

Geography 360

November 28, 2016

## Quiz II Review

## & a few other spatial analysis tools

### 1. *Questions and Announcements*

- Final Project Worksheet Due Now!
- Final Project Peer Review starting ~1 PM. Please do yours soon so your peer can read it and think about it before their TA conference.
- Final Project student-TA conference this week: Schedule yours now!  
No lecture Wednesday to allow for easier conference scheduling.
- Quiz II: Friday. Review online. Material through today.

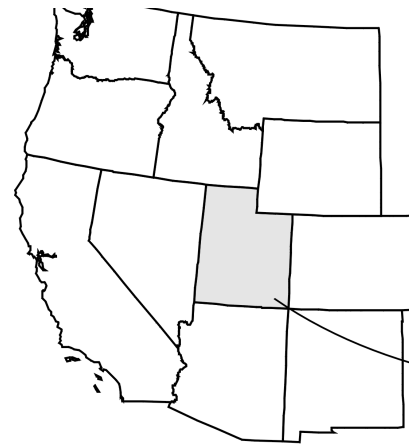
### 2. *A few thoughts about buffers and tools of spatial analysis*

### 3. *As you have questions: Quiz II Review.*

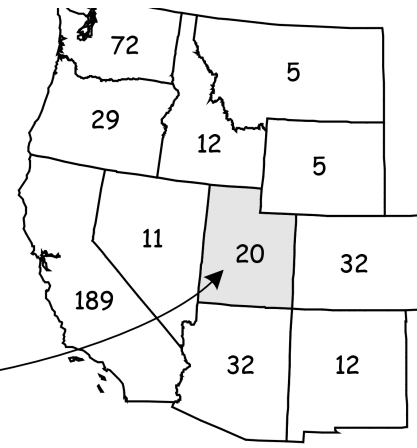
# The Scope of Spatial Analyses:

Local,  
'Neighborhood',  
'Global'

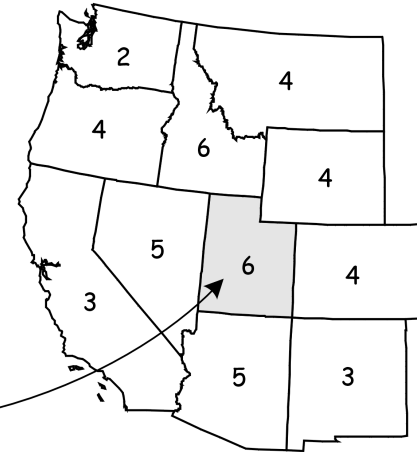
What do each of these  
terms mean here?



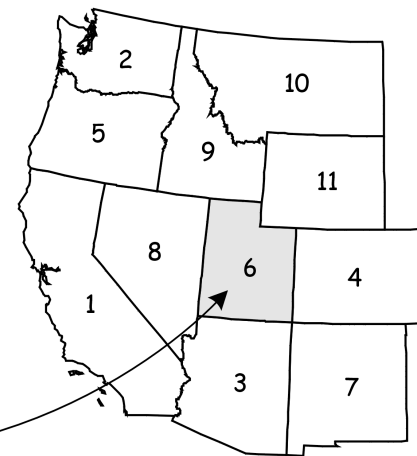
Local operation:  
1990  
population  
density



