Plan the Route

Use map essentials to plan a trip across an island

SS24.7.1a "Explain and demonstrate the use of map essentials, including direction, distance, legend, latitude, longitude, map type, projection, scale, and symbols."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB As you read, underline the map details the crew uses to plan its route. Circle the map features that help the crew understand the land.

A Route Across Gull Island

1. A rescue crew is planning a hike across imaginary Gull Island. They choose a topographic map because contour lines show steep slopes that might slow them down. A north arrow points toward the top of their map. Its legend explains that a dashed line represents a trail, a wavy line represents a stream, and a small triangle marks a hilltop. These symbols let the crew read the landscape without seeing it from above. A plain road map would show routes but offer less detail about the island's slopes.

2. The map's scale says 1 centimeter represents 2 kilometers on the ground. From the ranger station, a straight trail segment runs 3 centimeters east to a lookout. A second straight segment runs 2 centimeters north from the lookout to a stream crossing. The crew plans to follow both segments rather than walk straight across the hills. They use the north arrow to check each turn and the scale to estimate the full walking distance. A ruler measures distances on the map, not actual steps on the trail.

3. The ranger station lies near 40°00' N, 73°00' W. The stream crossing lies near 40°02' N, 72°56' W. Latitude measures position north or south of the equator, while longitude measures position east or west of the prime meridian. The map uses a Mercator projection, a way to draw Earth's curved surface on flat paper. On Mercator maps, places far from the equator appear larger than they really are compared with places near the equator. For this short route, the crew uses the map's scale to plan travel.

2 ANSWER WITH EVIDENCE

Use the passage

1. Using the scale, how far does the crew travel east from the ranger station to the lookout?

2. The crew needs to find the stream and avoid steep slopes. Which legend symbol helps them find the stream, and which map feature helps them spot steep slopes?

3. Which is farther north, the ranger station or the stream crossing? Use their coordinates to explain.

4. Why might this Mercator map give a misleading size comparison between Gull Island and an island near the equator?

3 YOUR TURN

Your own words

Design a map plan for an imaginary place in one paragraph. Name its map type and projection, give a scale and a starting point's latitude and longitude, and describe a route with its compass direction, map distance, and real distance. Include two symbols with legend meanings and one limitation of the projection.

ANSWER KEY

Plan the Route

GRADE 7 · SS24.7.1a

PART 1 · READ AND MARK

As you read, underline the map details the crew uses to plan its route. Circle the map features that help the crew understand the land. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Using the scale, how far does the crew travel east from the ranger station to the lookout?	**The lookout is 6 kilometers east of the ranger station.**
2	The crew needs to find the stream and avoid steep slopes. Which legend symbol helps them find the stream, and which map feature helps them spot steep slopes?	**The wavy line marks the stream. Closely spaced contour lines show steep slopes.**
3	Which is farther north, the ranger station or the stream crossing? Use their coordinates to explain.	**The stream crossing is farther north. Its latitude is 40°02' N, compared with 40°00' N for the ranger station.**
4	Why might this Mercator map give a misleading size comparison between Gull Island and an island near the equator?	**Mercator maps make places farther from the equator appear larger relative to places near the equator.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My topographic map shows imaginary Pine Bay using a Mercator projection. Its scale is 1 centimeter to 3 kilometers. The clinic is at 18° N, 66° W. A straight trail runs 2 centimeters west from the clinic to a shelter, so the route is 6 kilometers. In the legend, a square means shelter and a circle means well. This projection makes places far from the equator appear too large compared with places near the equator.

For question 2, accept contour lines as the map feature; closely spaced lines indicate steeper slopes. For the open task, check that the stated real distance matches the student's scale and map distance.