

Name _____ Hour _____

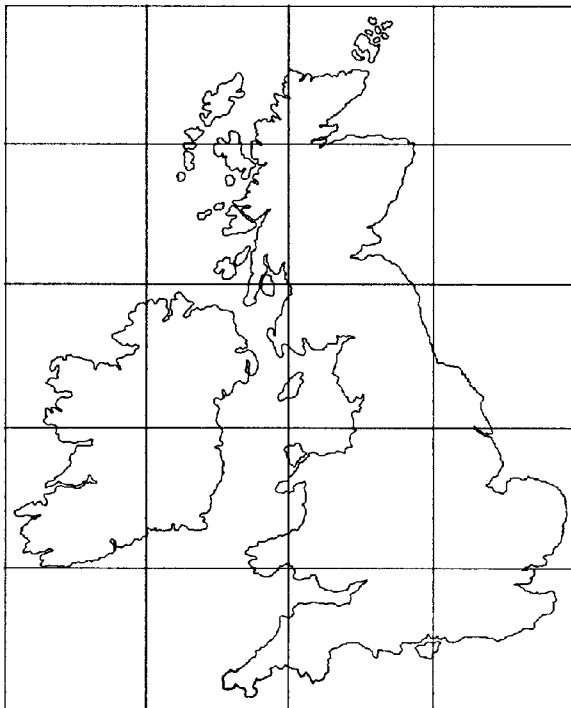
Box Dimension and Coastlines

We can utilize box dimension to measure the complexity of various shapes including the complexity of coastlines.

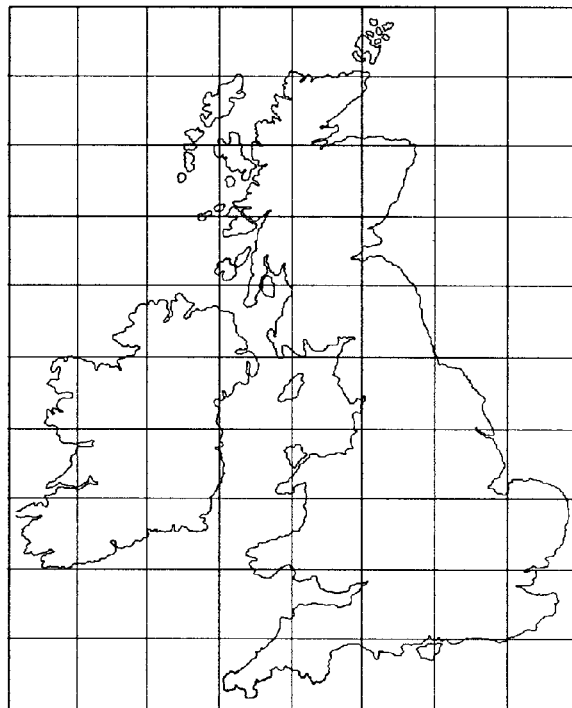
- For each of the six maps of Great Britain, use the boxcounting techniques practiced in Activity 3.6. Enter the results in the table. Be sure to count every box in the grid that contains any portion of the coastline within the interior of the box.

$1/(\text{scale } x)$	4	8	12	16	24	32
boxcount y						283

- Form a double logarithmic plot of the boxcounts y versus $1 / \text{scale } x$. Choose one of the following approaches.
 - Use double logarithmic graph paper as in Activity 3.3.
 - Plot points of the form $(\log 1/x, \log y)$ on standard graph paper as in Activity 3.4.
 - Use a computer package or graphing calculator as in Activity 3.5.
- Compute the box dimension of the coastline by determining the slope of the best fitting line.

