

PUPIL WORKSHEET

Build and challenge an orbit model

Autumn 1 · Week 6 · Lesson B

Describe Earth and the other planets orbiting the Sun: order eight planets, group rocky/giant planets, and explain the Sun's inward gravitational pull.

Tuesday · 40 minutes: 32-minute workshop, 4-minute pupil feedback, 4-minute exit.

Name: _____ Date: _____. Build a model, use the given year data and explain its limits.

1. Retrieve and choose your model · 4 min

Retrieve Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune in order. Choose counters, a drawing or directing an adult. Set out the Sun, Earth and two labelled arrows.

2. Model and compare ·20 min

Write, draw, point or dictate as agreed with your teacher.

Show Earth in two positions. At each, point gravity towards the Sun and motion along the path. Use the supplied values to predict which planet in your pair takes longer. Check the prediction against the numbers. Supported: use Earth/Mars. Standard: use two pairs. Stretch: test the farther-out/longer-year pattern and explain a model limit.

Planet	Approximate orbital period / Earth days
Mercury	88
Earth	365
Mars	687
Jupiter	4,333
Neptune	60,190

3. Record the comparison

Keep the units. Complete one row supported or two standard: _____ has the longer year because _____ days is greater than _____ days.

My planet pair	Longer year and numerical evidence	Which completes one orbit first?

4. Pause and check ·2 min

Write, draw, point or dictate as agreed with your teacher.

Show an adult or chosen partner one arrow and one comparison. A longer year means more time for one orbit. Mark one idea you checked and correct it if needed.

5. Correct and tidy ·6 min

Write, draw, point or dictate as agreed with your teacher.

Correct one arrow or comparison. Record two things the model shows and one limit, then return counters and labels.

The model shows...	The model also shows...	It does not show accurately...

6. Pupil feedback ·4 min

Point, sign, speak, write, use a chosen partner or pass. What helped or made access difficult? The adult explains one possible change and checks whether it helps.

7. Exit ·4 min

Write, draw, point or dictate as agreed with your teacher.

Choose the agreed route. Supported: name the third planet. Standard: name the force keeping planets in orbit. Stretch: explain why Earth does not simply fall into the Sun.

CHOOSE A RESPONSE ROUTE

Ways to show your understanding

Choose the route agreed with your teacher. You do not need to complete every route.

Supported

Direct the model with an adult, order the planet names with support and compare Earth 365 days with Mars 687 days.

Standard

Order and group planets; show both arrows, compare two pairs and explain a continually curving path.

Stretch

Test the farther-out/longer-year prediction and explain why hand-moving counters is not an experiment on gravity.