# Round the World Lesson Plan 1

**Main focus of activity:**

- To be able to plan a round the world trip within the constraints of the tickets.

**Learning objectives:**

- To be able to work with co-ordinates in the first quadrant.
- To be able to work with co-ordinates in all four quadrants.
- To be able to work with column vectors between two points.

**Links to curriculum:** Links to the maths curriculum are as follows

- Co-ordinates
- Negative numbers
- Column Vectors
- Distances
- Translations

**Cross curricular links**

- There are geographical links in this activity which maps world cities and discusses world travel

**Activity outline:**

Introduction
The overall objective is to decide which acts can appear at which arena

- On a simple level this activity requires simple co-ordinates in the first quadrant only
- On a more advanced level the same principle is applied but with the need to work with co-ordinates in all four quadrants
- At a higher level the use of column vectors is required so that pupils can describe the translation between two cities. The most able students could use Pythagoras to work out shortest distances. Some students may even be able to use simple trigonometry to work out bearings.

The starter activity will show a world map with a set of co-ordinates overlaid (either in one quadrant, or all four quadrants dependent on ability). Pupils can be asked to write down the co-ordinates of points on the world map on mini whiteboards so that the teacher can access prior knowledge of co-ordinates. You may want to full screen display the 'Earth Map Grid' from the resource pack for a clearer view.

**Main Part of Lesson:**
Teaching and Learning:

- The idea is that pupils will create a round the world travel itinerary based on the criteria for a round the world ticket.
- Pupils will be asked to complete a table of co-ordinates for all of the major cities on the image. Where the cities are not exactly on the grids teachers can decide whether

pupils round to the nearest whole number or estimate the co-ordinates using fractions or decimals.

- The lower ability students are expected to only work with world cities in the first quadrant and use positive whole numbers.
- For a middle ability pupils will be expected to work out all of the above but will expected to do so in all four quadrants.
- At a higher level pupils will need to be able to carry out all of the above and use them to work out column vectors between the world cities. This can lead on to discussion and possible calculations about shortest distances including Pythagoras' theorem.

**Plenary:**

Is this a realistic way of working out a 'round the world' air ticket? Pupils are asked to discuss if this is realistic way of working out a real life 'round the world' airfare. Is it going to give you the shortest distances?  Are there any problems with working out a round the world air ticket this way.

**Extension Challenges:**

1) Using your column vectors, work out how far you will travel on your trip.

Assume the following:
- Each grid is 300 miles
- A plane consumes 5 gallons of fuel per mile
- Jet fuel costs $2/gallon

2) How much would the fuel be for your trip?

3) What would be a fair price for your trip? Justify your answers by considering food/service etc.