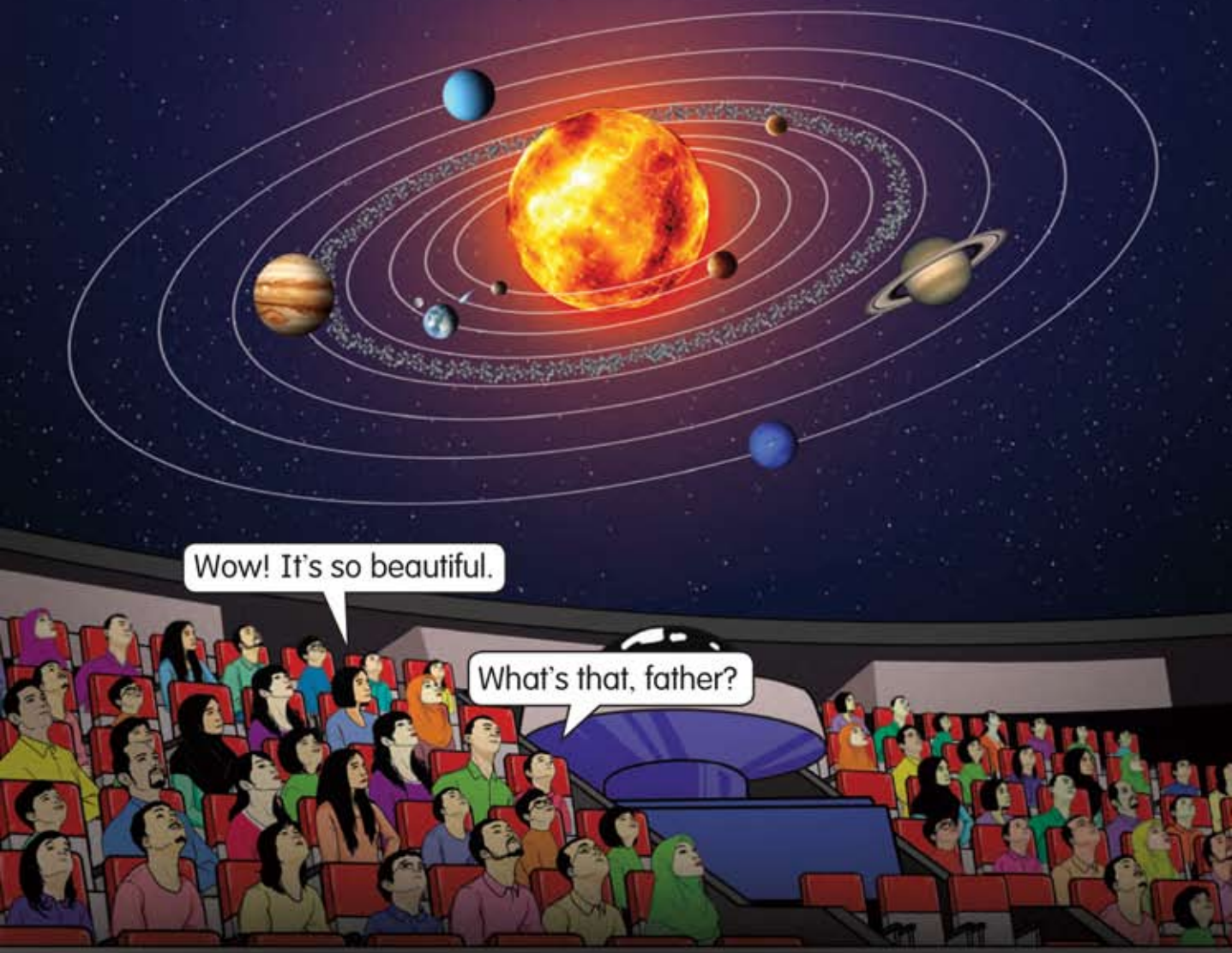
Unit 9

THE SOLAR SYSTEM

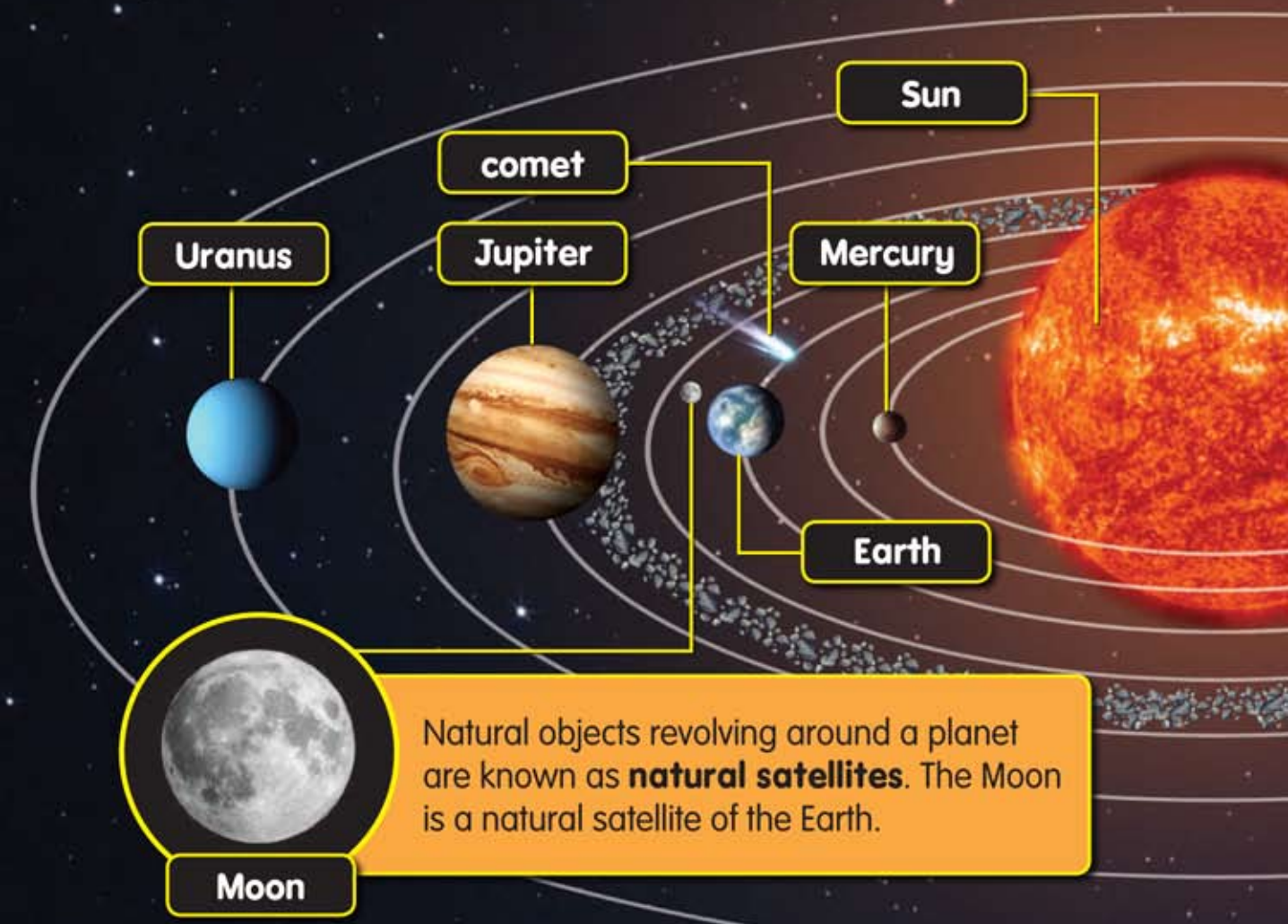
Langgi and his family are watching a presentation at the National Planetarium space theatre.



What is shown on the theatre screen?

Members of the Solar System

The Solar System is made up of the Sun, planets, natural satellites, asteroids, meteoroids, and comets. Let us get to know our Solar System.



Natural objects revolving around a planet are known as **natural satellites**. The Moon is a natural satellite of the Earth.

