

*Island of the Blue Dolphins*, Chapter 5  
**Determining Scale and Distance**

**Grade Level**

Upper Elementary: Third Grade through Fifth Grade

**Subject**

Literacy and Language Arts, Mathematics, Science

**Common Core Standards**

4.RI.7, 4.MD.2

**Next Generation Science Standards**

4-ESS2-2

**Background Information**

In chapter 5, there is trouble on the island, and the people of Ghalas-at begin to talk about going elsewhere. Some want to migrate to Santa Catalina Island. But the new chief decides to travel to the mainland to seek help instead. How far was the chief's trip? How great is the distance between Karana's home (on San Nicolas Island) and Santa Catalina? How far is each of these islands from the mainland?

This activity teaches students to use maps to answer their questions about distance. Students will measure distance on the surface of a map and then use a variety of tools to understand what their measurements mean for the same distance on the surface of Earth.

**Materials**

- ! Copy of activity sheet for each student (provided)
- ! Copy of "The California Channel Islands" map printed on 8x11-inch paper\* for each student; can be in color or black and white (provided)  
<https://www.nps.gov/subjects/islandofthebluedolphins/upload/The-California-Channel-Islands-smaller-file.pdf> OR  
<https://www.nps.gov/subjects/islandofthebluedolphins/upload/The-California-Channel-Islands-larger-file.pdf> (higher resolution file)
- ! Scissors for each student
- ! Class set of *Island of the Blue Dolphins*  
\* If the map is printed on larger paper the scale ruler on the activity sheet will not be accurate.

**Procedure**

1. Give each student copies of the map and activity sheet.
2. Ask students to examine their maps and identify each of the eight California Channel Islands. Identify San Nicolas Island, Karana's home. Ask students to also identify cities and other locations shown along the coast of the California mainland.

3. Point out the map's legend. Discuss with students the types of information found in legends. For example: A legend provides information to help a map make sense. It provides the explanation of any symbols used on a map. It also identifies the map's scale. A map scale shows the relationship (or ratio) between distance on a map and the corresponding distance on the ground.
4. Ask students to identify the boundaries of Channel Islands National Park and Channel Islands National Marine Sanctuary. The natural and cultural resources on these islands and in their surrounding waters are protected.
5. Go over the directions for completion of the activity sheet.
6. When students have completed the activity sheet, have a class discussion about the challenges of traveling from San Nicolas Island to other islands and to the mainland. Have students consider ocean currents, tides, weather, and difficulty of long-distance travel across open water. Discuss possible routes.

### Enrichment Activities

1. To help students develop a sense of the distance from San Nicolas Island to the mainland, relate the distance (60–65 miles) to a local distance that is relevant to the students, perhaps the distance from their community to another town/city in the area. Why not travel directly between two points (“as the crow flies”), whether on land or on water? What might cause “detours” to direct routes? (mountains, rivers, ocean currents, paddling distances, etc.)
2. For more advanced students, this exercise provides an opportunity to introduce ratios and proportions. A map scale shows the ratio between distance on a map and the corresponding distance on the ground. The scale of this map: 1.25 inches equals 25 miles. The measured distance between San Nicolas Island and Palos Verdes Point is about 3.25 inches. That sets up the following ratio (proportion):

$$\frac{1.25 \text{ inches}}{25 \text{ miles}} = \frac{3.25 \text{ inches}}{x \text{ miles}}$$

Since the unknown number (x) is in the denominator, use the cross product method to solve. The cross product is the product of the numerator of one of the ratios and the denominator of the second ratio. The cross products of a ratio (proportion) are always equal.

$$\begin{aligned} 1.25x &= 81.25 \\ x &= 65 \text{ miles} \end{aligned}$$

Name \_\_\_\_\_

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**Determining Scale and Distance**

**Directions:** Cut out the scale ruler below. Use it to measure and estimate the distances between San Nicolas Island and Santa Catalina Island and Palos Verde Point on the map the teacher has given you. Then measure and estimate the distance between the two islands. Work carefully to make your estimates as accurate as possible. Record your estimated distances below.

1. " Start: San Nicolas Island "  
End: Palos Verde Point "

Estimated distance (miles): \_\_\_\_\_

2. " Start: Santa Catalina Island "  
End: Palos Verde Point "

Estimated distance (miles): \_\_\_\_\_

3. " Start: San Nicolas Island "  
End: Santa Catalina Island "

Estimated distance (miles): \_\_\_\_\_