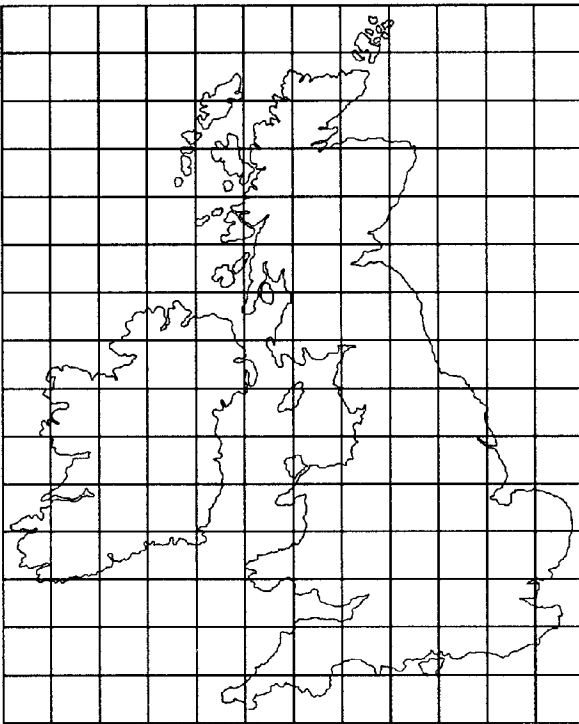


scale 1/4

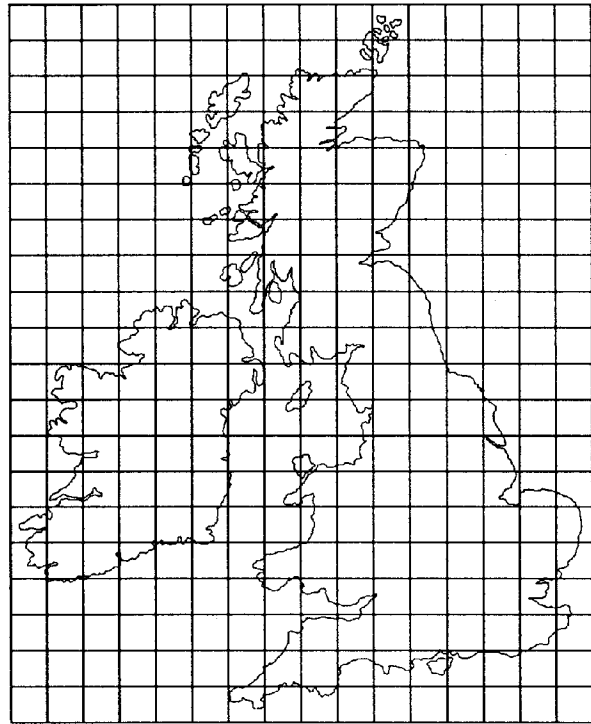


scale 1/8

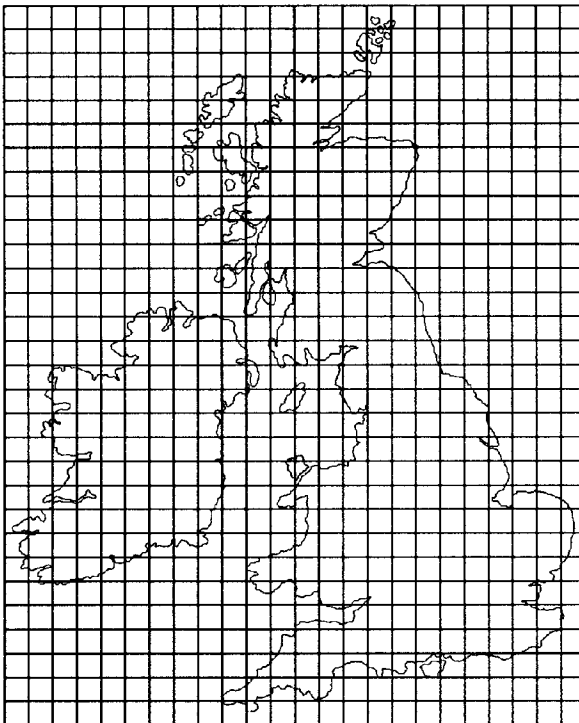
Box Dimension and Coastlines



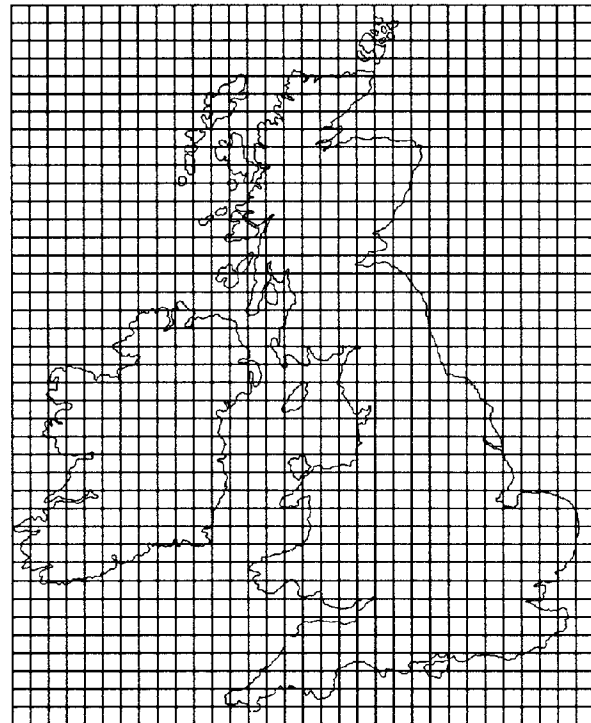
scale 1/12