Neighborhood  
operation:  
number of  
adjacent  
states

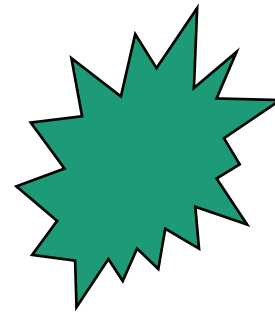


Global operation:  
rank order  
by total  
population  
in 1990



# A few more geometrical spatial analysis tools

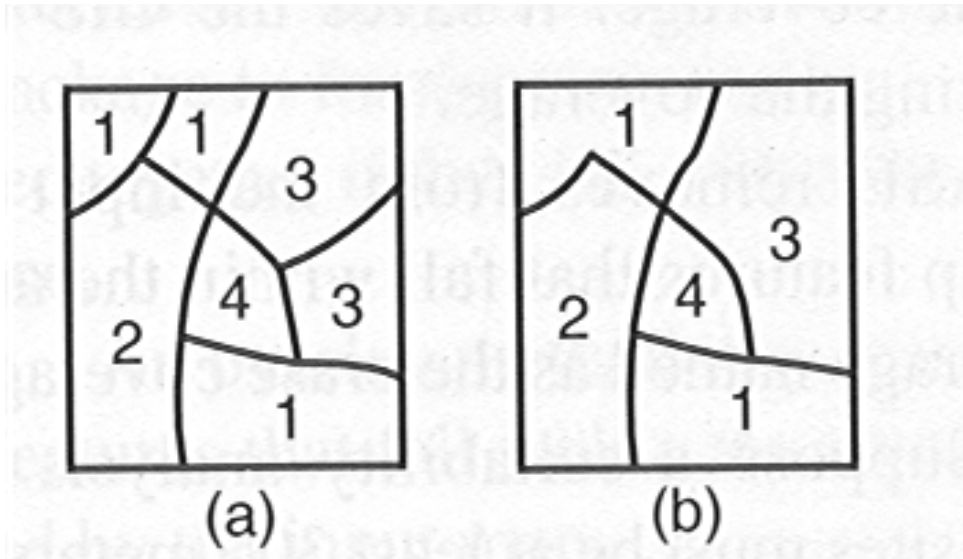
- Studying Shape
  - How compact or complicated is one shape compared to another?  
[An application: Looking for 'gerrymandering' of electoral districts]



- Calculating slope / aspect
  - How steep is the hill? Which direction does it face?
  - These are angles found using trigonometric inverses.

## Dissolve

Removes boundaries between adjacent areas that have the same attribute values, to create a single area.



(For example: combine all areas that are growing similar crops. Imagine 1 is wheat, 2 is rice, 3 is corn, and 4 is alfalfa.)

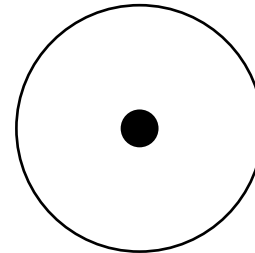
# Buffering

- Selects areas that are within a specified distance of selected features on a map
  - Applied to points, lines, or polygons
- Can also be used to create a polygon that is then used for additional operations
  - i.e. you can use your buffer to do other selections...
- Buffers should be done with [coordinates that have been transformed to have] linear units of measurement!

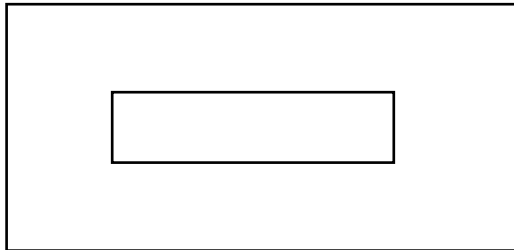
# Simple buffers, created around features



Line buffer



Point buffer



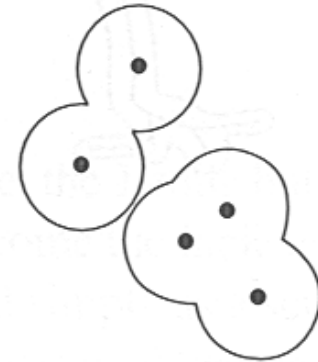
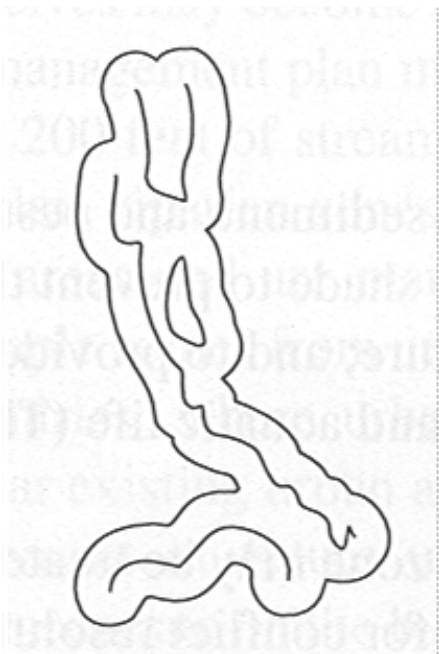
Polygon buffer

(What do these buffers share in common, geometrically?)