The Sun, which is the centre of the Solar System, is surrounded by other members of the Solar System.

Where is the position of the Sun in the Solar System?

9.1.1

TEACHER'S NOTES

- The illustration of the Solar System is not to scale.

asteroid

Venus

Saturn

Mars

Neptune

meteoroid

Collisions between asteroids produce smaller pieces of rock in outer space known as **meteoroids**.

State the sequence of the planets in the Solar System starting from the Sun.

TEACHER'S NOTES

- Pluto was once classified as the 9th planet of the Solar System. It was classified as a dwarf planet in 2006.
- Facts about the planets in the Solar System are available at https://solarsystem.nasa.gov/planets/

Activity Book Pages: **77-79, 84**

Fun Activity Solar System Balloons

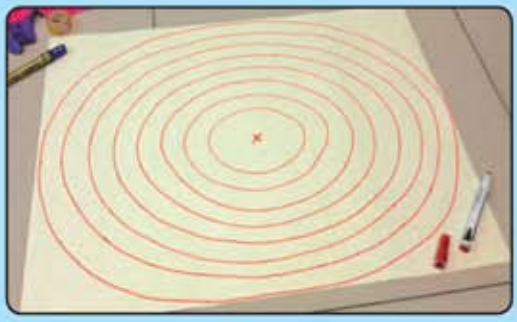
ACTIVITY GROUP

Apparatus and Materials

- adhesive tape
- balloons
- marker pen
- manila cardboard

Steps

1. Blow up the balloons according to the estimated sizes of the Sun and the eight planets.



