



# The size of the Moon

## Journey to the Moon

**time**

50 minutes.

**learning outcomes**

To:

- know that the Earth is larger than the Moon
- discover that an object looks smaller if it is further away

**end product**

- a scale model of the Earth and the Moon

**materials needed**

- 13 balloons
- 6 pieces of string (the length of the string is the circumference of the Earth)
- a scale model of the Earth (a ball with a minimum diameter of 75 centimetres, such as a space hopper or a large beach ball)
- a balloon as a scale model of the Moon
- scissors

## Preparation

Write on the board the questions for the activity **The size of the Moon**.

For the activity **Measure the Moon**, measure the circumference of the scale model of the Earth by laying a piece of string around the Equator. Use a ball with a diameter of 75 centimetres, such as a space hopper, to represent the Earth. Cut the length of string to the same length as the equator you have just measured. Cut twelve pieces of string to this length. Inflate a balloon to the right size to represent the Moon: the circumference of the Moon is one quarter the size of the Earth's. Use this balloon-Moon as a guide to see if the children are arriving at the correct answer.

Make sure you have the scale model of the Earth, the Moon, and an uninflated balloon ready at hand.



## The size of the Moon 10 min.

Discuss the Moon with the children. Sometimes the Moon looks small, and sometimes it looks a lot larger. But how large is it really? And how far away from the Earth is the Moon? Encourage the children to describe what they know about the size of the Moon. Write their responses on the board.



The children carry out an activity to find out whether the Moon is larger or smaller than the Earth.



## What can you see? 10 min.

The children investigate whether something looks larger or smaller when seen from further away. Organise the children into pairs. Child 1 stands against the wall of the classroom. Child 2 stands opposite Child 1.

Child 2 uses his or her hands to make a frame, as shown on the worksheet. Child 2 holds this frame in front of his or her eyes so that the head of Child 1 fits perfectly in the frame.

Child 2 walks backwards four metres, while Child 1 remains against the wall.

Child 2 makes the frame again and looks through it at the head of Child 1.

Child 1's head now appears much smaller. That is because he or she is further away. The children swap roles and complete [Task 1](#) on the worksheet.

## Measure the Moon 25 min.

Is the Moon really that small, or does it just look small because it is so far away?

The children compare the size of the Moon with that of the Earth. To complete this task the children will need to be familiar with the term circumference. If they are not, you should explain it to them.

Show the children the scale model of the Earth. Give each pair a balloon.

This balloon represents the Moon. Encourage the children to blow up the balloon until it is the size that they think it should be to represent the Moon in relation to the scale model of the Earth. Once the children think that the balloon is the right size, you can tie a knot in it.

Now that the children have estimated the size of the Moon, they will measure it to see if their estimate is correct. Explain to the children that the circumference of the Earth is approximately 40,075 kilometres. The circumference of the Moon is about a quarter of this: 10,920 kilometres. Take one of the strings which represent the length of the Earth's circumference. Show the children that this string fits exactly around the Earth's equator. Ask the children how long the string would need to be to fit exactly around the equator of the Moon. Encourage them to reach the conclusion that they need to cut the string into quarters.



Organise the children into groups of four and ask them to complete [Task 2](#) on the worksheet. When they are finished, discuss the task. Did any of the children blow up their balloon to the right size? Why did they think this was the right size? Did any children think that the Moon was larger?



