

Data analysis: Patterns in the solar system

Year 5 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 5, students classify substances according to their observable properties and behaviours. They explain everyday phenomena associated with the transfer of light. They describe the key features of our solar system. They analyse how the form of living things enables them to function in their environments. Students discuss how scientific developments have affected people's lives and how science knowledge develops from many people's contributions.

Students follow instructions to pose questions for investigation, predict what might happen when variables are changed, and plan investigation methods. They use equipment in ways that are safe and improve the accuracy of their observations. Students construct tables and graphs to organise data and identify patterns. They use patterns in their data to suggest explanations and refer to data when they report findings. They describe ways to improve the fairness of their methods and communicate their ideas, methods and findings using a range of text types.

Summary of task

Students had investigated models of the solar system, including exploring a digital learning object. They had discussed the types of data that could be gathered about the solar system, and the ways in which patterns in data can assist us in making predictions.

Students were asked to extract and organise a set of data related to the planets in the solar system. As a whole class they constructed a scale model of the solar system on the school oval. They were then provided with a set of questions that prompted them to identify patterns in the data. Students spent one lesson constructing their table from the provided data, another lesson constructing and discussing their scale model, and a final lesson completing the discussion questions.

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Solar System
Planets

	Distance from the sun	Length of a day	Length of a year	Diameter
Mercury	58 million km	176 Earth days	88 days	4,879 km
Venus	108 million km	243 Earth days	225 days	12,100 km
Earth	150 million km	24 hours	365 days	12,756 km
Mars	228 million km	25 hours	686 Earth days	6,780 km
Jupiter	778 million km	10 hours	12 Earth years	142,984 km
Saturn	1,427 million km	10 hours	30 Earth years	120,540 km
Uranus	2,870 million km	17 hours	84 Earth years	51,118 km
Neptune	4,497 million km	18 hours	165 Earth years	49,528 km

Annotations

Constructs a table to record and organise data collected.

Identifies the planets in the solar system, and that they have varying properties (distance from the sun, day length, year length, diameter).

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① What did you notice about the length of a year of the Planets in relation to the distance from the Sun?
The further they are away from the Sun the longer their year is.

② How were the Planets spaced?
The first 4 Planets are close together
The last 4 were very far apart.

③ Which Planet has the smallest orbit?
Why? Mercury has the smallest orbit because it is closer to the Sun than the rest of the Planets

Annotations

Identifies patterns in data by relating two variables.

Observes patterns in the data.

Uses data to answer a research question and provides an explanation with reference to features of the solar system.

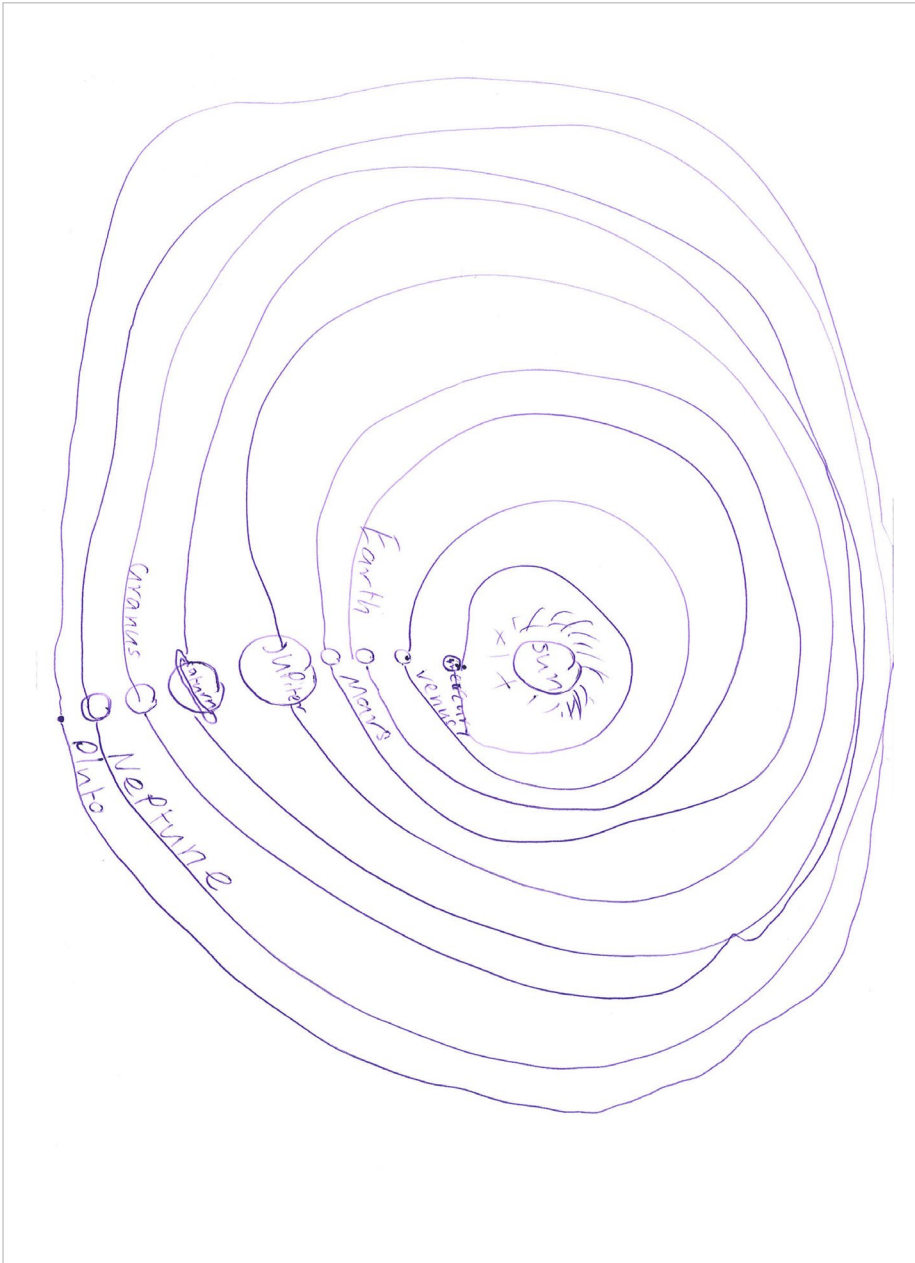
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- ④ What did you notice about the size (Diameter of Planets)?
The closer to the Sun the Planets were the smaller they got.
- ⑤ What other patterns did you notice about the Planets in the Solar System?
Pluto is a dwarf Planet but still has the longest orbit.

Annotations

Identifies a phenomenon that does not fit the observed pattern.

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Annotations

Constructs a labelled diagram of the solar system.

Annotations (Overview)

The student communicates ideas and findings using tables, written text and labelled diagrams.