**What is a spatial database? What sorts of things does it make efficient? What is a relational database? Why and when would you use a relational database instead of a flat file? What are some potential limitations to using relational databases in terms of what sorts of data models or analyses they facilitate? 6.3 (also 8.3 and Price 2016 Chapter 6).**

**What is SQL? (7.1) What is a relational algebra? (7.2)**

**Can you write attribute queries in SQL? Do you know how AND and OR work? See 7.1-7.2, also Price 2016 reading, p.232-234.**

* **Note: Don’t worry for the quiz about how a field is properly written in an SQL query (e.g. as [POP1990] or as POP1990 or as "POP1990"), as that differs depending on what flavor of relational database your data is stored in. Also, I don't care whether you write % or \* as the text wildcard.**

**Spatial Queries: Containment, Intersection, Proximity (7.1 and** Price 2016 Chapter 8).

**Can you differentiate between spatial and attribute queries?** What is the difference between a spatial query and a spatial join?

Attribute joins. What are they? Could you explain cardinality and classify examples of joins by their cardinality? What is the Rule of Joining? Can you discuss why particular joins are difficult within a relational database framework that relies on tables? Price 2016, pp.175-178.

**What is Spatial Analysis? (7.2) What is an exploratory analysis versus a confirmatory analysis? (8.1) Can you give examples of such analyses?**

Spatial joins. What are they? What do they really mean? Can you compare and contrast how spatial joins and non-spatial attribute joins work? Have a sense for the different types of spatial joins (especially see: 9.1 and Price 2016 Chapter 9) and for when you might want to use them: What are distance spatial joins? What are inside spatial joins? What are summarized- versus simple- spatial joins and when might you use each? What type of spatial join can be done where the cardinality is ‘one-to-many’?

What is distance? What are some different ways it can be defined and when might you want each? What sorts of analyses are sensitive to the choice of distance metric? 9.1 and NEAR AND far project.

What are Thiessen Polygons? What inputs are used to make them? What are some uses for them? (9.1)

**What is an algorithm? Why does GIS use them? What do they make possible? (8.1-8.2)  How do data structures and algorithms connect to each other? (8.2 p.11)**

* **Note: You don't have to be able to remember, design or analyze specific algorithms for the quiz. You don't need to know how efficient various approaches are relative to each other (though I'm letting you know a bit just for your own information).**

**What are overlay operations? What is a Union and what is an Intersect?** Can you give examples of the types of problems they can help address**? Clip and Erase: what are they and when are they useful? What happens to the features in the clip or erase layer (not the input layer)?** What are differences and similarities between various overlay operations and spatial queries?  8.3, Price 2016 ch. 10.

Can you compare and contrast when you would use an overlay operation versus when you would use a spatial join? (Hint: Ponder how overlay operations rely on spatial intersection/overlap between layers...but spatial joins (think: inside spatial joins vs. distance spatial joins) aren't limited to only letting you study how features intersect across layers.)

**What is an intellectual hierarchy? What is a visual hierarchy? How are they supposed to relate? How are visual hierarchies constructed? What techniques do they use? (9.2) *Can you look at a map and discuss how the visual hierarchy is constructed, and how it, in turn, constructs a particular intellectual hierarchy?***

**What are figure and ground? How do you generate 'figure'? Why do you want to? (9.2)**

**What sorts of considerations go into a layout that is balanced and not distracting? (9.2)**

**What are good elements to have in the text of a title? (9.2)**

**What is a large scale map? What is a small scale map? (9.2)**

**When would having a north arrow on a map be misleading? (9.2)  (One type of hint: think about polar projections...)**

**Can you differentiate and exemplify between local, regional, and global spatial analyses? (10.1)**

**What is a Dissolve and when might you use one? (10.1)**

**Buffers: When would you use them? How do you decide on how big a buffer to make?** What sorts of modeling problems might buffers be insufficient for? Can you give an example of a buffer whose shape varies and depends on the values of attributes? What sorts of geometries do buffers result in? **What kind of coordinate system should you use?** **What is a sensitivity analysis?** (10.1)

A few suggestions of things to look back on, as they've generally had enduring value to your practice: levels of measurement; visual variables; projections and what properties they can preserve; classification techniques and when you might use them; if data has topology stored, what that means.

Quiz 1