2. Mark 'X' at the centre of the manila cardboard. Then, draw eight circles of different sizes.

3. Attach the balloons onto the circular lines according to the sequence of planets in the Solar System.

4. Label every planet. Draw the asteroids, meteoroids, and comets on the manila cardboard.

5. Present your Solar System Balloons to the class.

Questions

1. List the members of the Solar System.
2. Where is the asteroid located in the Solar System?

9.1.1
9.1.5

Fun Activity Interactive Card

INDIVIDUAL

Apparatus and Materials

- scissors (Caution)
- pictures of planets
- coloured paper
- glue

Steps

Caution

1. Fold the paper in half. Then, cut the centre part of the fold as in the diagram.

2. Push the fold between the two cuts upwards.

Caution

3. Cut the picture of the planet and paste it on the upward fold of the card.

4. Write information about the planet on the cardboard. Decorate the card creatively.

5. Repeat steps 1 to 4 for other members of the Solar System.

Question

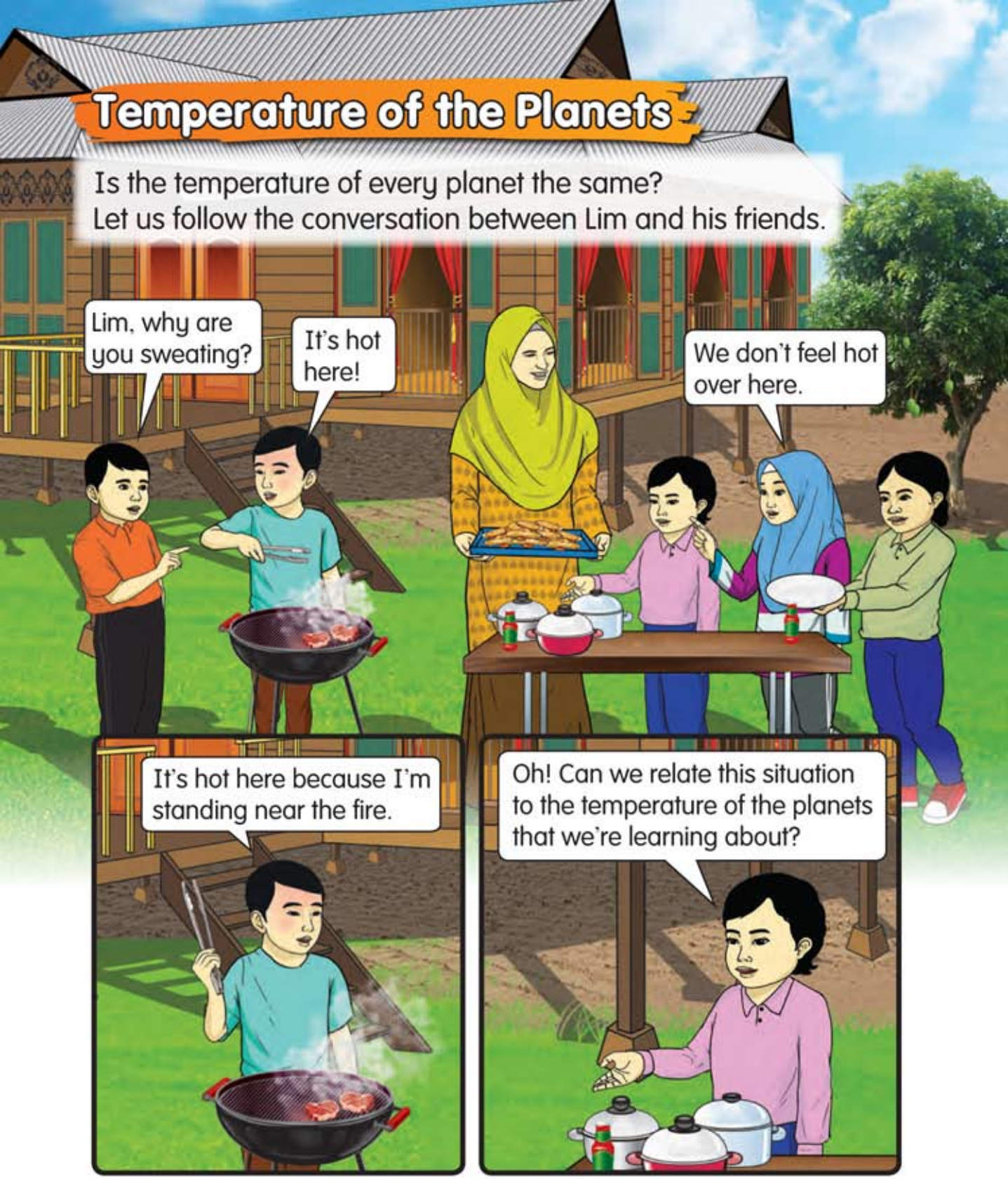
Besides Saturn, which planet has a ring?

