How Maps Distort the World: Mercator and Country Size

Name Date Class

Reading

1 Picture the world map on a classroom wall. Greenland **sprawls** across the top, looking almost as large as Africa, and nothing about the picture seems wrong, because most of us grew up with maps like it. Yet Africa covers roughly 30 million square kilometers, about fourteen times the area of Greenland. The island looks enormous only because of the way the map was drawn, and that choice has a history worth knowing.

2 The cause is stretching. A globe cannot be pressed flat without some distortion, much as an orange peel splits if you flatten it on a table. The Mercator projection keeps the lines of latitude parallel and stretches the map more and more toward the poles. Near the equator the stretching is mild. At 60 degrees north, the latitude of Oslo and Helsinki, areas are drawn about four times too large. Greenland lies so far north that the effect **inflates** it by roughly a factor of ten. If Greenland were drawn at its true size, it would look only slightly larger than Mexico.

3 None of this was a blunder. In 1569 the Flemish cartographer Gerardus Mercator published a large world map whose Latin title says it was adapted for the use of navigators. It was designed for **mariners**. On a chart drawn this way, a captain could **plot** a course with a ruler, because a straight line crossing the meridians at one angle matched a single compass **bearing** that a ship could follow. If you were a sixteenth-century captain, you would find this astonishingly practical. Mercator also knew the price. His own notes on the map explain that the degrees of latitude had to be stretched toward the poles.

4 The price was size. Every flat map is a **trade-off**, because no map can keep shapes, areas, and distances correct everywhere at once. Mercator protected directions and angles and gave up area, a bargain for ships, and sea charts are still commonly drawn this way. The trouble began when the same picture moved onto classroom walls and, in a modified form known as Web Mercator, into online mapping after Google Maps adopted it in 2005. It became the **default**, the map you get unless somebody chooses another. Over generations the habit grew **entrenched**. In 2018, Google Maps on desktop began showing a globe when you zoom far out, which quietly shrank Greenland back to its true size.

5 Critics have long argued that the habit **skews** how people see the world. In the 1970s Arno Peters promoted an equal-area map and claimed that the Mercator picture favored colonial powers. Map historians replied that a Scottish clergyman had devised almost the same projection more than a century earlier, and that it stretches shapes badly. Boston's public schools made headlines in 2017 by switching their classroom maps to it, and some historians were openly critical. No flat map can **sidestep** the problem. If a map kept every area accurate, the continents would look warped, and if it kept every shape, the sizes would drift.

6 Whether Mercator's long reign reflected prejudice or simple convenience is **contentious**, and Mercator himself was working for sailors, not for schools. The **legacy**, however, is easy to see: Europe, Russia, and Canada loom large, while countries near the equator look smaller than they are. In 2025 the African Union backed #CorrectTheMap, a campaign run by two organizations, Africa No Filter and Speak Up Africa, that asks institutions to use the Equal Earth projection. Introduced in 2018, it keeps areas in true proportion and bends the shapes of the continents a little. In September 2026 the UN General Assembly **endorsed** the call in a resolution that passed by 164 votes to one, with six abstentions. The United States cast the only vote against. The resolution is **non-binding**, and one report says it explicitly leaves Mercator in place for navigation at sea and in the air.

7 Here is the **caveat**: a new map will not change attitudes by itself. Equal Earth has distortions of its own, and by one count there are more than 200 major projections, each with a different compromise. Even supporters of the change say that switching maps will not undo centuries of distorted images. A simple experiment shows how much the choice matters. Try dragging Africa northward on one of the free true-size map tools online, and watch what happens to it.

Vocabulary Matching

Match each word from the reading with its meaning. Write the letter on the line.

1	**sprawls**	_____	**A**	makes something look larger than it is
2	**inflates**	_____	**B**	publicly declared support for something
3	**mariners**	_____	**C**	not legally forcing anyone to obey
4	**plot**	_____	**D**	pushes something toward a biased picture
5	**bearing**	_____	**E**	firmly established and hard to change
6	**trade-off**	_____	**F**	a warning that limits how far to trust a claim
7	**default**	_____	**G**	the compass direction of travel
8	**entrenched**	_____	**H**	sailors who help to navigate ships
9	**skews**	_____	**I**	the standard choice used unless changed
10	**sidestep**	_____	**J**	likely to cause disagreement or argument
11	**contentious**	_____	**K**	something from the past that still has effects
12	**legacy**	_____	**L**	mark a route on a map or chart
13	**endorsed**	_____	**M**	a balance in which one gain costs another
14	**non-binding**	_____	**N**	spreads out untidily over a large area
15	**caveat**	_____	**O**	avoid dealing with a difficult problem

Fill in the Blank

Choose a word from the box to complete each sentence. Use each word once. The words are already in the correct form.

bearing	**caveat**	**contentious**	**default**	**endorsed**	**entrenched**	**inflates**	**legacy**	**mariners**
non-binding	**sidestep**	**skews**	**sprawls**	**trade-off**				

1 The old harbor town _____ along the coast for several kilometers.

2 A flattering camera angle _____ the size of the building.

3 Ancient _____ used the stars to find their way across open water.

4 The pilot checked the compass _____ and corrected the course slightly.

5 Cheap flights and short journeys often involve a _____ with comfort.

6 Unless you change the settings, English is the _____ language of the app.

7 Old habits become _____ and are very hard to break.

8 A badly worded question _____ the results of a survey.

9 The minister tried to _____ the question about taxes.

10 The old regime left a _____ of mistrust that lasted for decades.

11 Immigration is a _____ topic at many family dinners.

12 Several doctors publicly _____ the new health campaign.

13 The vote was _____ , so the council could ignore the result.

14 The report is useful, with one important _____ about its small sample.

Comprehension Questions

Answer in your notebook or discuss with a partner. Questions 10 to 12 are IELTS-style.

