Module 12 Similarity

Module Performance Task: *Spies and Analysts*™

MYSTERY OF THE SEA

How big is the Bermuda Triangle?

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Connections to This Module

One sample solution might include changing the GPS coordinates to (x, y) coordinates.

- Create a triangle similar to the Bermuda Triangle. **(12.1)**
- Use indirect measurement to find the area of the Bermuda Triangle. **(12.2)**

The approximate area of the Bermuda Triangle is about 1 million square miles (2,600,000 square kilometers). depending on the choice of vertices.

MYSTERY OF THE SEA

Overview

To determine "how big" the Bermuda Triangle is, students can make the following assumptions.

- The vertices of the Bermuda Triangle are Miami, Florida, San Juan, Puerta Rico, and Hamilton, Bermuda.
- The area of the triangle indicates "how big" the Bermuda Triangle is.
- The section of Earth that includes the Bermuda triangle lies in a plane.

Be a *Spy*

First, students need to determine the information they need to answer the question. This can include doing the following:

- determine the GPS coordinates of the cities,
- convert the GPS coordinates to x- and y-coordinates.
- graph the coordinates and find the area of the triangle.

Be an *Analyst*

Help students understand that one way to answer the question, "How big is the Bermuda Triangle?" is to ask "What is its area?" Have a map of the area available so that students can use its scale and calculate a reasonably accurate approximation of distances in miles or kilometers between the cities. Then they can find the lengths of a base of the triangle, the altitude to that base, and use the formula $A = \frac{1}{2}bh$, where A is the area measured in square units.

Alternative Approaches

In their analysis, students might:

- use algebraic methods they learn in this module, as shown at the left.
- enclose the Bermuda Triangle in a rectangle made up of four triangular regions—three right triangles and the Bermuda Triangle. The approximate area of the Bermuda Triangle is then the difference between the area of the rectangle minus the sum of the areas of the right triangles.