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The Equator

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The Equator

Imagine a belt drawn around the middle of the Earth. It is not a real belt. It is an imaginary line, but it shapes weather, daylight and even rocket launches. That line is the equator.

This lesson shows where it runs, what it crosses and why it matters. Each card gives one idea, with its source.



The Mitad del Mundo (“Middle of the World”) monument near Quito, Ecuador, marking the equator. Photo by Bbb, CC BY-SA 3.0, via Wikimedia Commons.

At a glance

Point	Detail
Latitude	0°, halfway between the two poles.
Length	About 40,075 km.
Land and sea	About 78.7% of the line crosses water.
Countries	11 on land, plus the waters of two island nations.
Highest point on the line	4,690 m, on Volcán Cayambe.
Spin speed at the line	About 1,670 km/h.

Equator is the imaginary line at 0° latitude. It sits exactly midway between the North and South Poles and splits Earth into two hemispheres.

Equatorial bulge is the slight swelling of Earth at its middle. The planet is a little wider across the equator than from pole to pole. The gap is about 43 km.

Geostationary orbit is an orbit high above the equator. A satellite there stays above the same point on Earth's surface.

Latitude tells you how far north or south a place lies. The equator is at 0°.

What the equator is

The equator is an imaginary line around Earth at 0° latitude. It lies exactly midway between the North and South Poles. It divides the planet into the Northern and Southern Hemispheres. The line is about 40,075 km long.

About 78.7% of it crosses water. Only the rest crosses land. This is why a trip along it is mostly an ocean voyage.

Earth also bulges a little here. Its diameter at the equator is about 43 km greater than at the poles.

Sources: worldatlas.com

> **Quick check 1.** About 78.7% of the equator runs over land. *(True or False?)* See answer ↓

Countries on the line

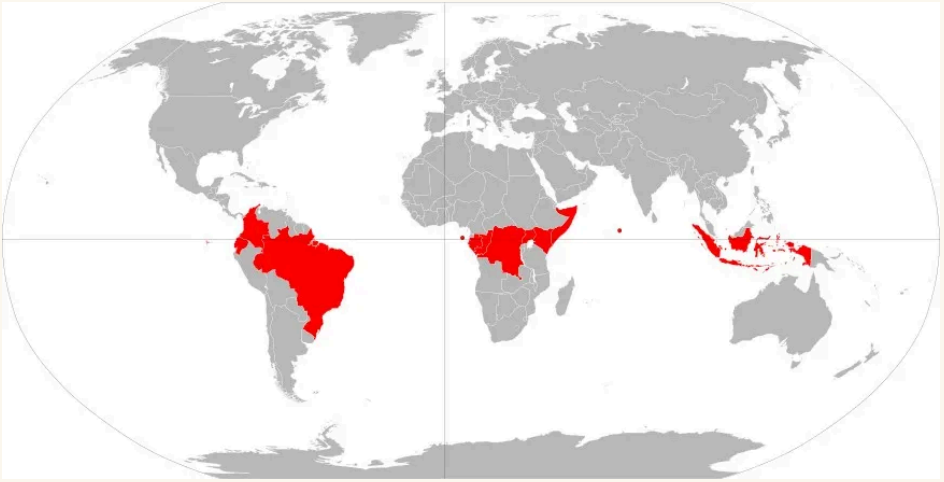
The equator crosses the land of 11 countries. It also passes through the waters of two island nations, without touching their land. This is why some lists say 13.

- South America: Ecuador, Colombia and Brazil
- Africa: São Tomé and Príncipe, Gabon, Republic of the Congo, Democratic Republic of the Congo, Uganda, Kenya and Somalia
- Asia: Indonesia

So the line runs over three continents. Ecuador is named after it. The country's official name means "The Republic of the Equator". Other countries are named after landscape features too. For example, Montenegro means "Black Mountain", after Mount Lovćen.

So the name is a handy memory hook for the whole topic.

Sources: worldatlas.com



Countries the equator passes through, highlighted in red. Map derived from Equator_and_Prime_Meridian.svg, CC BY-SA 3.0, via Wikimedia Commons.

Quick check 2. Ecuador takes its name from the equator. *(True or False?)* See answer ↓

Oceans, lakes and straits on the line

The equator crosses three oceans: the Atlantic, the Indian and the Pacific. In East Africa it passes through Lake Victoria. In Indonesia it crosses several seas and straits.

- Karimata Strait
- Makassar Strait
- Gulf of Tomini
- Molucca Sea
- Halmahera Sea

Not every big lake sits on the line. Lake Tanganyika, Lake Tonlé Sap and Patos Lagoon are not on it. This is a classic exam trap, and it appears in the PYQ below.

Sources: worldatlas.com; mcqquestion.com

Quick check 3. The equator passes directly through Lake Tanganyika. *(True or False?)* See answer ↓

Climate on the line

Lands on the equator mostly have a tropical rainforest climate. Distinct seasons are usually absent. The average daytime temperature is around 30 °C. Rainfall is high, about 2,500 to 3,500 mm a year.

In a few places, cold ocean currents bring a dry season. Most countries on the line share this climate.

Sources: worldatlas.com

Volcán Cayambe, ice on the equator

Volcán Cayambe stands in the Ecuadorian Andes. Its southern flank lies on the equator. The main summit is about 5,790 m high. Above 4,800 m, an ice cap covers about 22 km².

The ice is 30 to 50 m thick near the summit. On the eastern flank, glaciers reach down to about 4,400 m. The highest point on the equator itself is on Cayambe's southern slopes, at 4,690 m.

This is the only place on the equator where snow lies on the ground. The volcano is part of the Andes.