## How large is the Moon? 5 min.

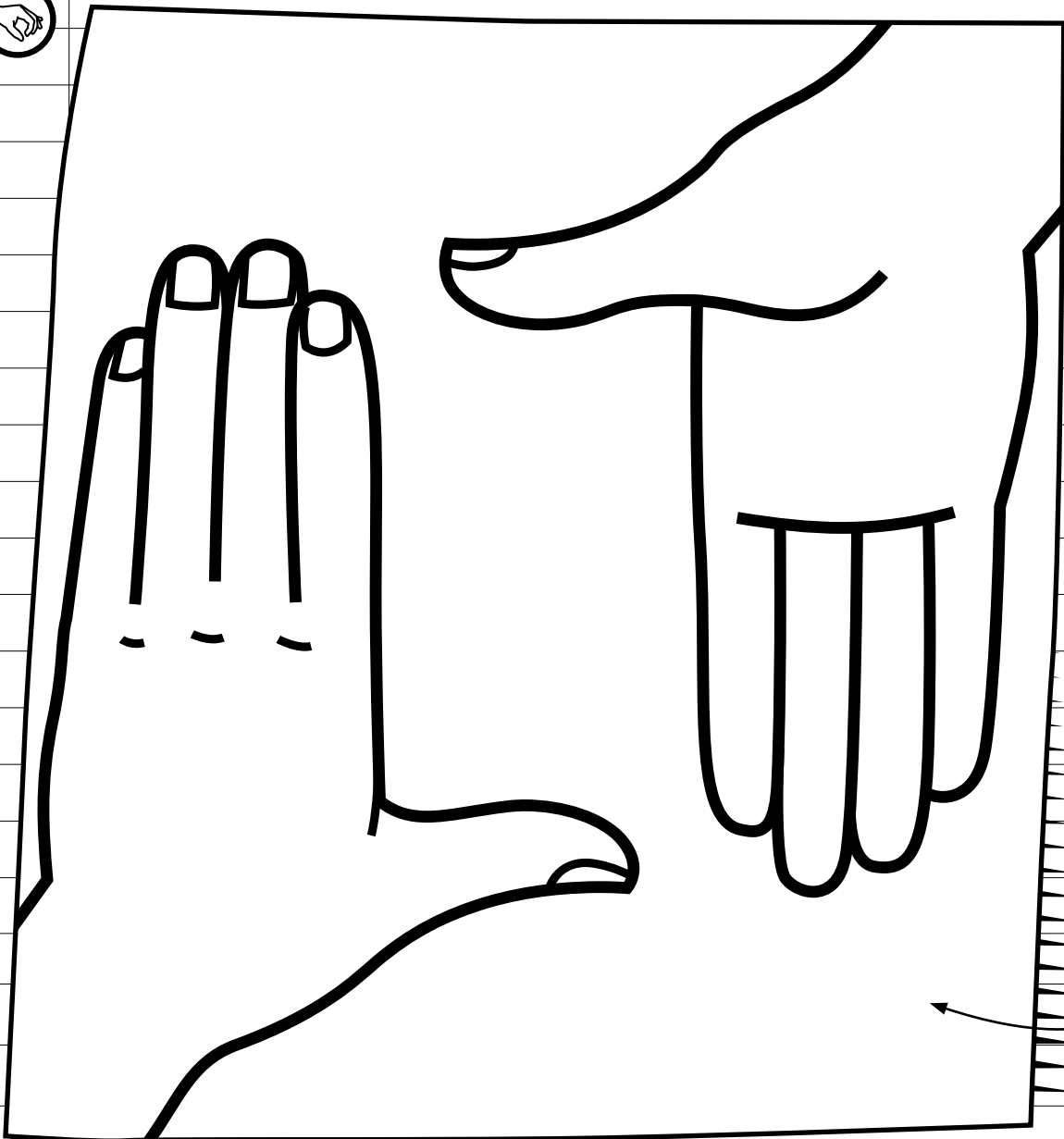
The children complete [Task 3](#) on the worksheet. Ask the children about their answers. How do they explain their responses? The Moon looks smaller than it really is because it is a long way away from the Earth. Just like the children looked smaller in the hand frame when seen from further away.



