Optional Projection Problems

These are optional. My goal here is to provide you some opportunity to practice and explore projections if you would like to. All the data you need is on:

practice_data\wk1302\projections

I've also placed copies of the Tissot Indicatrix circles and the graticule grid shapefiles I've been using in lecture in this folder.

(1) What's the difference between State Plane and UTM?
    a. Data: state_park_blue_line
    b. Project the data into the appropriate NY State Plane
    c. Project the data into the appropriate UTM zone
    d. Calculate the area of each
    e. What's the difference?

(2) Where should you set the standard parallels when creating a custom Conic projection?
    a. Data: states_48
    b. Project the original data into an Albers Conic Projection, set the Standard Parallels to more or less fall in line with the northern and southern boundaries of the US, and set the Central Meridian to be more or less in the center of the US.
    c. Now project again into an Albers Conic Projection with the Standard Parallels offset from the northern and southern boundaries (either going in or away from the boundaries) and again set the Central Meridian to be in the center of the US.
    d. Calculate the area of features for both projections
    e. What'd you find?

(3) What's the difference between using a Conic with custom Standard Parallels and a Mercator with a custom Standard Parallel?
    a. Data: "I80"
    b. Project the data into an Albers Conic with Standard Parallels framing the highway route
    c. Project the data into a Mercator with a Standard Parallel approximating the center of the route
    d. Calculate the length of the feature for both projections
    e. What's the difference?

(4) Now what if you tried #3 again with a feature that has a different orientation?
    a. Data: “miami2seattle”
    b. Project the data into an Albers Conic with Standard Parallels framing the highway route
    c. Project the data into a Mercator with a Standard Parallel approximating the center of the route
    d. Calculate the length of the feature for both projections
    e. What’s the difference?

(5) How do you find the area of all the world’s countries?
    a. Data: “countries”