stations.
- a. cosmic rays from distant galaxies.
- c. emitted, reflected, transmitted, and absorbed.
- d. capable of passing through muscle tissue.
- e. all of the above.

**34. Color that human eyes perceive is the result of**

- a. wavelengths of light reflected from objects.
- b. electromagnetic fluctuations perpendicular to our line of sight.
- c. Mie and Raleigh particle scattering.
- d. wavelengths of light absorbed and transmitted by objects.
- e. rose colored spectacles

**35. The scale of an aerial photograph**

- a) can be calculated from the vertical exaggeration and the relief displacement.
- b) is proportional to the focal length of the camera lens and the height of the aircraft.
- c) provides an accurate ratio of ground distance to photo distance for every point on the photo.
- d) is a unitless measure representing the height of the aircraft and the distance of the datum from the principle point.

**36. The Principal Point**

- a) is that point on the air photo directly beneath the camera lens.
- b) is always the exact center of an aerial photo.
- c) tends to be displaced relative to the datum.
- d) is necessary for determining the scale of an aerial photo.

**37. Parallax**

- a) enables the perception of depth by the human brain.
- b) is demonstrated by the sighting of a single object from two different angles.
- c) is available only to organisms with at least two eyes that can focus simultaneously on a single object.
- d) all of the above.
- e) a and c, but not b.

**38. The magnetic compass was first used in:**

- a) Egypt
- b) China
- c) USA
- d) Italy
- e) England

39. The "Pointer Stars" can be found in which constellation:

- a) Little Dipper
- b) Big Dipper
- c) Polaris
- d) Orion
- e) Pegasus

40. In 1714, the British passed the Longitude Act, a contest to see who could first develop an accurate method to calculate Longitude on the earth. John Harrison was the winner. The instrument he created to calculate longitude was the:

- a. Theodolite
- b. Transit
- c. Chronometer
- d. Atomic Clock
- e. Triangulator

41. The program implemented by the U.S. Department of Defense that used to make GPS less accurate for non-military users for security reasons was called:

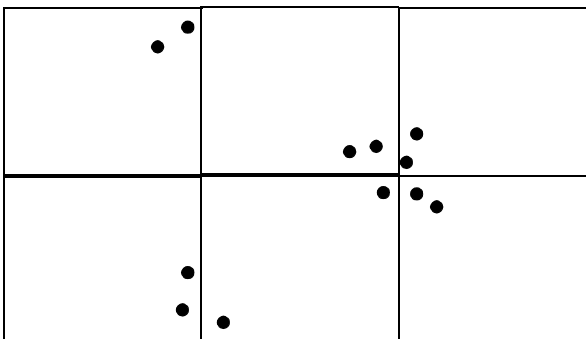
- a) Baby Bertha
- b) Sundown
- c) Code Silence
- d) Navstar
- e) Selective Availability

42. A traverse that ends at a different point than where it began is called a(n):

- a) Spatially challenged traverse
- b) Hyper traverse
- c) End traverse
- d) Open traverse
- e) Differential traverse

43. Worth 4 points

Compute the variance-mean ratio for the following six quadrats.  
What does the value tell you about the distribution?



**Table 1: Quadrat Analysis**

Quadrat #	Points per Quadrat (x)	x <sup>2</sup>
1		
2		
3		
4		
5		
6		

$$\text{Variance} = \frac{\text{sum of } [x^2] - (\text{sum of } x)^2 / N}{N - 1}$$

N - 1

Mean = sum of x / N

variance-mean ratio = variance / mean

**44. (4 points)** The following table represents a three legged traverse from a start point. Use coordinate to bearing and vice versa calculations to fill in the missing values. Note that the last bearing and distance should set the traverse back at the start point.

**Table 2: Traverse Data (UTM Zone 12, N)**

Position	Northing	Easting	Bearing (Mag)	Distance
Start	4,231,156	623,196		
House	4,230,976	623,327	234	314
Hill top (back to start)				