GIS2 - Lab4 Name: _____

Projecting geographic coordinates onto commonly used planar mapping systems and seeing what happens.

Question 1: According to the attribute table, which three airports are the northernmost airports (in order)?

Top 3	Place name	Latitude (DD - 4 decimal places)
1		
2		
3		

Question 2: According to the metadata, what is the geographic extent covered by your connections data? Report your answer using both the given DD and the DMS format for geographic coordinates.

Extent	DMS format	DD format (4 decimal places)
E		
W		
N		
S		

Question 3: According to the metadata, what is the geographic extent covered by your county data? Report your answer using both the given DD and the DMS format for geographic coordinates.

Extent	DMS format	DD format (4 decimal places)
E		
W		
N		
S		

Question 4: If you had a question about these county data, then how would you contact the responsible party by phone or email?

phone _____

email _____

Question 5: Preview your new county attribute table. Compare and contrast the auto-calculated shape area of Cook County, IL and the GEODESIC area [sq.km].

auto-calculated value based on the coordinates _____

given geodetic value _____

Question 6: Preview your new connections attribute table. What are the perimeter [Shape_Length] and area [Shape_Area] values for the Harrisburg to Denver connection?

Shape_Length _____

Shape_Area _____

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Question 7: On the USA mapping system, which three airports were projected as the northernmost airports [in order]?

Top 3	Place name	Northing (nearest m)	Latitude (DD - 4 decimal places)
1			
2			
3			

Question 8: On the USA mapping system, which connection length suffered the most inflation because of how it was projected? The most deflation? Least distorted? Round your evidence to 2 decimal places.

Type	Connection	Geodetic value (NM)	Projected value (NM)	Distortion (NM)
Most inflated				
Least distorted				
Most deflated				

Question 9: On this USA mapping system, which county area suffered the most inflation because of how it was projected? The most deflation? The least distortion? Round your evidence to 2 decimal places.

Type	County, ST	Geodetic value (sq.km)	Projected value (sq.km)	Distortion (sq.km)
Most inflated				
Least distorted				
Most deflated				

Question 10: On the HIA centered mapping system, which three airports were projected as the northernmost airports [in order]?

Top 3	Place name	Northing (nearest m)	Latitude (DD - 4 decimal places)
1			
2			
3			

Question 11: On the HIA centered mapping system, which connection length suffered the most inflation because of how it was projected? The most deflation? Least distorted? Round your evidence to 2 decimal places.

Type	Connection	Geodetic value (NM)	Projected value (NM)	Distortion (NM)
Most inflated				
Least distorted				
Most deflated				

Question 12: On this HIA centered mapping system, which county area suffered the most inflation because of how it was projected? The most deflation? The least distortion? Round your evidence to 2 decimal places.

Type	County, ST	Geodetic value (sq.km)	Projected value (sq.km)	Distortion (sq.km)
Most inflated				
Least distorted				
Most deflated				

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Question 13: On the Minnesota Central mapping zone, which three airports were projected as the northernmost airports [in order]?

Top 3	Place name	Northing (nearest m)	Latitude (DD - 4 decimal places)
1			
2			
3			

Question 14: On the Minnesota Central mapping zone, which connection length suffered the most inflation because of how it was projected? The most deflation? Least distorted? Round your evidence to 2 decimal places.

Type	Connection	Geodetic value (NM)	Projected value (NM)	Distortion (NM)
Most inflated				
Least distorted				
Most deflated				

Question 15: On this Minnesota Central mapping zone, which county area suffered the most inflation because of how it was projected? The most deflation? The least distortion? Round your evidence to 2 decimal places.

Type	County, ST	Geodetic value (sq.km)	Projected value (sq.km)	Distortion (sq.km)
Most inflated				
Least distorted				
Most deflated				

Question 16: On the Illinois East mapping zone, which three airports were projected as the northernmost airports [in order]?

Top 3	Place name	Northing (nearest m)	Latitude (DD - 4 decimal places)
1			
2			
3			

Question 17: On the Illinois East mapping zone, which connection length suffered the most inflation because of how it was projected? The most deflation? Least distorted? Round your evidence to 2 decimal places.

Type	Connection	Geodetic value (NM)	Projected value (NM)	Distortion (NM)
Most inflated				
Least distorted				
Most deflated				

Question 18: On this Illinois East mapping zone, which county area suffered the most inflation because of how it was projected? The most deflation? The least distortion? Round your evidence to 2 decimal places.

Type	County, ST	Geodetic value (sq.km)	Projected value (sq.km)	Distortion (sq.km)
Most inflated				
Least distorted				
Most deflated				

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Projecting geographic coordinates onto commonly used planar mapping systems and seeing what happens.

Question 19: On the UTM 13N mapping zone, which three airports were projected as the northernmost airports [in order]?

Top 3	Place name	Northing (nearest m)	Latitude (DD - 4 decimal places)
1			
2			
3			

Question 20: On the UTM 13N mapping zone, which connection length suffered the most inflation because of how it was projected? The most deflation? Least distorted? Round your evidence to 2 decimal places.

Type	Connection	Geodetic value (NM)	Projected value (NM)	Distortion (NM)
Most inflated				
Least distorted				
Most deflated				

Question 21: On this UTM 13N mapping zone, which county area suffered the most inflation because of how it was projected? The most deflation? The least distortion? Round your evidence to 2 decimal places.

Type	County, ST	Geodetic value (sq.km)	Projected value (sq.km)	Distortion (sq.km)
Most inflated				
Least distorted				
Most deflated				

Question 22: The latest population estimate for Cook County, IL, is 5,211,263 people.
Which of your projected polygons will let you calculate population density accurately? [see Eq.4] Which polygons will lead you to overestimate population density? To underestimate it? Support your claims with calculated population densities.