

Geographic information systems

Spatial analyses in GIS (Lesson 7)

Contents

- analyses in GIS
- spatial queries:
 - Select by location
 - Buffer
 - Overlay

Select by location

- spatial queries – based on the spatial relationship between features
- example of spatial query:
 - select features from one layer that overlap with features from another layer

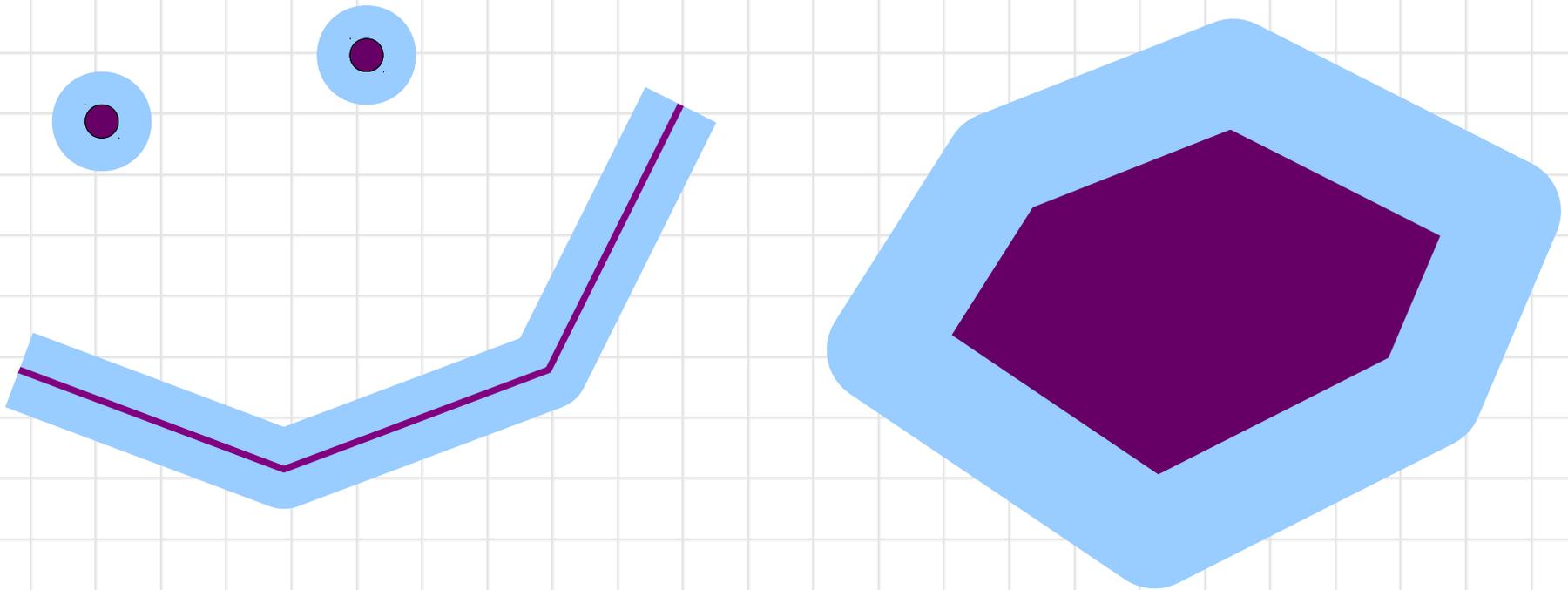
Vector → Research Tools → Select by location

- save selected objects as a new layer:

Layer → Save Selection As...

Buffer

- buffer area (zone) around the feature



Buffer

Vector → Geoprocessing Tools →

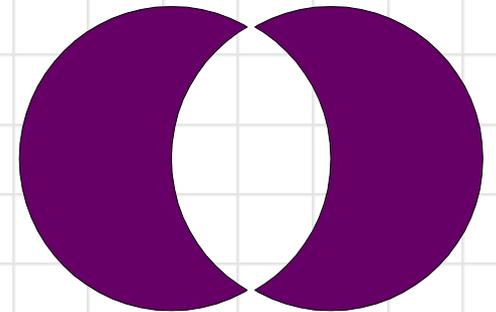
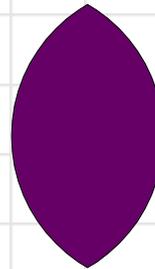
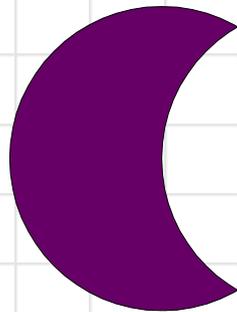
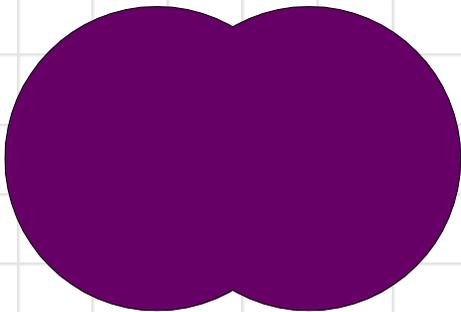
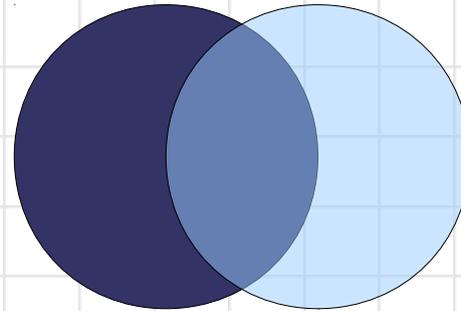
Fixed distance buffer

