GEOG 4/581: Test 1 (April 24) Name _____

I. Match each term (letters) with its definition (numbers). [3 points]

A. datum B. geographic coordinate system

C. geoid D. map projection

E. raster F. vector

____ 1. A model of the true shape of the earth.

____ 2. The position of a model of the earth relative to the center of the earth.

____ 3. A transformation which converts locations on a three-dimensional surface into locations on a two-dimensional flat surface or plane, providing a frame of reference in the new coordinate space.

____ 4. A data model that represents discrete objects as individual spatial representations with any number of related attributes.

____ 5. A data model that divides the covered extent with a regular grid, and stores a single attribute value in each grid cell.

____ 6. The use of angular measures from the Earth's center to determine locations on a three-dimensional spherical surface.

II. Fill in the blanks. [6 points]

7. The lines of _____ trace great circles around the Earth and pass through the north and south poles. Their values range from _____ to _____ .

8. The lines of _____ trace non-intersecting circles that represent and angular measure from the Earth's center of gravity between the north and south poles. Their values range from _____ to _____ .

9. Applying or tagging data object with a spatial location is known as _____ . Two examples of this type of tagging are _____ and _____ .

III. Attributes [8 points].

ObjectID*	rainfall	type	temp
0	45.2	deciduous	89.7
1	12.8	coniferous	53.4
2	20.0	deciduous	72.3
3	52.7	deciduous	101.5
4	19.3	coniferous	91.6
5	32.6	coniferous	75.1
6	null	deciduous	90.0
7	31.9	coniferous	100.2
8	5.7	deciduous	53.0
9	63.2	deciduous	97.3

11. Which rows in the table above satisfy the criteria specified in the following SQL query?

("rainfall" < 20 OR "temp" > 90) AND "type" = 'deciduous'

List the object IDs: _____ [2 points]

12. For each field in the table, identify both the attribute type and the measurement scale of the values. [2 points]

ObjectID _____ rainfall _____

Type _____ temp _____

13. Object ID = 6 has a `null` for its rainfall value. What does this mean? [2 points]

14. Shapefiles do not allow null-values. Suggest a possible stand-in value to indicate to the data user the same meaning as a null-value would. Consider the attribute data type and the possible values of the real-world property itself. [2 points]

IV. Match each projection type (letters) with property of minimized distortion. [3 points]

A. compromise	B. conformal
C. equal area	D. equidistant
E. gnomonic	F. retroazimuthal

____ 13. Angles, or the general shape of objects.

____ 14. Direction from a fixed location.

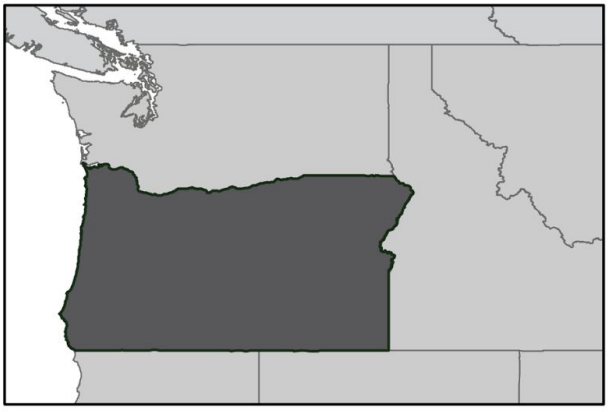
____ 15. None: converts great circles to straight lines.

____ 16. Distance from a fixed point or line.

____ 17. No one property - attempts a chosen balance between distortions.

____ 18. Area.

V. Provide a brief response (2-3 complete sentences) to each of the prompts below. [10 points]



Map A

Map B

19. On the maps above, which has the more suitable projection for a map of the state of Oregon? Provide a brief justification for your choice. [2 points]

20. Give an argument for representing cities as vector points, and a counter-argument against representing cities as vector points. [2 points]

21. Imagine that you have downloaded data for a single geographic area from two sources. When you plot the two data sets, things don't quite line up. Give two potential reasons for the misalignment. [2 points]

23. Reflect on your own academic and/or mapping interests in the context of your upcoming final project: [4 points]

a. What is a (potential) topic or phenomenon of interest?
b. Where is there an instance of this topic or phenomenon?
c. What data layers could provide context (e.g. political boundaries or physical landscape) or evidence of that topic or phenomenon (e.g., measured observable events, physical entities)?