TEACHER'S NOTES

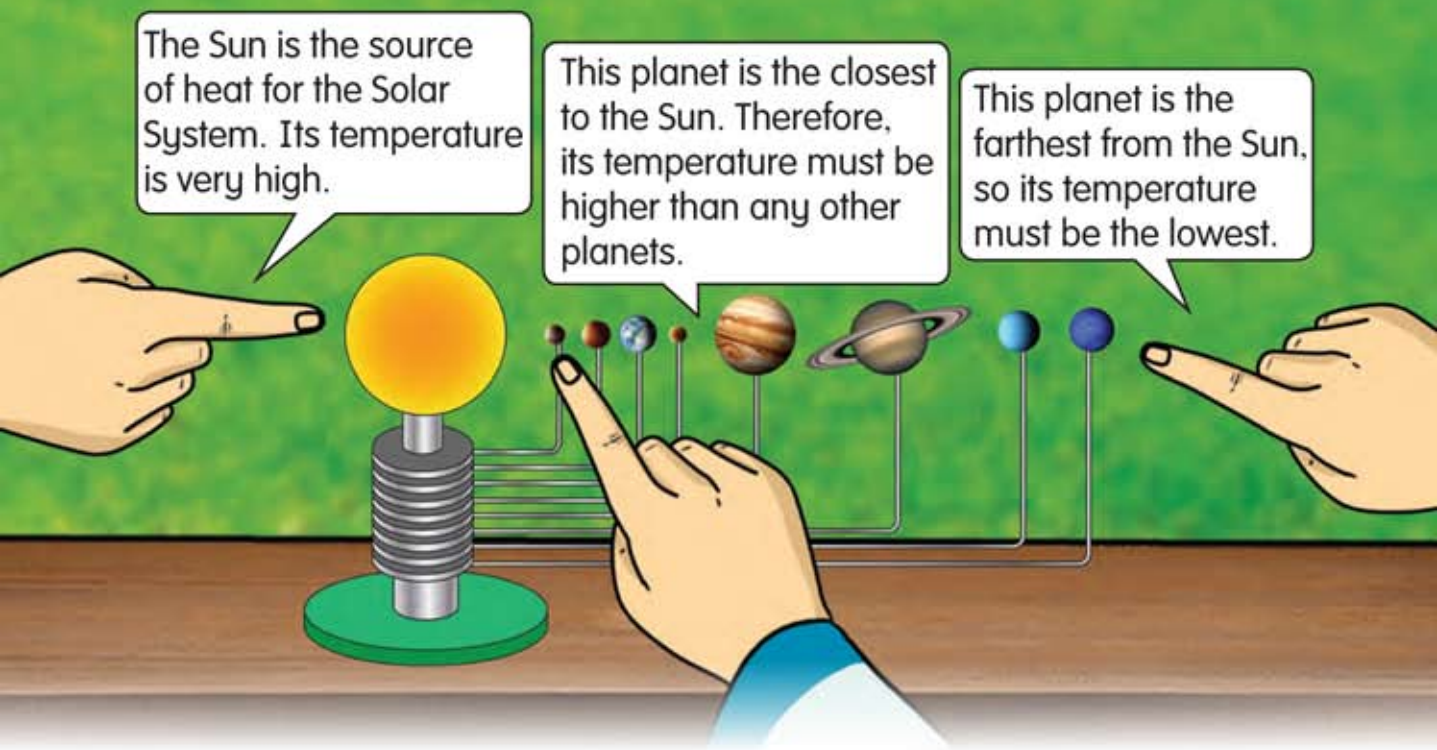
- More information about the members of the Solar System is available at https://solarsystem.nasa.gov/

Temperature of the Planets

Is the temperature of every planet the same?
Let us follow the conversation between Lim and his friends.



9.1.2



What can you state about the temperature of the planets?

The temperature of the nearest planet to the Sun is higher than the temperature of the farthest planet from the Sun.

HOTS

If the Earth were located in Uranus's position, would it be suitable for life? Why?

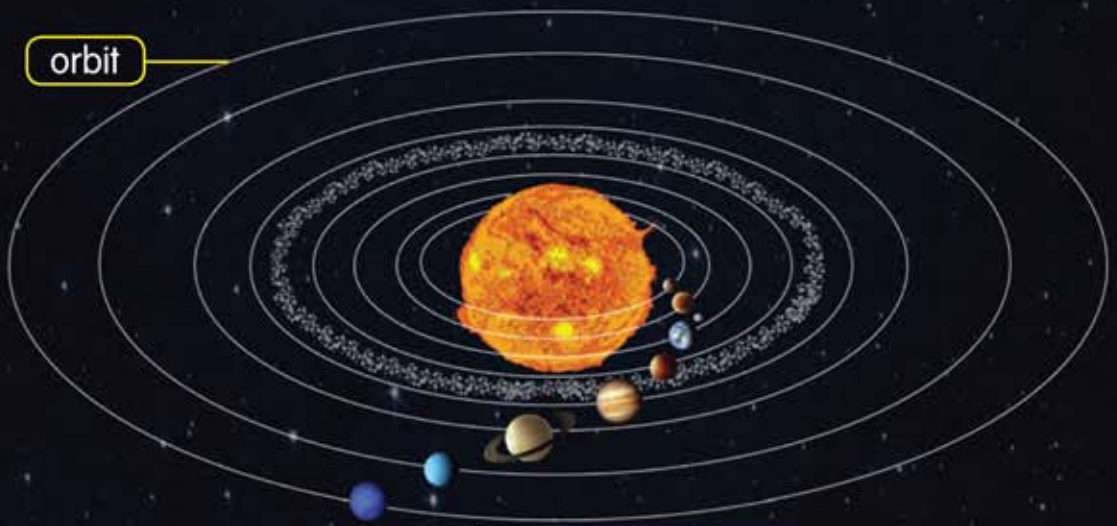
TEACHER'S NOTES

- An atmosphere is a layer of gas that surrounds a planet.
- An interactive activity on planet temperature can be found at https://bukuteks.dbp.gov.my/media.php?id=1336

Activity Book Pages: **80-81**

Orbit of Planets

Just like the car track, each planet revolves around the Sun in its own path called an **orbit**.



