Shorter by helicopter?

In this activity you will find out how much further you have to travel to make a journey by road than if you could travel in a straight line by helicopter.

You will measure distances and try to find an approximate rule you can use to convert 'helicopter distances' into road distances.

Student information sheet

Using a road atlas

You can use a road atlas to find two distances between towns.

1   Use the table of distances, which gives the distance between the places if you travel by road.

2   Use a ruler to measure the 'helicopter distance' on the map (the straight line between the places) and then calculate the approximate distance using the map scale.
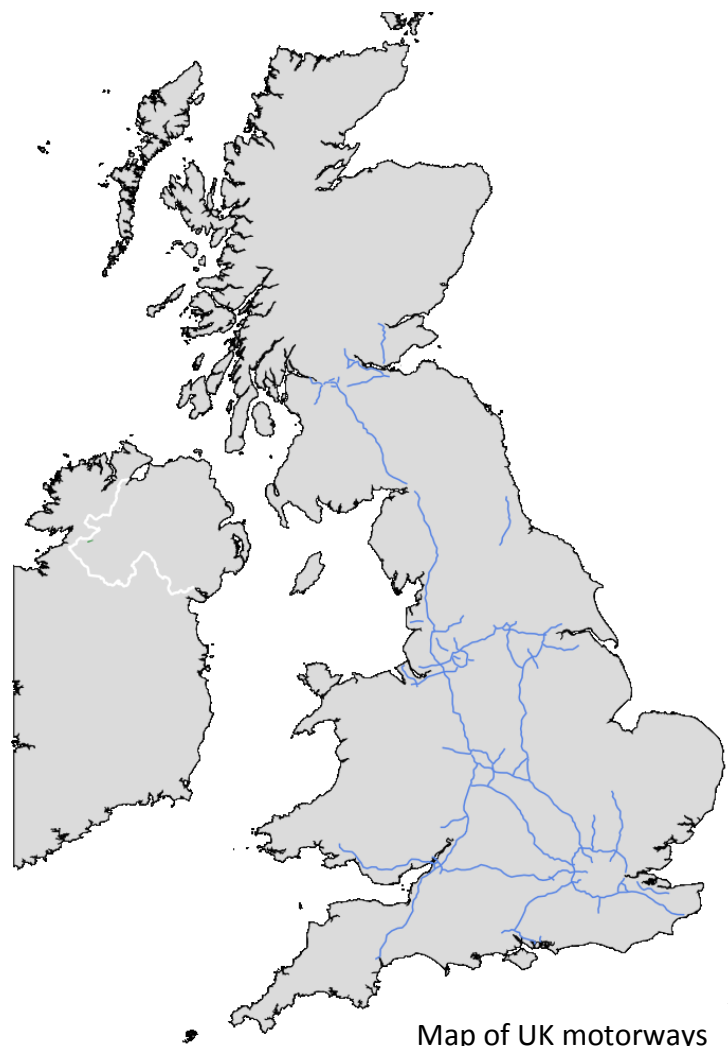
Think about

Why is the road distance longer than the helicopter distance?

Will you be working in miles or kilometres?

How will you scale up map distances to miles or kilometres?

How can you use a graph to find a rule that links the road distance to the helicopter distance?

Map of UK motorways

Student worksheet

Try these

1 Choose one place in England given in the mileage chart.

2 Find both the actual road distance from the table, and the 'helicopter distance' from the map, to at least 10 other places on the mainland of Britain.

3 Draw up a table of results.

4 By hand, or on a spreadsheet, plot points with 'helicopter distance' as the horizontal axis (along the bottom) and 'road distance' as the vertical axis (up the side).

5 Make sure that your axes are scaled correctly and that you plot the points accurately.

6 Draw a straight line of best fit through the origin.

Think about

Why does the graph go through (0, 0)?

7 Use the gradient of your graph to get a rule so that you can convert 'helicopter distances' to road distances, for places not shown in the table at the back of the atlas.

8 Check your rule with two places which are in the table but you have not used yet.

At the end of the activity

Did you find a connection between the distances by helicopter and by road?

If you have found a rule, how can you check that it works?

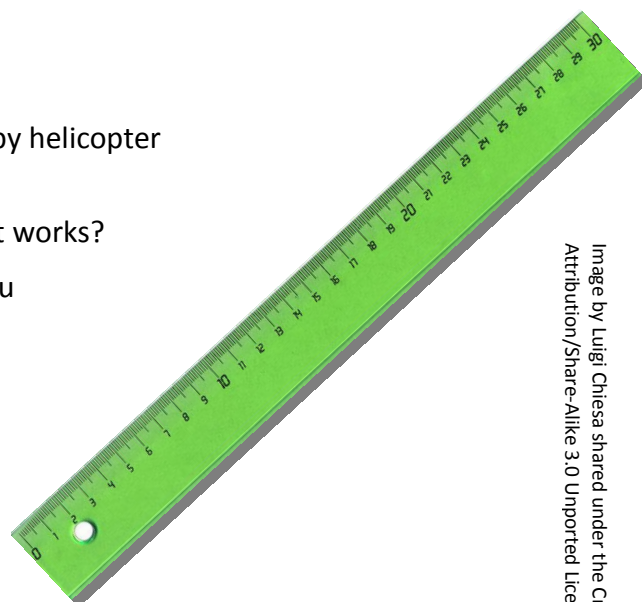Would your results have been more accurate if you had used a larger scale map?