Teacher's Key

How Maps Distort the World: Mercator and Country Size (Level C1)

Vocabulary Matching

1 sprawls = **N**
2 inflates = **A**
3 mariners = **H**
4 plot = **L**
5 bearing = **G**
6 trade-off = **M**
7 default = **I**
8 entrenched = **E**
9 skews = **D**
10 sidestep = **O**
11 contentious = **J**
12 legacy = **K**
13 endorsed = **B**
14 non-binding = **C**
15 caveat = **F**

Fill in the Blank

1 sprawls
2 inflates
3 mariners
4 bearing
5 trade-off
6 default
7 entrenched
8 skews
9 sidestep
10 legacy
11 contentious
12 endorsed
13 non-binding
14 caveat

True or False

1 **True.** The reading gives about fourteen times the area.
2 **False.** It stretches the map more and more toward the poles.
3 **True.** The reading gives 1569.
4 **False.** His own notes explain that latitude had to be stretched toward the poles.
5 **True.** That is why it was useful for navigation.
6 **True.** The reading says this quietly shrank Greenland back to its true size.
7 **False.** A Scottish clergyman had devised almost the same projection more than a century earlier.
8 **False.** It keeps areas in true proportion and bends the shapes of the continents a little.
9 **False.** It passed by 164 votes to one, with six abstentions. The United States cast the only vote against.
10 **True.** No country is legally required to change its maps.

Language Focus: Second Conditional

Example answer: If I **could** redraw the world map for my school, I **would choose** an equal-area projection, and I **would add** a small note explaining what it distorts.

Comprehension Questions: Model Answers

1 The Mercator projection stretches the map more and more toward the poles. Greenland lies far north, so it is drawn roughly ten times too large, while Africa, which lies near the equator, is stretched only a little.

2 A curved surface such as a globe cannot be flattened without being stretched or torn, just as an orange peel splits if you press it flat. Every flat map must therefore distort something.

3 It was designed to help sailors navigate. A captain could plot a course with a ruler, because a straight line on the chart matched one constant compass bearing that the ship could follow.

4 His own notes on the map explain that the degrees of latitude had to be stretched toward the poles, so he understood that sizes would be distorted in exchange for the navigational benefit.

5 A flat map cannot keep shapes, areas, and distances correct everywhere at once, so improving accuracy in one respect costs accuracy in another. Mercator kept directions and angles and gave up area.

6 Mercator's picture moved from sea charts onto classroom walls, and a modified version, Web Mercator, was adopted by Google Maps in 2005. It became the default, and over generations the habit became entrenched.

7 Some historians pointed out that a Scottish clergyman had devised almost the same projection more than a century earlier and that it stretches shapes badly.

8 Open answer. A strong answer separates the cause (a debated question about prejudice versus convenience) from the effect (a picture in which Europe, Russia, and Canada look large and equatorial countries look small), and notes that the effect can be seen on any map whatever the intent.

9 The African Union backed the #CorrectTheMap campaign in 2025, and in September 2026 the UN General Assembly endorsed the call by 164 votes to one. The resolution is non-binding, so no country must change its maps. The writer's caveat is that a new map will not change attitudes by itself and Equal Earth has distortions too.

10 Not Given. The reading says Mercator knew that latitude had to be stretched, but it does not say whether he was the first person to realize that a flat map must distort a globe.

11 No. The writer says a new map will not change attitudes by itself and that switching maps will not undo centuries of distorted images.

12 Open answer. A strong answer notes that the ending moves from explanation to action: it invites readers to test the distortion for themselves, so the purpose is mainly to invite readers to test the idea, not to summarize it.

Notes on the Evidence

- Africa and Greenland. Africa is about 30.3 million square kilometers (Al Jazeera, September 2026; the Correct The Map site says more than 30 million). Greenland is 2,166,086 square kilometers (CIA World Factbook). The ratio is about 14, which NPR, Wikipedia, and the campaign all give. Wikipedia says Greenland "appears the same size as Africa" on Mercator maps. A rough calculation with the area scale factor (the square of the secant of the latitude) suggests Greenland appears somewhat smaller than Africa, perhaps two thirds to three quarters as large, so the reading says "almost as large". This is the editor's estimate, not a published figure. Scale factors: 4 at 60 degrees, about 11.7 for Greenland's median latitude of about 73 degrees (Wikipedia, Mercator projection), so "roughly a factor of ten" is a hedged simplification. Greenland is only slightly larger than Mexico (about 1.97 million square kilometers, Wikipedia).
- Mercator's intent. The 1569 map was titled for the use of navigators and mapped constant-bearing courses (rhumb lines) as straight lines (Wikipedia, Mercator 1569 world map). Mercator's legend explains that latitude degrees are increased toward the poles. Wright's mathematical formulas came later. The claim that the map was designed to favor colonial powers is Peters's argument (reported by Atlas Obscura, with historians such as Matthew Edney noting that it was used by some pro-imperial writers), not a documented aim of Mercator, so the reading treats it as contentious. Some sources say Mercator was Flemish, others Dutch. The reading follows Al Jazeera and Wikipedia (Flemish).
- Equal Earth. Developed by Bojan Šavrič, Bernhard Jenny, and Tom Patterson. NPR says 2017, Wikipedia and the paper (International Journal of Geographical Information Science) give 2018 for the introduction. The reading says "Introduced in 2018". It is equal-area and distorts shapes. Web Mercator: Google Maps adopted it in 2005 (Wikipedia). Google Maps desktop began showing a globe when zoomed far out in August 2018 (TechCrunch, Engadget). Whether mobile apps changed was not checked, and the reading does not claim it.
- African Union and UN. NPR (August 21, 2025) reports that the African Union backed the #CorrectTheMap campaign run by Africa No Filter and Speak Up Africa; the exact date of the African Union decision was not confirmed in the sources opened, so the reading says only "In 2025". The General Assembly vote: 164 in favor, 1 against (the United States), 6 abstentions (Al Jazeera, The National, The Week). The date appears as September 4, 2026 in Al Jazeera, The National, NPR, and Correct The Map, and as September 5 in The Week, Ukrmedia, and the Washington Post URL (a time zone or publication-date difference); the reading says only "September 2026". Togo led the proposal on behalf of African Union members. The "in no way challenges the use of the Mercator projection for maritime and aerial navigation" wording comes from one report (Al Jazeera) and was not found in the others, so the reading attributes it to "one report". Al Jazeera's explainer contains an inverted phrase ("14 times smaller"); it was not used.
- Peters and Gall. Arno Peters introduced his map publicly in 1973 (Wikipedia). James Gall presented the same projection in 1855 (Wikipedia, Gall-Peters projection); Atlas Obscura says the 1860s, so the reading says only "more than a century earlier". Boston Public Schools adopted the Gall-Peters map in March 2017 (WBUR, NPR). One report (The World, 2017) says Mexico is "much larger" than Alaska on a true-size map; Mexico is only about 14 percent larger (about 1.97 versus 1.72 million square kilometers, Wikipedia), so this claim was not used. Swab and Alderman (University of Tennessee, via The Conversation) report "over 200 major projections" and the caveat that switching maps will not undo centuries of distorted images; the reading says "by one count". All figures are as of October 2026.