Routes and Regions

Use scale and direction, then examine distortion on world maps.

6.C.1.2.A "Apply the concepts of scale, distance, and direction to explain the relative location of physical and human places using maps and globes; explain how various map projections are distorted."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each map distance and scale, circle direction words that locate places, and number the two kinds of distortion described for flat world maps.

A Town Walk and a World Map

1. A town planner describes a map for a weekend walk. Its scale says 1 centimeter on paper stands for 1 kilometer on the ground. The map's north arrow points up, so east is right, west is left, and south is down. The library is the starting point. The bridge is 4 centimeters east of the library. A wetland lies 2 centimeters north of the bridge. The school is 3 centimeters west of the library, and a rocky hill is 2 centimeters south of the school.

2. Because the map shows straight-line distances, the bridge is 4 kilometers east of the library, but a walking route may be longer. The wetland is north of the bridge and northeast of the library. The hill is southwest of the library: first travel west toward the school, then south. From the school to the library is 3 kilometers in a straight line. A visitor checking a globe would not see this small town in such detail. A globe works better for comparing places across Earth.

3. Now picture the planner choosing a world map for a travel poster. A globe shows Earth as a round object, but a flat map must spread that curved surface onto paper. This causes distortion. On a Mercator projection, areas near the poles look larger than they are compared with areas near the equator. An equal-area projection keeps the relative sizes of regions accurate, but their shapes may look stretched. Neither flat map can keep every size, shape, distance, and direction correct at once. The planner checks a globe when comparing the sizes of places.

2 ANSWER WITH EVIDENCE

Use the passage

1. How far and in what direction is the bridge from the school in a straight line? Use the scale to explain.

2. In which direction is the wetland from the library? Give the two distances that help you find that direction.

3. Where is the rocky hill compared with the library? Include directions and distances along the route through the school.

4. Why should the planner not use a Mercator map to compare the sizes of places near the poles and the equator? What could the planner use instead?

3 YOUR TURN

Your own words

Invent a different town map with a starting point, one human landmark, and one natural feature. Choose a scale, state each place's direction and map distance from the starting point, convert both distances to ground distances, and explain one size distortion a Mercator world map could show.

ANSWER KEY

Routes and Regions

GRADE 6 · 6.C.1.2.A

PART 1 · READ AND MARK

Underline each map distance and scale, circle direction words that locate places, and number the two kinds of distortion described for flat world maps. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How far and in what direction is the bridge from the school in a straight line? Use the scale to explain.	**The bridge is 7 kilometers east of the school. The school is 3 centimeters west of the library, and the bridge is 4 centimeters east, for a total of 7 centimeters at 1 kilometer per centimeter.**
2	In which direction is the wetland from the library? Give the two distances that help you find that direction.	**The wetland is northeast of the library: 4 kilometers east to the bridge, then 2 kilometers north.**
3	Where is the rocky hill compared with the library? Include directions and distances along the route through the school.	**The hill is southwest of the library, 3 kilometers west to the school and then 2 kilometers south.**
4	Why should the planner not use a Mercator map to compare the sizes of places near the poles and the equator? What could the planner use instead?	**Mercator makes areas near the poles look too large compared with areas near the equator. The planner could use a globe or an equal-area projection to compare relative sizes.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My map starts at the town square, with a museum 2 centimeters north and a pond 5 centimeters east. The scale is 1 centimeter for 2 kilometers. That puts the museum 4 kilometers north of the square and the pond 10 kilometers east. If this town were near the Arctic Circle, a Mercator world map could make its region look too large compared with a region near the equator.

Accept equivalent compass directions and correctly converted distances. For the open task, landmarks and scale may vary, but both conversions and the Mercator size distortion must be accurate.