

Explore the Solar System

English learning edition - September 2026

A 45-minute lesson: observe for 10 minutes, compare for 20 and check learning for 15. Materials: a browser with WebGL, optional projector, ruler, paper and string. No student account is needed.

Activity 1 | Compare sizes

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Represent Earth with a 1 cm disc. Draw Mercury at 0.38 cm, Mars at 0.53 cm, Neptune at 3.86 cm and Jupiter at 10.97 cm. Explain why volume does not increase at the same rate as diameter.

Group work

Record your result, a supporting explanation and a question to investigate.

Activity 2 | Walk through distances

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In a space about 40 metres long, place the Sun at zero. One metre represents one AU. Mercury: 0.39 m; Venus: 0.72 m; Earth: 1 m; Mars: 1.52 m; Jupiter: 5.20 m; Saturn: 9.58 m; Uranus: 19.19 m; Neptune: 30.07 m; Pluto: 39.48 m. These are approximate average distances.

Group work

Record your result, a supporting explanation and a question to investigate.

Activity 3 | Discuss Pluto

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Examine the three IAU criteria from 2006: orbit the Sun, be nearly spherical and dominate the orbital neighbourhood. Explain which criterion Pluto does not meet and why scientific classifications can change.

Group work

Record your result, a supporting explanation and a question to investigate.

Answers and assessment

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Jupiter is about 11 Earth diameters across, but roughly 1,300 Earths fit inside its volume. At 1 m = 1 AU, Earth would be about 0.085 mm across, so visible markers are needed. Pluto does not dominate its orbital neighbourhood. Assess order, classification, rotation, orbits, scales and evidence-based explanations.

Scientific table

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Average distances from the Sun and orbital periods. Figures are rounded.

Body	Average distance	Orbital period
Mercury	0.39 AU · 57.9 million km	87.97 days
Venus	0.72 AU · 108.2 million km	224.70 days
Earth	1 AU · 149.6 million km	365.256 days
Mars	1.52 AU · 227.9 million km	686.98 days
Jupiter	5.20 AU · 778.5 million km	11.86 years
Saturn	9.54 AU · 1.43 billion km	29.45 years
Uranus	19.19 AU · 2.87 billion km	84 years
Neptune	30.07 AU · 4.50 billion km	164.8 years
Pluto	39.48 AU · 5.9 billion km on average	≈ 248 years

Sources and responsible use

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Main sources: NASA Science, JPL Solar System Dynamics and the International Astronomical Union. Adaptable to ages 9-12 and secondary learners; based on French Cycle 3, not an official UK or US curriculum. The artistic view alters sizes and distances. PDFs may be reproduced free of charge for educational use.

<https://science.nasa.gov/solar-system/>

<https://ssd.jpl.nasa.gov/>

<https://www.iau.org/>

<https://systeme-solaire-3d.fr/en/methode>