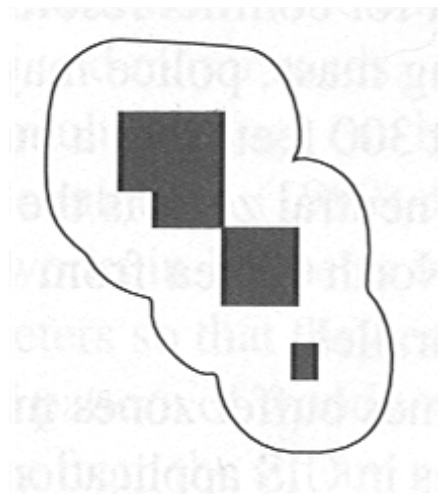
# Examples

Create buffers within 500 meters of the schools in our neighborhood:

Create buffers of all river bank  
Areas within 50 feet of the rivers



Buffer within 1 mile of the factory

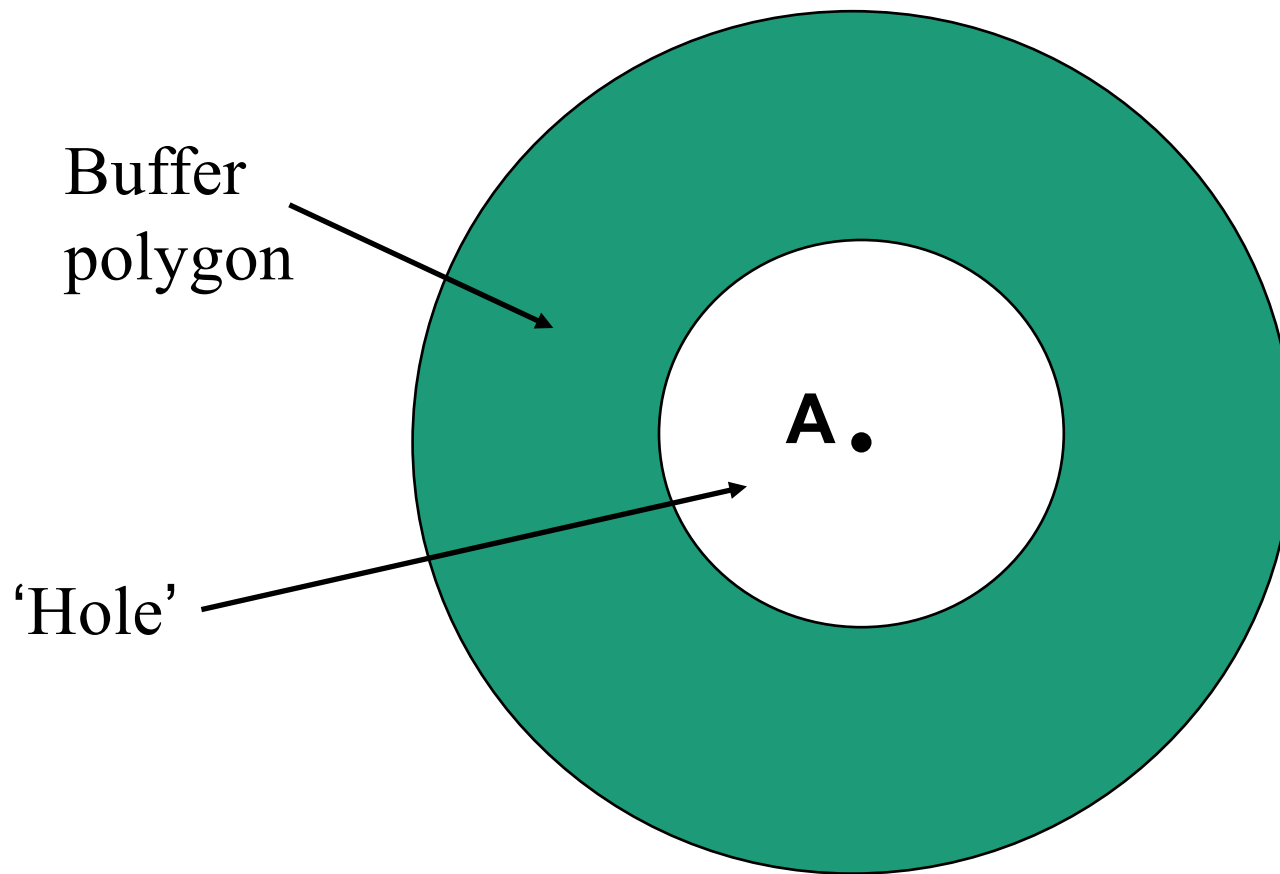


For each of these buffers:  
Give an example of a research  
question that could have  
prompted you to make the buffer.

