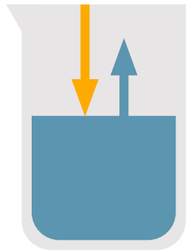
What temperature does water boil at?

COMPOUND INTEREST

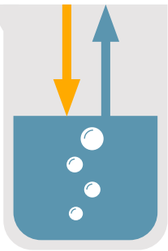
It might seem a pretty straightforward question – but actually, water's boiling point can differ at different elevations. This graphic takes a look at its boiling point in a several different locations, as well as looking at the reasons behind this variance.

EVEREST	KILIMANJARO	LA PAZ	LONDON	SEA LEVEL	BAKU	THE DEAD SEA
ELEVATION: 8848 m WATER BOILS: 69.94 °C	ELEVATION: 5895 m WATER BOILS: 80.33 °C	ELEVATION: 3640 m WATER BOILS: 87.71 °C	ELEVATION: 14 m WATER BOILS: 99.96 °C	ELEVATION: 0 m WATER BOILS: 100.0 °C	ELEVATION: –28 m WATER BOILS: 100.1 °C	ELEVATION: –427 m WATER BOILS: 101.4 °C
World's highest mountain	Highest free-standing mountain	World's highest capital city	Capital city of the United Kingdom	Used as a relative elevation reference	World's lowest capital city	Lowest point in the world



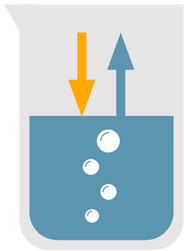
Water (room temperature)

At room temperature, water doesn't boil, as the vapour pressure of the water is lower than the surrounding atmospheric pressure.



Water (boiling temperature)

At sea level, a temperature of 100 °C is needed for the water's vapour pressure to equal atmospheric pressure, and for the water to boil.



Mount Everest (lower pressure)

At a lower surrounding pressure, the water requires a lower vapour pressure for it to be equal to the surrounding pressure and to boil.

KEY

↓ **ATMOSPHERIC PRESSURE**

Decreases with increasing elevation above sea level.

↑ **VAPOUR PRESSURE**

Increases with increasing water temperature.

Why does water's boiling point vary?

It's not so much the elevation that affects water's boiling point, as the decreased atmospheric pressure at higher elevations. A liquid will boil when its vapour pressure is equal to the atmospheric pressure; vapour pressure can be thought of as the tendency of molecules to escape the liquid's surface into the gas phase.

Vapour pressure increases with increased temperature, as more molecules have the kinetic energy required overcome attractions to other water molecules. At lower pressures, molecules escape more easily, as the vapour pressure required for them to do this is lower.