Where was this photo taken? Teachers' Notes

Curriculum Links

The Position and Orientation statements that are part of the Level 4 and Level 5 Geometry and Measurement section refer to interpreting points and lines on coordinate planes as well as working with scales, distances and directions on maps. Converting distances using a scale and calculating distances will require understanding of decimal place value and a confident knowledge of metric units of length.

Background

This task is based on a similar task described in some detail in the article *Using Mathematical Tasks built around "real" contexts: Opportunities and challenges for teachers and students* (http://www.merga.net.au/documents/Symposium5.3_ClarkeD.pdf). Doug Clarke and Anne Roche discuss the nature of what they call "Type 2 Tasks". These are tasks that contextualise mathematics and have a clear and practical purpose. The Signpost Task is one of these. Working with maps and scales affords the opportunity to work with converting and estimating distances on a map.

The multiple city signpost is a common feature of many tourist sites and students may already be familiar with the convention. The idea of the "mystery" city is engaging and adds a puzzle component to the task. It is also challenging as there is lots of information presented and you don't need to use all of it to solve the problem. There is room for evaluative decisions and strategic approaches.

The solution is that the photo was taken in Apia, Samoa. How students figure this out may involve many different approaches.

One solution involves noticing that the mystery city is about the same distance from both Sydney and Honolulu. Drawing a line showing the places in the Pacific that are a similar distance from those two cities provides a starting point. Making a circle around another city creates an overlap and then it is a matter of deciding how to pinpoint the location working with the scale. At some point students may want to switch from a world map to more regionalised maps so they can get more accurate distances.

Suggestions

The Clarke and Roche article referenced above provides another signpost task for students to solve.

The following links provide challenging work and research information in the areas of:

- Scaling: http://nrich.maths.org/4958
- Alternative Earth shapes: http://nrich.maths.org/1363
- Colouring of regions on maps: http://nrich.maths.org/6291