Large and small planets
Journey through the Solar System

41

time
50 minutes.

learning outcomes
To:
- know that the eight planets vary in size
- learn the names of the planets
- learn the order of the planets from the Sun

end product
- a wall model of the planets showing their size to scale

materials needed
- 8 drawing compasses
- 4 x A6 paper
- 2 x A2 paper
- 2 sheets of black A2 paper
- A4 paper
- scissors
- rulers
- glue

Tip. This lesson can be combined with Lesson 44. Keep the scale models made in this lesson so that you can use them again in Lesson 44.

Preparation
For the activity **Planets** show the planets under each other on the board, as shown in the table.

Planets 15 min.
Explain to the children that there are a lot of planets in our solar system. Ask how many they think there are. Are these planets larger or smaller than the Earth? Encourage the children to name the planets they already know. Now they should complete Task 1 on the worksheet. This will help them to learn the names of the planets. Discuss the answers with the class. Invite the children to vote on the following questions: Which planet is the largest? Which planet is the smallest? Record the number of votes on the board next to the relevant planet.

Good to know. Since 24 August 2006, Pluto is no longer classified as a planet but a dwarf planet. To qualify as a planet, an astronomical object must meet three conditions: It must move in an orbit around a sun; it must be massive enough for it to take on a round shape as a result of its own gravity; and finally it must not be part of a large collection of similar astronomical objects in the same part of the solar system. Pluto does not meet this final condition as near Pluto there are many other lumps of ice orbiting the Sun. Pluto shows a great resemblance to these lumps of ice, and therefore it is no longer classified as a planet.

The children investigate which planet is the largest and which the smallest.

Make a planet 25 min.

The children make the planets to scale. To perform this activity they need to be familiar with the terms diameter and radius. Explain these terms if necessary. The diameter is the straight line that passes through the middle of a circle with its ends on the edge of the circle. The radius is half the diameter. Explain how a drawing compass works.
Using the table below, write the information from the second column (the diameter) next to the planets on the board. Explain clearly to the children that the Sun is very large, and that it is not a planet at all, but a star. It is interesting to see how large the sun is compared to the planets.
Use the information in column three of the table to give the children an idea of how large the planets are in reality.
In this example an average cycling speed of 15 km/h is assumed. Explain that if you were to cycle through the middle of the Earth to get to the other side, it would take you 36 days non-stop. If you were to do the same on the Sun it would take you eleven years! Make sure the children realise that this is only an example, and that it is not really possible to cycle through the centre of a planet or the Sun.

object	**diameter** (in 100 km)	**cycling through an astronomical object** (15 km/h, 24 hours a day)	**radius to scale** (in cm)	**paper format required**
Sun	13,900	11 years	218	-
Mercury	49	14 days	1	A6
Venus	121	34 days	2	A6
Earth	128	36 days	2	A6
Mars	68	19 days	1	A6
Jupiter	1430	1 year	22	A2 + A4
Saturn	1205	335 days	18	A2
Uranus	511	142 days	8	A4
Neptune	495	138 days	8	A4

The distances shown in column two are too large to use for drawing, so to be able to draw the planets to scale a fourth column has been added. The proportions are the same. Copy column four onto the board. Explain to the children that they will be using the numbers in this column to draw the planets. The Sun is only included to show how large it is.

Organise the children into groups of three. Give each group a sheet of coloured paper and a drawing compass. The size of the piece of paper needed to draw the planet is shown in the fifth column. Each group makes a different planet. The children complete Task 2 on the worksheet and adjust the compass to the length of the radius. Provide assistance where needed. The children can now draw, cut out and colour the planets.
Help the children to paste their planets in the correct order on the sheets of black A2 paper. Start with the planet that is closest to the Sun. Hang the Solar System in the classroom.

Tip.
In the groups making the smaller planets, encourage each child to make a planet. Then each group can choose which is the best planet to paste on the black sheet.

Which planet is the largest? 10 min.

At the beginning of the lesson the children held a vote on which they thought were the largest and smallest planets. Now that the children have made scale models of the planets, they know the size. The children complete Task 3 on the worksheet.

Discuss the worksheet. What is the largest planet? And the smallest?
Do the results correspond to the vote at the beginning of the lesson?

Large and small planets

1 Planets

Which of these are the names of planets? Circle the right answers.

Jupiter / London / Mercury / Earth / Triton

Venus / Uranus / Sun / Saturn / Mars / Milky Way / Neptune

Orbit / Moon / Orion / Andromeda

CIRCLE the words which are the names of planets

2 Make a planet

What do you need?

- compass
- sheet of coloured paper: A2, A4 or A6 size
- ruler
- scissors
- glue

What are you going to do?

1 Carry out this task with your two team-mates.
Your teacher will tell you which planet you are going to make.

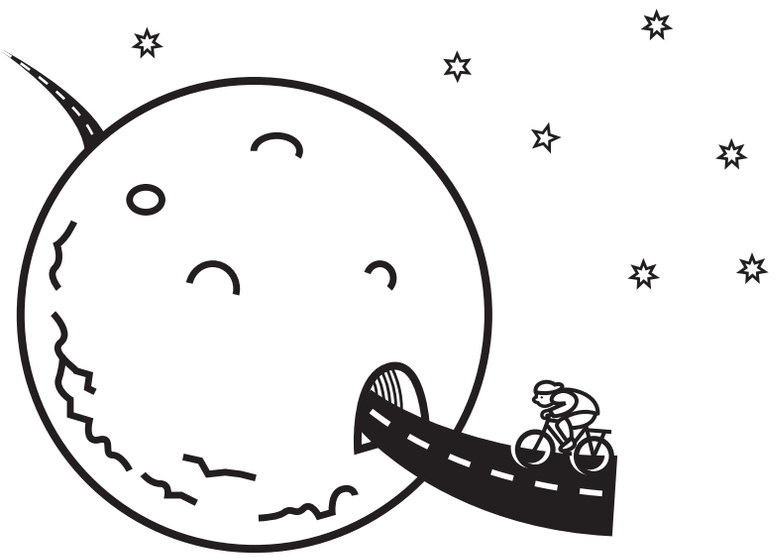
2 Look up the length of the radius of your planet in the table on the board.

3 The distance in centimetres between the compass point and the pencil is the radius of the planet.

4 Use the compass to draw the circle.

5 Cut out and colour your planet.

6 Ask your teacher to help you paste your planet in the right position on the black paper.



3 Which planet is the largest?

a Write the names of the planets in the spaces below. Begin with the largest planet, then the name of the next largest, and so on. Continue until you reach the last planet, which will be the smallest.

write the name of the planets HERE

Top 8 planets:

1

2

3

4

5

6

7

8

b The largest planet is .....

write the name of the largest planet HERE

c The smallest planet is .....

write the name of the smallest planet HERE