

# Assignment 3: Data Queries

(60 Points, 4 Points per Question)

Data available under [Resources>UK Data](#).

The provided [uk\\_data.gpkg](#) GeoPackage contains a variety of data layers for the United Kingdom, including the following that you will use in this assignment:

[uk\\_bound](#): boundary of entire United Kingdom

[countries\\_bound](#): boundaries of England, Wales, Scotland, and Northern Ireland

[district\\_bound](#): all districts in the United Kingdom

[geo\\_bedrock](#): bedrock geology

[geo\\_surfacial](#): surficial geology

[geo\\_faults](#): fault lines

[geo\\_dykes](#): geologic dykes

[airports](#): major airports

[places](#): major cities

[roads](#): major roads

[railroads](#): major railroads

The geology data are from the British Geological Survey. The political boundaries are from the United Kingdom Data Service. All other layers are from Natural Earth.

Use these layers, Select by Location, and Select by Attribute to answer the following questions. All questions can be answered with just querying methods.

\*There are some geometric issues with the geology data that will cause some tools to fail. To prevent this issue, you need to set “Invalid features filtering” to “skip (ignore) features with invalid geometries.” This is available here: Settings > Options > General.

## Questions

1. How many [districts](#) have mapped [faults](#) passing through them?
2. How many [districts](#) have mapped [dykes](#) passing through them?
3. How many [districts](#) contain at least some “CHALK” [bedrock geology](#) (hint: use “RCS\_D” field)?
4. How many [districts](#) contain at least some [geologic formations](#) from the Silurian Period (hint: use “MIN\_PERIOD” field)?
5. How many [districts](#) contain some peat [surficial geology](#) (hint: use “LEX\_D” field)?

6. How many **bedrock geology** features are mafic tuff that formed during the Carboniferous period (hint: use "RCS\_D" and "MIN\_PERIOD" fields)?
7. How many **districts** have a **road** and a **railroad** line passing through them?
8. How many **surficial geology** features are of the type alluvium (hint: use "LEX\_D" field).
9. How many of the **districts** occur completely within the **country** of Wales?
10. How many **districts** contain an **airport**?
11. In the **roads** dataset, how many features are of the type "Major Highway" (hint: use "type" field)?
12. In the **roads** dataset, how many are major highways that at least partially pass through Wales?
13. How many **dykes** formed during the Silurian period (hint: use "MIN\_PERIOD" field)?
14. How many **dykes** formed during the Silurian period and are of the type "FELSIC-ROCK" (hint: use the "RCS\_D" field)?
15. How many **dykes** occurred during the Silurian period, are of the type "FELSIC ROCK", and are completely within the **country** of Scotland?