The orbit is an elliptical imaginary path that goes around the Sun in space.

9.1.3

TEACHER'S NOTES

- An ellipse is a regular oval shape (almost like the shape of an egg).
- An interactive activity on the orbits of planets can be found at https://bukuteks.dbp.gov.my/media.php?id=1337

Activity Book
Pages:
82-83

Fun Activity

An Orrery of the Solar System

ACTIVITY GROUP

Apparatus and Materials

- ruler
- adhesive tape
- scissors (Caution)
- cardboard
- coloured pencils
- cutter (Caution)
- paper cup
- paper fastener
- hole punch

Steps

1. Draw and cut pictures of the Sun and the planets.

2. Cut the cardboard into eight strips of different lengths.

3. Paste the picture of each planet at one end of every strip in a sequence.

4. Make a hole at the other end of each strip and at the bottom of the paper cup.

5. Tie all the strips together at the bottom of the paper cup using the paper fastener.

6. Paste the picture of the Sun at the centre of the model and label it.

7. Discuss the Solar System using the orrery model.

Questions

1. What does the length of the strips in the orrery model represent?
2. State the planets in sequence starting from the nearest to the Sun.

9.1.3
9.1.5

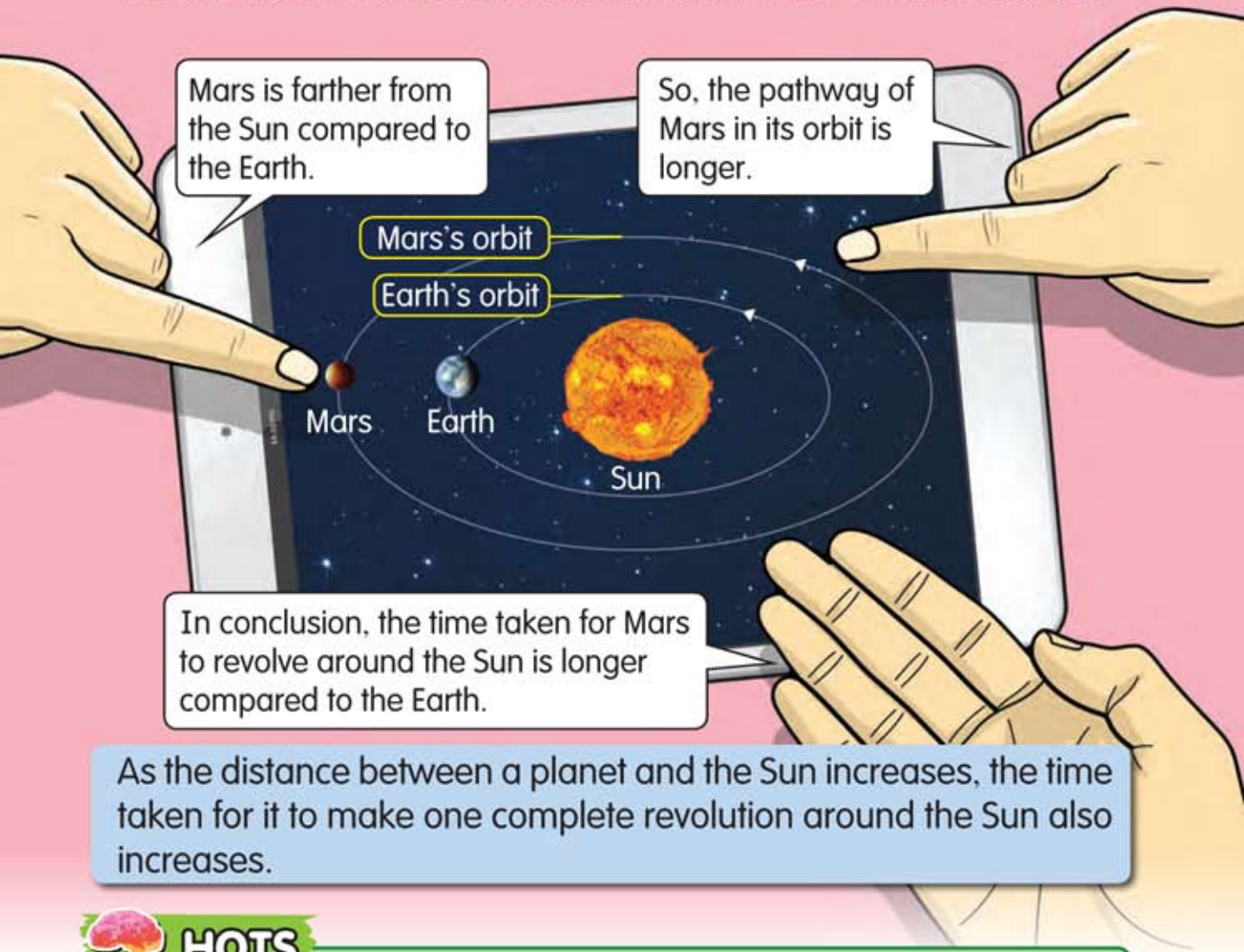
TEACHER'S NOTES

- An orrery is a special type of clockwork model invented by George Graham to compare the position and movement of the planets in the Solar System.

Revolution Time of the Planets

The time taken for each planet to revolve around the Sun is different. Observe the situation below.

What is the difference between the Earth's orbit and Mars's orbit?



As the distance between a planet and the Sun increases, the time taken for it to make one complete revolution around the Sun also increases.

HOTS

The Earth takes one year to make one complete revolution around the Sun. Compare the time taken for other planets to revolve around the Sun in the unit of Earth Year.

9.1.4

TEACHER'S NOTES

- Earth Year is a unit for the time taken by the Earth to make one complete revolution around the Sun.

