Name: _____ Date: _____

Why Greenland Looks So Huge on Flat Maps

Circle group

Look at a common wall map of the world. Greenland looks huge. It seems as big as the whole continent of Africa. But Africa is many times bigger. How can a map be so wrong?

The problem is that the Earth is a ball, and a map is flat. Think of peeling an orange and pressing the peel flat on a table. It would crack and stretch. Mapmakers have the same problem. Any way to flatten the globe must stretch, squeeze, or cut some part. Each way is called a projection.

A mapmaker named Gerardus Mercator made a famous projection in 1569. He made it for sailors. On his map, a line of steady direction on the sea is a straight line. That makes steering across an ocean easier. To keep the directions right, the map stretches the land more as it moves away from the equator. Places near the poles, like Greenland, look far too big.

Other projections show size more truly but bend the shapes of the continents. No flat map is perfect. A globe is the best way to see the Earth. A mapmaker picks the map that fits the job.

Questions

1. How does Greenland look on a common wall map?

_____

_____

2. Why must every flat map have some mistakes?

_____

_____

3. What is a projection?

_____

_____

4. Who made the famous projection in 1569, and who was it for?

_____

_____

5. Why does the Mercator map make steering at sea easier?

_____

_____

6. Why does the passage talk about an orange peel?

_____

_____

Words to know

continent: one of the seven great land masses on Earth
projection: a way of showing the round Earth on a flat map
equator: the imaginary line around the middle of the Earth
poles: the northern and southern ends of the Earth

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Greenland Looks So Huge on Flat Maps

Triangle group

Look at a common wall map of the world and Greenland seems enormous. It appears about as large as the whole continent of Africa. In truth, Africa is many times larger. How can a map get this so wrong?

The trouble is that the Earth is a ball, and a map is flat. Imagine peeling an orange and pressing the skin flat on a table. The peel would crack and stretch. Mapmakers face the same problem. Any way of flattening the globe must stretch, squeeze, or cut some part of the surface. Each method is called a projection.

One famous projection was made by a mapmaker named Gerardus Mercator in the year 1569. It was designed for sailors. On a Mercator map, a line of constant direction on the sea shows up as a straight line, which makes steering across an ocean much easier. To keep directions correct, the map stretches the land more and more as it moves away from the equator. Places near the poles, such as Greenland, look far too big.

Other projections give a truer picture of size but bend the shapes of the continents. No flat map is perfect. A globe is the best way to see the Earth truthfully, and a mapmaker simply chooses which map fits the job.

Questions

1. How does Greenland look on a common wall map?

_____

_____

2. Why must every flat map have some mistakes?

_____

_____

3. What is a projection?

_____

_____

4. Who made the famous projection in 1569, and who was it designed for?

_____

_____

5. Why does the Mercator map make steering at sea easier?

_____

_____

6. Why does the passage compare a map to an orange peel?

_____

_____

Words to know

continent: one of the seven great land masses on Earth
projection: a way of showing the round Earth on a flat map
equator: the imaginary line around the middle of the Earth
poles: the northern and southern ends of the Earth
constant: staying the same without changing

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Greenland Looks So Huge on Flat Maps

Square group

Examine a typical wall map of the world and Greenland appears gigantic, seemingly as large as the entire continent of Africa. In reality, Africa is many times larger. How could a map distort the truth so badly?

The difficulty is that the Earth is a sphere while a map is flat. Imagine peeling an orange and attempting to press the skin flat on a table; it would split and stretch in places. Mapmakers confront exactly the same dilemma, because every method of flattening the globe must stretch, squeeze, or slice some portion of the surface. Each such method is known as a projection.

One celebrated projection was created by a mapmaker named Gerardus Mercator in 1569, and it was designed with sailors in mind. On a Mercator map, a course of constant direction across the sea appears as a straight line, which makes navigating across an ocean considerably simpler. To preserve directions accurately, the map stretches the land more and more as it moves away from the equator, so regions near the poles, such as Greenland, look far larger than they truly are.

Other projections give a more faithful impression of size but warp the shapes of the continents. No flat map is flawless. A globe remains the most truthful way to view the Earth, and a mapmaker simply selects whichever map suits the purpose.

Questions

1. How does Greenland appear on a typical wall map?

_____

_____

2. Why must every flat map contain some distortion?

_____

_____

3. What is a projection?

_____

_____

4. Who created the celebrated projection in 1569, and who was it designed for?

_____

_____

5. Why does the Mercator map make ocean navigation simpler?

_____

_____

6. Why does the passage compare a map to an orange peel?

_____

_____

Words to know

continent: one of the seven great land masses on Earth
projection: a way of showing the round Earth on a flat map
equator: the imaginary line around the middle of the Earth
poles: the northern and southern ends of the Earth
constant: staying the same without changing

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Why Greenland Looks So Huge on Flat Maps

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Why Greenland Looks So Huge on Flat Maps

Easier · 193 words · Flesch-Kincaid grade 3.3

1. About as big as the continent of Africa.
2. The Earth is a ball, and flattening it must stretch, squeeze, or cut part of it.
3. A way of flattening the globe onto a map.
4. Gerardus Mercator made it for sailors.
5. A line of steady direction shows as a straight line.
6. A peel stretches and cracks when pressed flat, just as the globe does.

Triangle: Why Greenland Looks So Huge on Flat Maps

This passage · 214 words · Flesch-Kincaid grade 5

1. About as large as the continent of Africa.
2. The Earth is a ball, and flattening it must stretch, squeeze, or cut some part.
3. A method for flattening the globe onto a map.
4. Gerardus Mercator made it for sailors.
5. A line of constant direction shows up as a straight line.
6. A peel stretches and cracks when pressed flat, as the globe does when it is flattened.

Square: Why Greenland Looks So Huge on Flat Maps

Harder · 224 words · Flesch-Kincaid grade 9.3

1. Seemingly as large as the entire continent of Africa.
2. The Earth is a sphere, and flattening it must stretch, squeeze, or slice part of the surface.
3. A method of flattening the globe onto a map.
4. Gerardus Mercator created it for sailors.
5. A course of constant direction appears as a straight line.
6. A peel splits and stretches when pressed flat, as the globe does when it is flattened.