1 Why does Greenland look almost as large as Africa on a classroom world map, even though Africa is about fourteen times larger?

2 What does the comparison with an orange peel show about flat maps?

3 What was Mercator's 1569 map designed to help people do, and how could a ship's captain use it?

4 Why does the writer say that Mercator also knew the price of his design?

5 Explain what the writer means by saying every flat map is a trade-off.

6 How did a map designed for sailors become the default picture of the world for so many people?

7 What criticisms did map historians make when Arno Peters promoted an equal-area map?

8 The writer calls the reason for Mercator's long reign contentious but says the legacy is easy to see. What is the difference between the two?

9 What did the African Union and the UN General Assembly do, what did they not do, and why does the writer add a caveat?

IELTS-Style Questions

10 **True, False, or Not Given:** *"Mercator was the first person to realize that a flat map must distort the globe."* Explain your answer using evidence from the reading.

11 **Yes, No, or Not Given:** *"The writer believes that changing the map will, by itself, change how people think about Africa."* Explain your answer using evidence from the reading.

12 **Author's purpose:** Why does the writer end by suggesting that readers drag Africa northward on a true-size map tool? Is the purpose to give a summary, to invite readers to test the idea themselves, or something else?

True or False

Circle T (true) or F (false) according to the reading. Write a correction for each false statement on the dotted line.

1 **T / F** The reading says Africa is about fourteen times larger than Greenland.

2 **T / F** The Mercator projection stretches the map most near the equator.

3 **T / F** Mercator published his famous world map in 1569.

4 **T / F** The reading says Mercator did not realize that his map changed the sizes of landmasses.

5 **T / F** On a Mercator chart, a straight line matched a single compass bearing.

6 **T / F** Google Maps on desktop began showing a globe when zoomed far out in 2018.

7 **T / F** Arno Peters came up with an equal-area projection that nobody had ever drawn before.

8 **T / F** The Equal Earth projection keeps shapes accurate but distorts areas.

9 **T / F** The UN General Assembly resolution passed unanimously.

10 **T / F** The reading says the UN resolution is non-binding.

Discussion Questions

Talk with a partner or in a small group. The questions move from personal to more abstract.

1. Which world map hung in your classrooms when you were a child? Do you remember how large your own country looked on it?
2. Before reading this, did you know that Greenland and Africa are so different in size? How did you feel when you learned the truth?
3. Do you use a map app every day? Do you ever zoom out to look at the whole world, or do you only look at the streets around you?
4. Is there a place you thought was bigger or smaller than it really is until you visited it? What changed your mind?
5. A map has to give up some accuracy to be useful. Can you think of another tool, such as a graph or a summary, that is useful because it leaves things out?
6. Mercator designed his map for sailors, not for schools. Is it fair to blame a tool for how later generations used it?
7. Some people say the Mercator picture made Europe look more important than it is. Others say it was just a convenient habit. Which view seems more convincing to you, and why?
8. Do you think seeing your region drawn smaller than its true size could affect how people feel about it? Why or why not?
9. In your country, which maps are used in schools, in the news, and in government offices? Are they the same type?
10. The UN resolution is non-binding. When a large majority of countries support a symbolic step like this, what difference can it make in practice?
11. The United States was the only country to vote against the resolution, and one government said the vote distracted from more serious issues. Do symbolic issues like this deserve international attention?
12. Equal Earth keeps areas accurate but bends shapes, and Mercator keeps shapes but changes areas. If you had to choose one for a classroom wall, which would you choose, and what would you tell students about its limits?
13. Can a change in the way we draw something really change how people think? Can you give another example, such as a name, a flag, or a calendar?
14. If you could design a new world map for the next hundred years, what would it look like, and who would you want to help you make it?

Language Focus: Second Conditional

The second conditional describes an unreal or imagined situation in the present or future. It uses if plus a past form (often were for be) in the if clause and would plus a base verb in the main clause.

In the reading:

- "If Greenland **were drawn** at its true size, it **would look** only slightly larger than Mexico."
- "If you **were** a sixteenth-century captain, you **would find** this astonishingly practical."
- "If a map **kept** every area accurate, the continents **would look** warped…"

Practice: Finish this sentence with an imagined situation: *"If I could redraw the world map for my school, I …"*

Activities and speed challenge
englishbridges.com/lessons/mercator-map-distortion

Notes