Activity Book Page: 83

Let's Test

Relating the Distance of Planets from the Sun and the Time Taken to Make One Revolution

ACTIVITY GROUP

Apparatus and Materials

- stopwatch
- wooden pole
- long rope
- adhesive tape

Steps

1. Stick a wooden pole in the field.
2. Mark eight different lengths on the rope.
3. Tie the rope to the pole and hold the other end of the rope.
4. Mark the starting position using adhesive tape and move around the pole to make one complete circle.
5. Record the time taken as in Table A.
6. Repeat steps 3 to 5 using different lengths of the rope.

Table A

Length of rope (m)	Time taken to make one complete circle (seconds)
1	
2	
3	
4	
5	
6	
7	
8	

Question

What is the relationship between the distance of your position from the centre of the circle and the time you revolve around the centre of the circle?

Leisure Science

My Planet Lantern

Steps

1. Cut and write information about planets on coloured paper strips.
2. Attach the coloured paper strips together using a paper fastener.
3. Form the coloured paper strips into a sphere.
4. Decorate your Planet Lantern.

9.1.4
9.1.5

TEACHER'S NOTES

- The time of a revolution is the time taken to make one complete circle.

Activity Book Pages: 83-84

Let's Remember

1. The Solar System

2. All planets revolve around the Sun in their orbits.
3. As the distance between a planet and the Sun increases, the time taken for it to make one complete revolution around the Sun also increases.

Let's Answer

Answer all the questions in the Science exercise book.

1. What is the position of the Earth in the sequence of planets around the Sun?
2. What are the objects located between Mars and Jupiter?
3. _____ is the coldest planet in the Solar System.
4. Uranus revolves around the _____ in its orbit.
5. Arrange the planets in sequence of increasing planet temperature.

   Earth | Jupiter | Neptune | Saturn | Venus

6. Which planet requires the least time to make one complete revolution around the Sun? Why?