Sources: volcanodiscovery.com; worldatlas.com

> **Think it through: why does a hot equatorial peak hold ice?**
>
> Look at the numbers.
> The ice cap starts above 4,800 m, and the summit is 5,790 m.
>
> So height, not latitude, decides where ice lies here.

> **Quick check 4.** Volcán Cayambe has snow because it is far from the equator. *(True or False?)* See answer ↓

The monument that missed the line

A French geodesic expedition mapped the equator in Ecuador in 1736. Its leader was Charles-Marie de La Condamine. Ecuador later built the Mitad del Mundo monument near Quito to mark the line. In 1979 a 30 m tower topped by a globe replaced an earlier monument.

Modern GPS shows that the true equator lies about 240 m north of the painted line. Park officials said a ravine made the true spot unsuitable for the monument.

Sources: amusingplanet.com; ecuador.com

Why rockets launch near the equator

Earth spins, and the surface at the equator moves at about 1,670 km/h. A rocket launched east starts with part of that speed. It needs less fuel to reach orbit. The Guiana Space Centre in French Guiana lies at about 5.2°N, close to the equator.

It is well placed for launches into geostationary orbit. That is why Europe launches rockets from South America. Further from the equator, the gain shrinks.

Cape Canaveral sits at about 28°N. Baikonur sits at about 45°N. The faster spin at the line cuts the fuel needed. Saved fuel means more payload for the same rocket.

Sources: sentinelmission.org; orbitalradar.com

> **Quick check 5.** Rockets launched near the equator need more fuel than rockets launched near the poles. *(True or False?)* See answer ↓

How has this been asked in exams?

UPSC CSP 2025

The question listed three water bodies: Lake Tanganyika, Lake Tonlé Sap and Patos Lagoon. It asked through how many of them the equator passes. The answer is none. None of the three lies on the line.

See UPSC CSP 2025.

Exam trap

Lake Victoria is on the equator. Lake Tanganyika is not. Learn the three continents: South America, Africa and Asia. Also remember that the line crosses mostly water.

Quick Q&A

- **How long is the equator?** About 40,075 km.
- **Which continents does it cross?** South America, Africa and Asia.
- **Which East African lake is on it?** Lake Victoria.
- **Why does Cayambe have ice?** Its height, about 5,790 m, keeps it cold.
- **Why launch rockets near the equator?** Earth's spin gives eastward rockets extra speed.

Remember This

- **Length**: about 40,075 km, mostly over water.
- **Countries**: 11 on land, plus two island nations' waters.
- **Lake**: Victoria is on the line, Tanganyika is not.
- **Ice**: Volcán Cayambe, about 5,790 m.
- **Rockets**: the spin gives about 1,670 km/h at the line.

Practice MCQ

Practice MCQs

1. Which of these water bodies does the equator pass through?

A. Lake Victoria

B. Lake Tanganyika

C. Lake Tonlé Sap

D. Patos Lagoon

See answer ↓

2. About how long is the equator?

A. About 50,000 km

B. About 30,000 km

C. About 20,000 km

D. About 40,075 km

See answer ↓

3. The name of which country means "equator" in Spanish?

A. Ecuador

B. Uganda

C. Colombia

D. Gabon

See answer ↓

4. Why can Volcán Cayambe hold ice although it sits on the equator?

A. It lies near the poles

B. It is a very small hill

C. Its great height keeps it cold

D. The ocean cools it

See answer ↓

5. Who surveyed the line that the Mitad del Mundo monument marks, in 1736?

A. A British team

B. A Spanish team

C. A French team

D. A German team

See answer ↓

6. Why do rockets launched eastward near the equator need less fuel?

A. The sea is warmer there

B. Gravity is zero there

C. The air is thinner there

D. Earth's spin already gives them speed

See answer ↓

Answer Key

1. **A.**
   The equator crosses Lake Victoria. It does not cross Lake Tanganyika, Tonlé Sap or Patos Lagoon.
   Sources: WorldAtlas: Countries on the Equator · UPSC CSP 2025 question.
   ↑ Q1
2. **D.**
   The equator is about 40,075 km long. Around 78.7% of it runs over water.
   Sources: WorldAtlas: Countries on the Equator · Sentinel Mission: Equator launches.
   ↑ Q2
3. **A.**
   Ecuador is Spanish for equator. Its official name means "The Republic of the Equator".
   Sources: WorldAtlas: Countries on the Equator · Ecuador.com: Mitad del Mundo.
   ↑ Q3
4. **C.**
   Cayambe's summit is about 5,790 m high. Air gets colder with height, so an ice cap survives there.
   Sources: VolcanoDiscovery: Cayambe · WorldAtlas: Countries on the Equator.
   ↑ Q4
5. **C.**
   A French geodesic expedition mapped the line in 1736. GPS later showed the true equator about 240 m north.
   Sources: Amusing Planet: Equator in Ecuador · Ecuador.com: Mitad del Mundo.
   ↑ Q5
6. **D.**
   The surface at the equator moves at about 1,670 km/h. An eastward rocket starts with part of that speed.
   Sources: Sentinel Mission: Equator launches · Orbital Radar: Guiana Space Centre.
   ↑ Q6

Quick-check answers

1. **False.** About 78.7% of the equator crosses water. Only the rest crosses land. ↑ 1
2. **True.** Ecuador is Spanish for equator. The official name is the Republic of the Equator. ↑ 2
3. **False.** The equator crosses Lake Victoria. Lake Tanganyika is not on the line. ↑ 3
4. **False.** Cayambe sits on the equator. Its great height, about 5,790 m, keeps it cold enough for ice. ↑ 4
5. **False.** Near the equator, Earth's spin gives an eastward rocket extra speed. That reduces the fuel it needs. ↑ 5

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