Teacher Pack

VEX Solar System, a 3D solar system your class can fly through in the browser. A 45 minute lesson plan, five questions, a student worksheet and an answer key.

Free to use. No install, no account. Works on a whiteboard, a laptop, a tablet or a phone.



Lesson plan: Journey through the solar system

Age: about 9 to 14
Time: 45 minutes
Topic: the planets, Earth and the Moon, size and scale

You need: a screen to show the class, and a laptop, tablet or phone for each pair. Printed pages 3 and 4. Headphones are optional, the short films have sound.

By the end, students can

- put the eight planets in order from the Sun and name the biggest and the smallest
- use the facts panel of a planet to find a number and compare two planets
- explain why the planets are not drawn to true scale in a model on one screen

Timing

Minutes	What happens
0 to 5	**Starter.** On a blank page, students list the planets in order from memory. No marking, they will check their list later.
5 to 15	**Demo on the big screen.** Open the tool (steps below). Click Earth, then Explore Earth Close Up and spin it. Click the Moon beside Earth. Press Watch Earth Videos and play one film. Step through the planets with the arrows at the top of the panel.
15 to 35	**Pairs explore.** Students fly to each planet and fill in the worksheet (page 4). Ask fast pairs to answer the five questions (page 3).
35 to 42	**Discuss.** Take answers to the five questions. Ask: which fact surprised you? Check the starter lists.
42 to 45	**Exit ticket.** One thing you learned and one thing you still want to know (bottom of page 4).

Opening the tool

1. Go to **visionvix.world** and press **Open Simulators**.
2. On the **Choose Your 3D World Simulator** page, press **Enter Simulator** on the Solar System card.
3. Click a planet in space or on the row of buttons at the bottom. Drag to turn it, scroll or pinch to zoom.

Support

Give a half finished table. Pair students who need help with confident readers. Use only the first five rows of the worksheet.

Stretch

Ask students to compare moons and diameters, then explain why Mercury is not the hottest planet. Ask them to design a more honest scale model.

Five questions

Use the tool to find each answer. Click a planet and read its facts panel.

1. Which planet is the biggest, and how wide is it?

2. Mercury is the closest planet to the Sun. Which planet is the hottest, and what is its average temperature?

3. How many known moons does Saturn have? How many does Earth have? What is the difference?

4. Uranus turns on its side. Look at its facts panel. How many degrees is its axial tilt?

5. In the tool, all the planets fit on one screen. Why is that not true to scale? What would you see if it were?



Saturn in close up, with its facts panel on the right.

Worksheet: planet facts

Fly to each planet. Fill in what its facts panel says.

Planet	Diameter	Moons	One fact I found
Mercury			
Venus			
Earth			
Mars			
Jupiter			
Saturn			
Uranus			
Neptune			

Put the planets in order

Now check your starter list. Write the planets from closest to farthest from the Sun.

Try this in the tool

- Set Orbit Speed to the slowest step. Which planet moves fastest round the Sun?
- Switch Show Orbits off. Can you still tell where each planet is going?
- Open the films for the Sun or the Moon. Write one thing you learned.

Exit ticket

One thing I learned:

One thing I still want to know:

Answer key (teacher copy)

Figures are the ones shown in the tool's facts panels.

1. Jupiter, 139,820 km across.

2. Venus, about 465°C on average. Its thick atmosphere traps heat, so it is hotter than Mercury even though it is farther from the Sun.

3. Saturn has 293 known moons and Earth has 1. The difference is 292.

4. 97.8 degrees, which is why it is described as turning on its side.

5. Distances and sizes are squeezed so every planet fits on one screen. At true scale the planets would be tiny dots with huge gaps between them, too small to see.

Worksheet answers

Planet	Diameter	Moons
Mercury	4,879 km	None shown in the tool
Venus	12,104 km	None shown in the tool
Earth	12,742 km	1 (the Moon)
Mars	6,779 km	Phobos and Deimos
Jupiter	139,820 km	115 known
Saturn	116,460 km	293 known
Uranus	50,724 km	29 known
Neptune	49,244 km	16 known

Facts will vary, accept any fact that matches the planet's panel. Order from the Sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune. Fastest orbit: Mercury.

Moon counts change as astronomers confirm new moons. The tool shows the figures it was checked with, so compare with the panel, not with an older book.

For schools

The VEX Solar System is a 3D model of the Sun, the eight planets and the Moon that runs in a web browser. Students click a planet, the camera flies to it, and they can get close, spin it, read its facts and watch a short film beside it. There are 26 films in all.

What teachers get

- Nothing to install and no account to make
- Works on a laptop, tablet or phone, and on an interactive whiteboard with a browser
- Facts stay on screen next to the planet
- The speed of the orbits can be paused or slowed for discussion

What you need

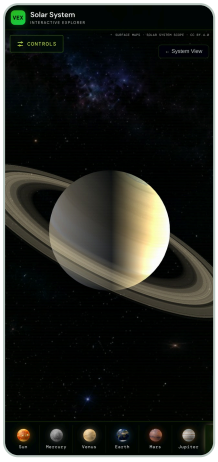
- A modern browser with 3D graphics turned on
- A normal school internet connection to load the tool the first time
- Older devices may run it slowly

Privacy of the tool

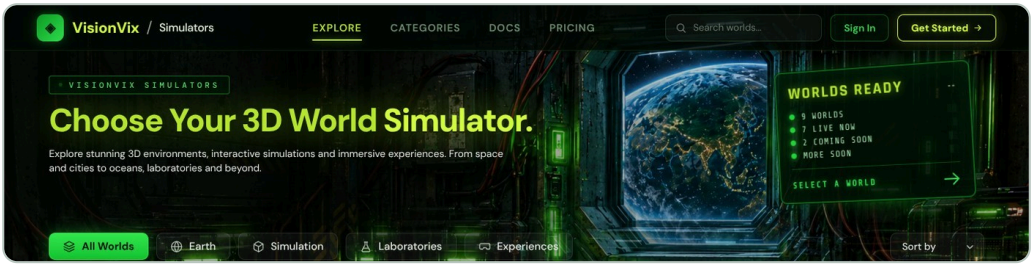
The Solar System tool itself sets no cookies, stores nothing about students and makes no outside requests while in use. Please ask your own data protection lead to confirm it meets your school's policy.

Plain limits

Distances and planet sizes are not to true scale. Only Earth's Moon is shown. It is not a sky map and does not show where the planets are on a real date.



On a phone: the planet panel becomes a bottom sheet.



The simulators page at visionvix.world.

A version built around your lessons?

If you are a teacher, a school or a trust and would like a version or extra simulators shaped around your curriculum, get in touch through **julianneagu.com**.

The VEX Solar System is designed and built by Julian Neagu, a solo founder in London who builds AI tools, apps and websites under VisionVix. Planet surface maps are by Solar System Scope, CC BY 4.0.