



Lunar eclipse and phases of the Moon

Journey to the Moon

time

55 minutes

learning outcomes

To:

- describe and name the phases of the Moon
- know what causes a lunar eclipse
- learn to work together
- learn to set up and carry out an experiment

materials needed

- photographs of phases of the Moon (Appendix)
- 8 balls
- 8 chairs
- 8 torches

end product

- a representation of the Sun, Moon and Earth during a lunar eclipse

Tip. You will need a large space for this lesson, for example the gym.

Preparation

For the activity **The Sun, the Moon and the Earth** you will need a ball, a chair and a torch for each group.



What do you think? 10 min.

Write the following questions on the board:

- Why does the Moon look different every day?
- What happens during a lunar eclipse?

Ask the children what they think the answers to these questions are. There are no right or wrong answers; you want to find out what the children think at the moment.



The children investigate the various phases of the Moon.



The Sun, the Moon and the Earth 10 min.

Organise the children into groups of three. Give each group a ball (Moon) and a chair with a torch (Sun). Explain to the children that the Moon is a sphere. That is why we are using a ball for this task. We see the Moon as a flat disc. The children complete Task 1 on the worksheet.

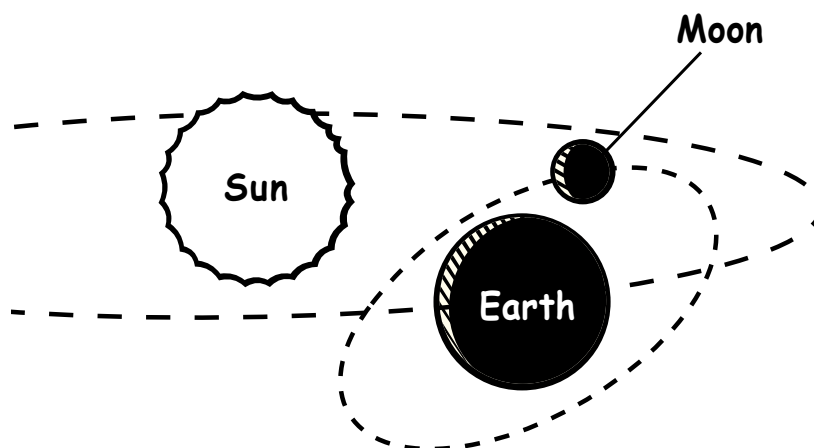


Phases of the Moon 15 min.

After the experiment, explain to the children the following six phases of the Moon: New Moon, First Quarter, Waxing Gibbous, Full Moon, Waning Gibbous, Last Quarter. Show the photograph of the eight phases of the Moon from the Appendix. The names of two phases of the Moon have already been filled in on the worksheet. You can use the following to help you remember the phases of the Moon: during the First Quarter the visible part of the Moon forms a 'b' (for begin). During the Last Quarter of the Moon the visible part of the Moon forms a 'd' (for end). Explain to the children where the word 'gibbous' comes from. Gibbous is another word for convex, or rounded. The children complete Task 2 on the worksheet.

Lunar eclipse 10 min.

During a lunar eclipse the Earth is lined up precisely in between the Sun and the Moon, so the light from the Sun shining on the Moon is blocked by the Earth. This does not occur every month because the Moon's orbit around Earth lies in a slightly different plane from Earth's orbit around the Sun. Show the drawing below to explain more clearly the answers to the questions.



Report 10 min.

The children complete Task 4 on the worksheet.
Discuss the answers with the class.



Lunar eclipse and phases of the Moon



In this experiment you will be answering two research questions:

- *Why does the Moon look different every day?*

- *What happens during a lunar eclipse?*

1

The Sun, the Moon and the Earth



What do you need?

• torch

• ball

• chair

What do you need to do?

1 Form a group with three children. Look at the drawing below.

2 One of you needs to sit on the chair, holding the torch.

That child is the Sun. Turn on the torch.

3 Another child stands in front of the chair at a distance of five large paces.

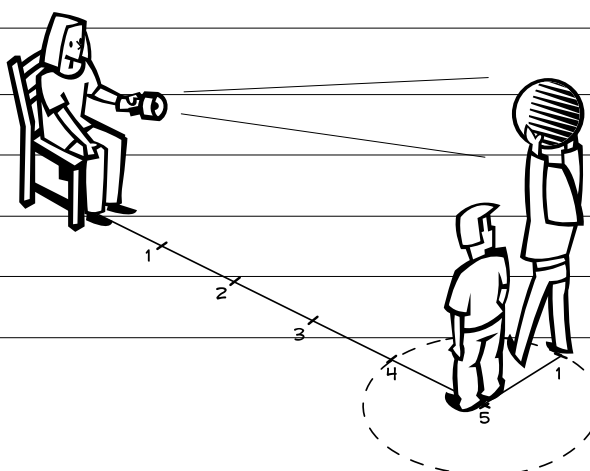
That child is the Earth.

