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# What is a space station?

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Right now, at this very moment, there are people living in space. They're sleeping in small compartments with no up or down, drinking recycled water, exercising two hours a day to stop their muscles wasting away, and watching the sun rise and set sixteen times in every 24-hour period. They're on the International Space Station — and it's been continuously occupied since November 2000.

## What is it, exactly?

A space station is a large spacecraft designed to stay in orbit for extended periods, providing a permanent or long-term living and working environment for astronauts. Unlike a rocket, which is designed to get somewhere, a space station is designed to stay put — circling Earth continuously while crew members rotate in and out on missions lasting months at a time.

🏠 Think of a space station like an offshore oil platform, but in orbit. A platform stays in one place at sea, workers rotate in for weeks at a time, and it needs regular supply deliveries. A space station does the same thing, just 400 kilometres above the planet, travelling at 28,000 km/h. The "staying in orbit" part is essentially the station falling around the curve of the Earth — moving so fast horizontally that by the time it falls, the Earth has curved away beneath it.

## What do astronauts actually do up there?

Science, mostly. The microgravity environment of a space station lets scientists run experiments that are impossible on Earth — studying how fire behaves without convection, how crystals grow without gravity interfering, how the human body changes in space, and testing technologies for long-duration spaceflight. The ISS has hosted over 3,000 scientific experiments. Some have led to medical advances, materials discoveries, and insights into fundamental physics.

## What comes next?

The ISS is ageing — it was launched in 1998 and is planned for deorbit around 2030, when it will be guided into a controlled re-entry over the South Pacific Ocean. NASA

has commissioned private companies to build successor commercial space stations. China has its own station, Tiangong, already operational. And SpaceX and other companies have ambitions for stations in lunar orbit. The era of humans living permanently in space, which began in 2000, isn't ending — it's expanding.