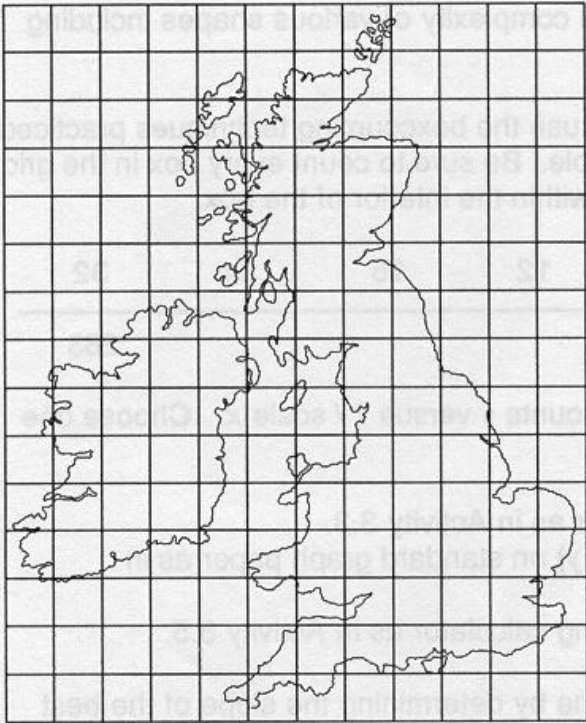
scale 1/16



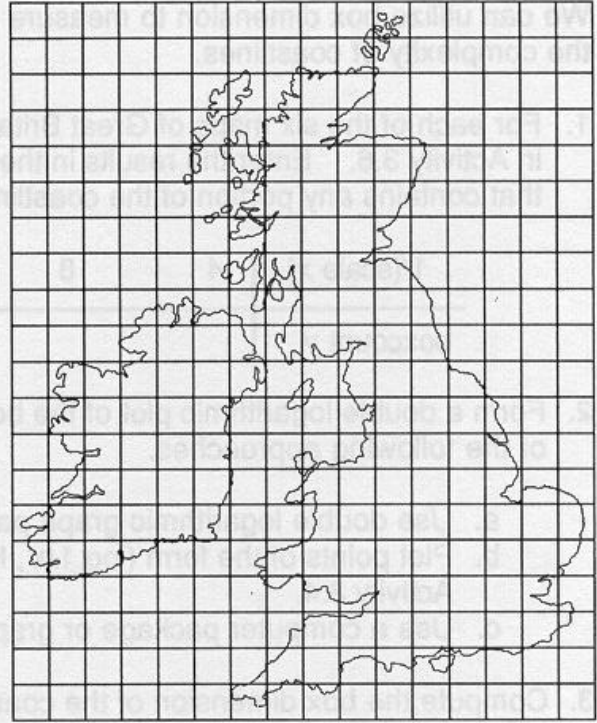
scale 1/24



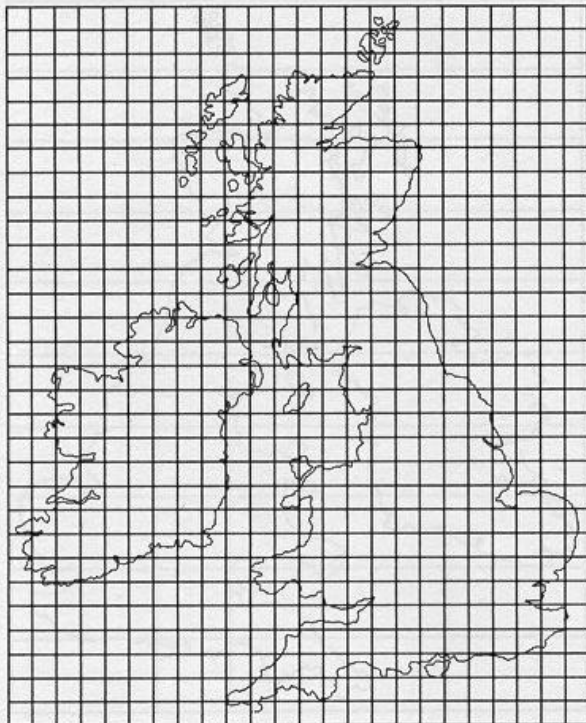
scale 1/32



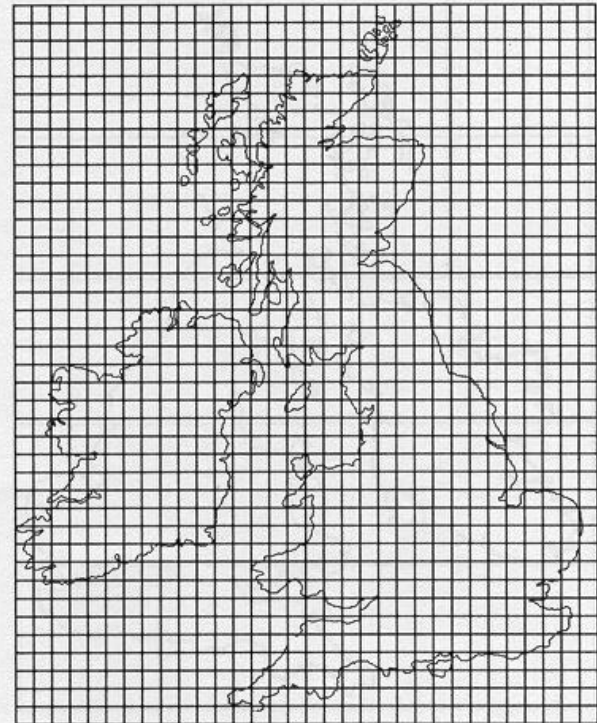
scale 1/12



scale 1/16



scale 1/24



scale 1/32