Buffers and Setbacks

- Analysis of ____________________
- Result in new output polygon layer
  - So different than select by location

When to Buffer

- Three applications of buffers:
  1.
  2.
  3.
Buffers and Setbacks

Buffers can be applied to:
- __________
- __________
- __________
- and selected graphics

Setbacks can be applied to:
- __________

Buffer/setback distance can be set:
- By user
- Based on features attribute value
- Single ring
- Multiple rings
Buffers and Setbacks

Special line buffers include:
- Side Buffers
- _________
- _________
- _________
- Ends Types
- _________
- _________

Buffers and Setbacks

What about overlapping areas?
- Dissolve options:
  - None
  - All
  - List

- Result in multipart polys
Map Overlay Analysis
- Manual map overlay has been used in various fields since the turn of the last century
- Used:
  - Tracing paper
  - Vellum
  - Mylar
  - and photographic techniques

Map Overlay
- Combines:
  - ____________
  - AND
  - ____________
  - of two or more input data layers
Map Overlay

- Requirements of input data layers:
  1. 
  2. 
  3. 

- Type determined by feature geometry:
  - Point in Polygon
  - Line in Polygon
  - Polygon on Polygon
  - Never point on point or line on line

- First layer is referred to as ___________
- Second layer is the ___________
  - Always a polygon
**Map Overlay**

- **Point in Polygon**
  - Input = point layer
  - Overlay = poly layer
  - Output = pt layer w/ attributes of both pts & polys

- **Line in Polygon**
  - Input = line layer
  - Overlay = poly layer
  - Output = line layer w/ lines dissected by polys & attributes of both lines and polys

- **Polygon on Polygon**
  - Input = poly layer
  - Overlay = poly layer
  - Output = poly layer w/ intersecting polys & attributes of both polys

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Map Overlay

Two ArcGIS overlay operations achieve all three:
- Union
- Intersection (intersect in ArcGIS)

They differ only in terms of:
- ______________
- ______________

Other overlay operations are just variations:
- Symmetrical Difference
- Identity

Map Overlay

Union
- Combines extents of __________
- Both inputs must be polygon
  - Note how tables are combined, empty fields

Map Overlay

Intersection
- Combines extents of __________
- Input may be pt, line or poly, overlay is poly
Map Overlay
- Symmetrical Difference
  - Combines extents of __________
  - Both inputs must be polygon

Map Overlay
- Identity
  - Preserves extent of ____________
  - Input may be pt, line or poly, overlay is poly

Editing Tools
- By the way:
  - Union and intersection are both editing tools in addition to overlay functions
Other Vector Data Analysis Tools

- **Dissolve**

Other Vector Data Analysis Tools

- **Eliminate**

Other Vector Data Analysis Tools

- **Update**
Other Vector Data Analysis Tools

- Erase

Sources of Error

- Datum/projection errors
- Poor registration
- Topological errors - slivers and gaps
- Incompatible levels of accuracy/detail