Variable distance buffer

- useful for tasks such as:
 - find all features within the 5 km distance from particular feature
 - define a buffer zone of water source
 - find out how many villages is located within a radius of 200 km from the power plant
 - ...

Overlay

- geometric operations:
 - union
 - difference
 - intersection
 - negation of intersection



Overlay

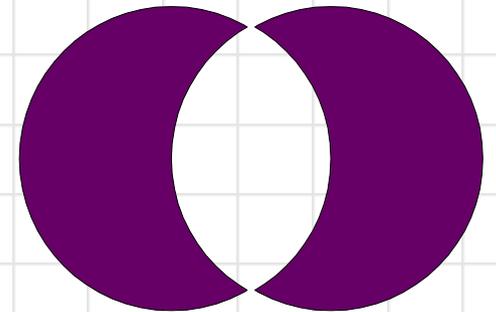
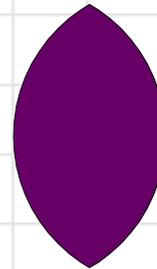
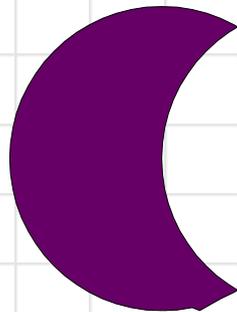
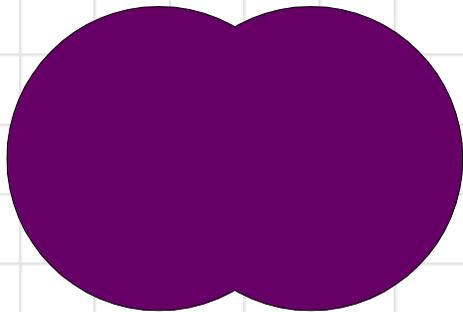
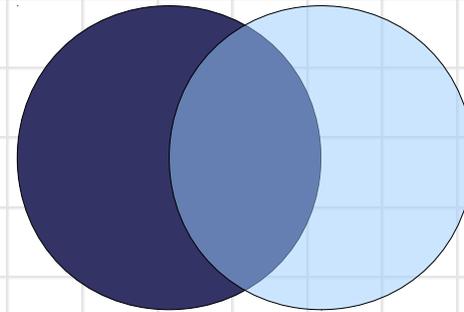
Vector → Geoprocessing Tools →

Intersect

Difference

Union

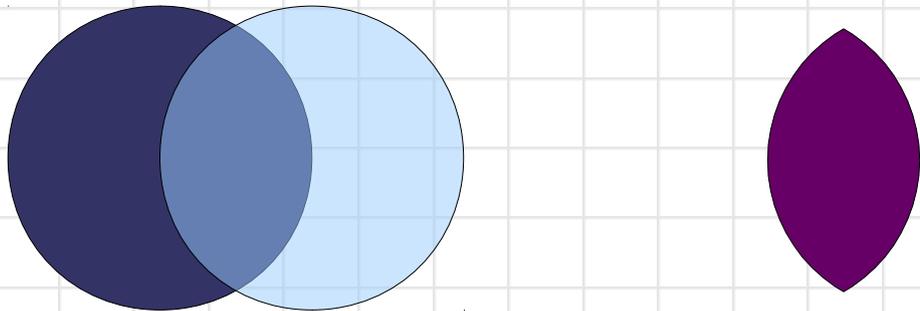
Symmetrical Difference



Clip

- clip one layer by another layer:

Vector → Geoprocessing Tools → Clip



- works also for point and line vector layers

Exercise

- Find out how many residents live in buffer zone of 5 km around railways in Žilina county.

Solution

1. Input data:

- point layer of towns and villages (mesta_sk_kr.shp)
- line layer of railways (zeleznice_kr.shp)
- polygon layer of counties (hranice_kraj.shp)

2. Select county by attribute (ZA county)

3. Select railways overlapping with ZA county (alternative – clip railways by ZA county)

4. Create buffer zone around railways

5. Select towns and villages located in buffer zone

6. Summarize the number of residents

Basic statistics for fields

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Basic statistics for fields

Vector → Analysis tools → Basic statistics for numeric fields

Vector → Analysis tools → Basic statistics for text fields

- counts only selected features
- if there are no features selected, counts all features

The End

Thank you for attention!