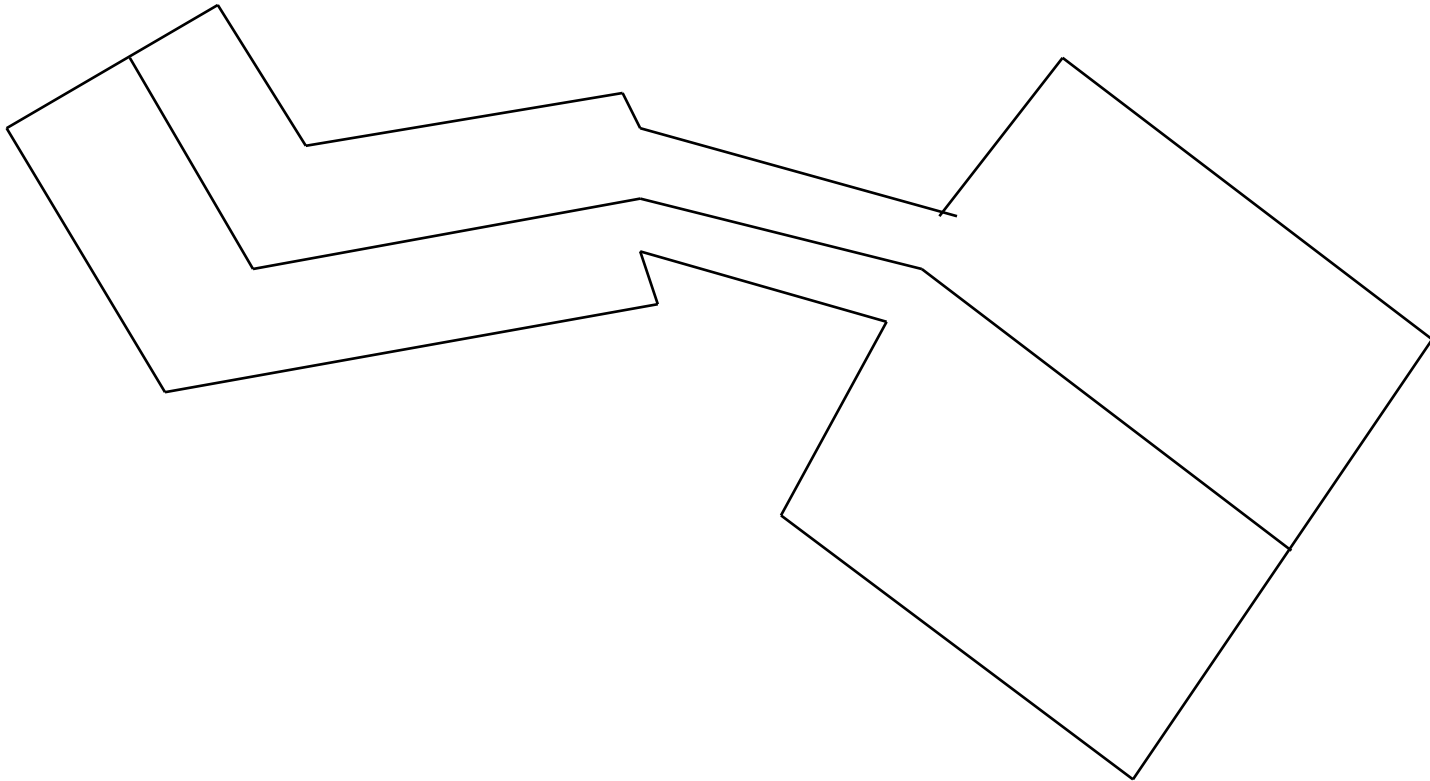


## More complicated buffers:

We want to know the areas that are at least 5 meters away from point A, but no more than 10 meters:



## Buffer distance can also be set to vary:



- Often, this is so you can vary the buffer based on some attribute associated with the feature in question
- e.g. flight path, height of plane, noise buffers

# A few more applications

- US Forest Service tells us logging zones must be a certain number of feet from a stream.  
We're the Longview Fiber Co., and we need maps of where we can log.
- If we know that a chemical spill will cause harm to anyone within 1 mile of its release site, we could buffer the places that chemical is stored, and use that information to plan our emergency response system