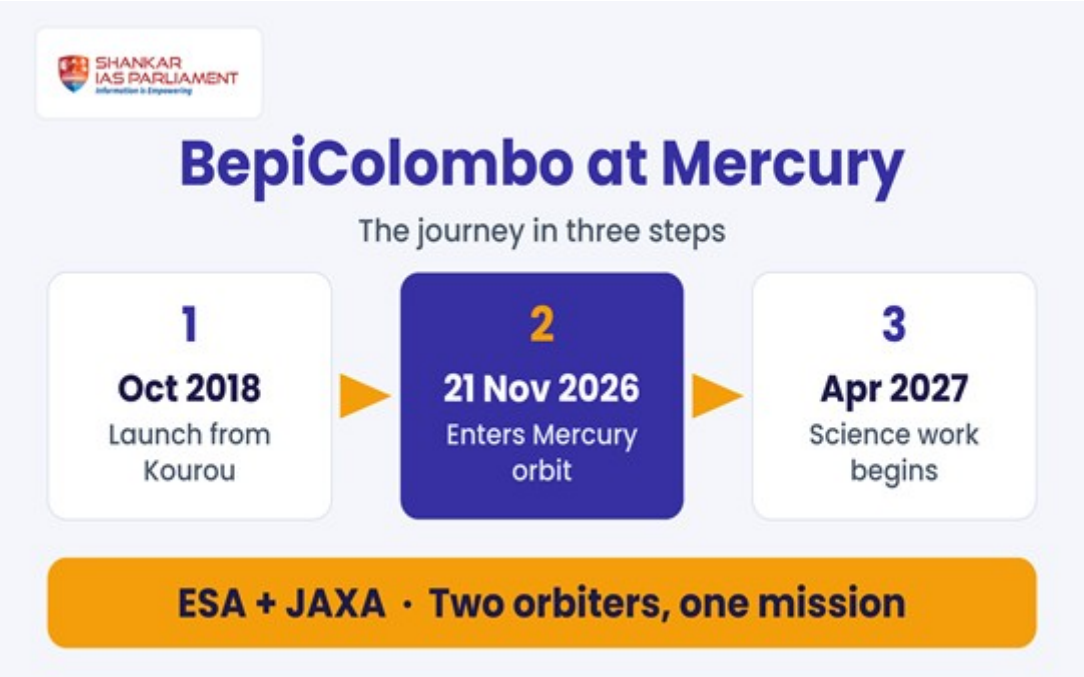
BepiColombo's Arrival – ESA and JAXA Reach Mercury

Prelims: *Current events of National and International Importance | Science and Technology*

Why in News?

BepiColombo*, the joint ESA–JAXA mission, entered orbit around Mercury on November 21, 2026, after an eight-year journey.*

- A software glitch cut the braking burn short (about 77% of the planned velocity change), leaving a 75-hour orbit instead of 58; the spacecraft is safe.



About the Mission

- **Partners** – The European Space Agency (ESA) leads, with Japan's JAXA; named after Italian scientist Giuseppe "Bepi" Colombo.
- **ESA's role** – Provides the ***Mercury Planetary Orbiter (MPO)*** and the Mercury Transfer Module; launched on Ariane 5 from Kourou on October 20, 2018; flown from ESOC, Germany.
- **JAXA's role** – Provides the Mercury Magnetospheric Orbiter, Mio.
- **Features** – Two orbiters on one stack, carrying 16 instruments; solar electric propulsion and nine flybys (Earth once, Venus twice, Mercury six times) slowed it for "weak stability capture".

Aims

- **Origin** – How a planet so close to the Sun formed and evolved.
- **Planet** – Mercury's surface, composition and interior.

- **Environment** – Its magnetic field, thin exosphere and interaction with the solar wind.
- **Physics** – Test Einstein's general relativity.
- **Next steps** – Orbiters separate on December 9–10, 2026; MPO reaches its science orbit by March 2027; science begins in April 2027.

Significance

- **First of its kind** – Europe's and Japan's ***first Mercury mission*** and the first with two orbiters; NASA's Mariner 10 and MESSENGER visited earlier.
- **Science** – Clues to how rocky planets form near stars, including Earth; a team of nearly 600 scientists will analyse the data.
- **Technology** – One of ESA's most complex arrival sequences; a model for ESA–JAXA cooperation.

Quick facts

Mercury
• **Position** – Closest and smallest planet; no moons or rings. • **Motion** – Orbits the Sun in 88 days; rotates once in about 59 days. • **Surface** – About 430°C by day and −180°C at night; thin exosphere. • **Structure** – Large iron core; Caloris Basin; water ice in polar craters.

Reference

India Today | BepiColombo

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