4 The third child takes the ball and stands one large pace away from the Earth.

That child is the Moon. Hold the ball (the Moon) high in the air so that the

Sun can still shine on it. Now walk slowly in an anticlockwise direction

in a circle around the Earth.





Draw in the box below what you see happening during the experiment.

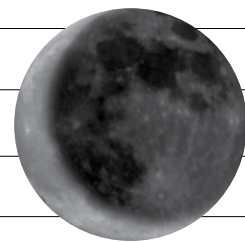
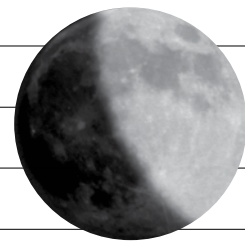
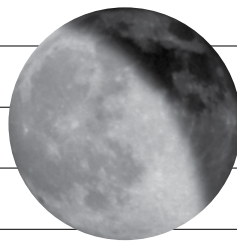
2 Phases of the Moon

a Draw the position of the Earth, the Sun, and the Moon when it is Full Moon.

b On the top line at each of the lunar phases below, write the correct number.
Write a 1 under New Moon, a 2 by the next phase, and so on. If you do not know the answer, ask your group to repeat the experiment from Task 1 and look closely to see what the Moon looks like.

c On the second line, write the name of the phase you can see shown.
Two have already been filled in for you. Choose from:

New Moon / First Quarter / Waxing Gibbous
Full Moon / Waning Gibbous / Last Quarter



Waning Crescent

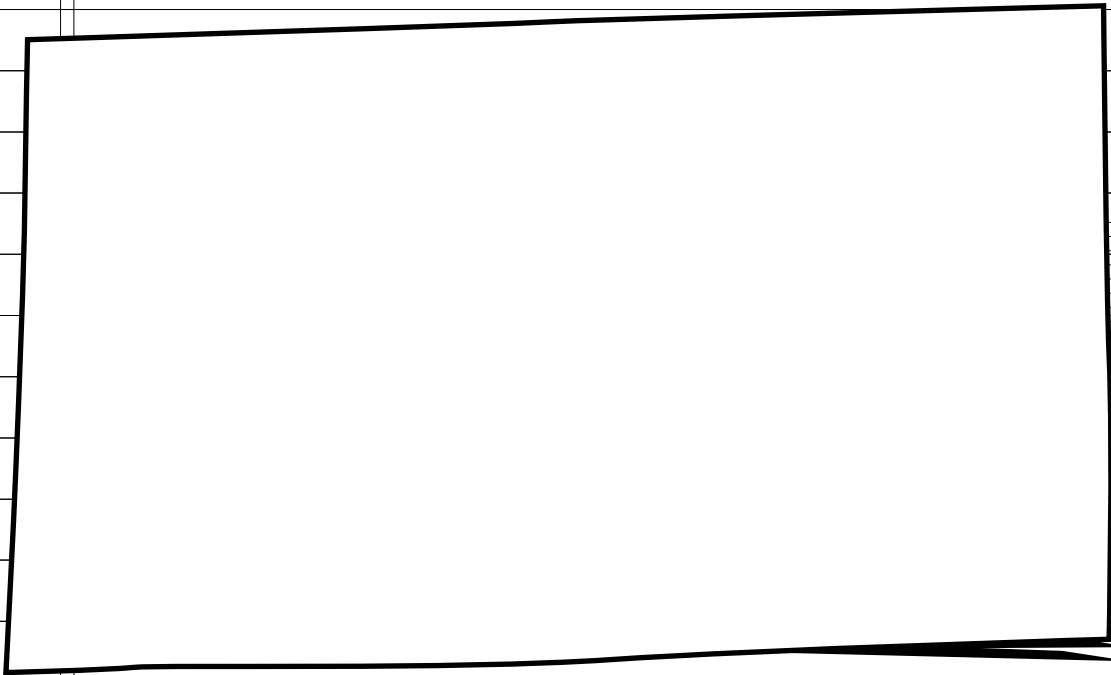
Waxing Crescent

write
the number
ON THE TOP
LINE

write
the name
ON THE
BOTTOM
LINE

3 Lunar eclipse

- a During a lunar eclipse the Earth is positioned exactly between the Sun and the Moon. Make sure that this is how you are standing. In the box below, draw the positions of the Sun, Moon, and Earth during a lunar eclipse.



- b What is the difference between the positions during a lunar eclipse and the positions for Full Moon?

- c Why do we not see a lunar eclipse every month?

4 Report



Write a short report about your research. Make sure you include:

- what your representations of the Full Moon and the lunar eclipse looked like
- what phases of the Moon you know
- why it is that we do not see a lunar eclipse every month