# The size of the Moon

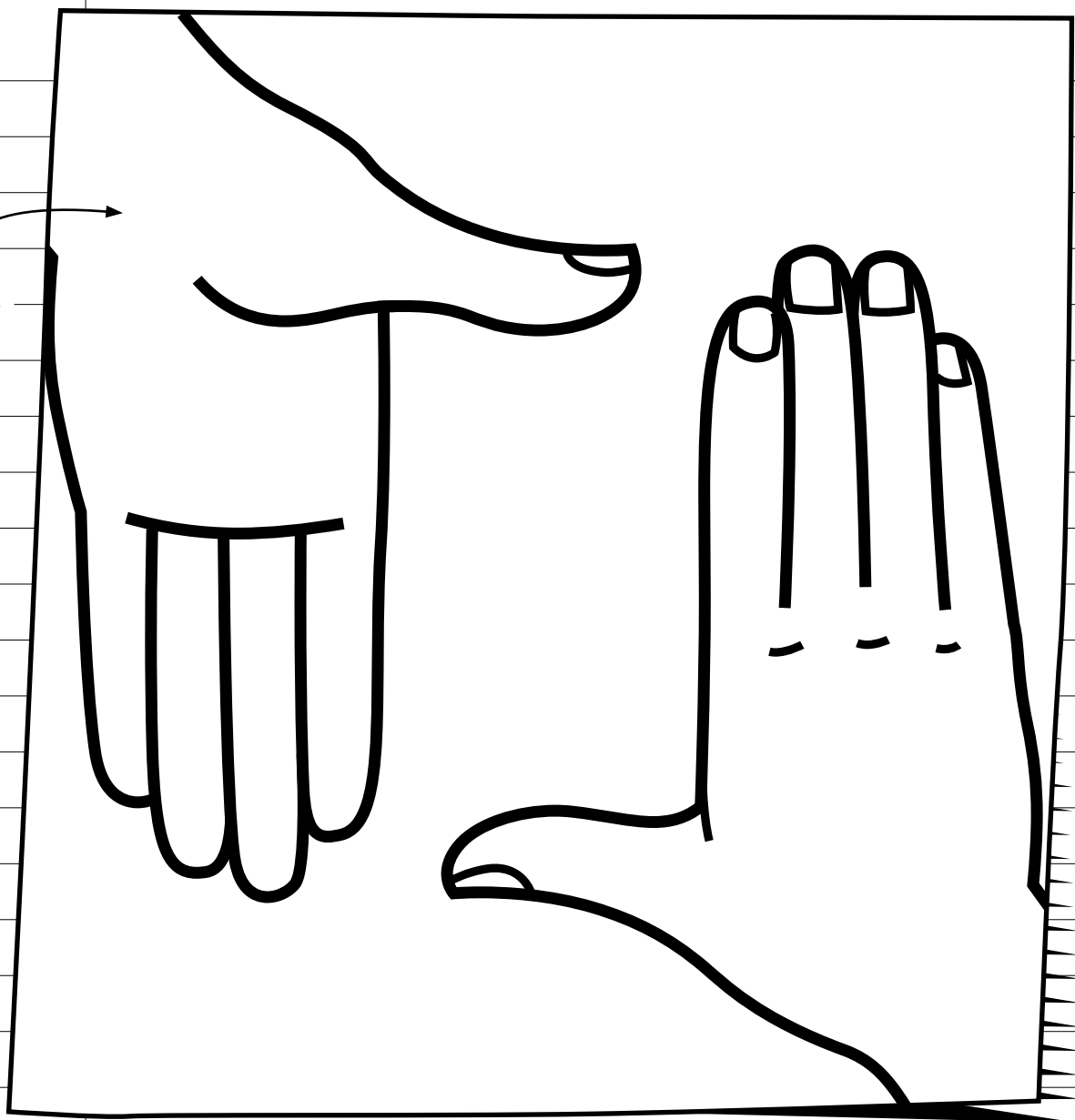
1 What do you see?

a Draw what your classmate looks like through your hands:



classmate  
close by

classmate  
far away



b Circle the correct answer: when something is further away it looks:

**larger / smaller**

c What do you think? Is the Moon larger or smaller than the Earth?

## 2 Measure the Moon

What do you need?

- string
- scissors
- balloon

What are you going to do?

You have made an estimate of how large you think the Moon is.

Now you are going to measure whether your balloon is the right size.

In your group cut your piece of string into four pieces of equal length.

1 Fold the string in half and in half again.

2 Cut the string at each fold. You will now have four pieces of equal length.

If your piece of string fits exactly once around the middle of your balloon  
then your Moon is exactly the right size!

a The string was **too long / too short / just right**



b So my Moon is **too large / too small / exactly the right size**

c The piece of string that your teacher measured around the equator of the Earth  
was long enough to go around the equator of the Moon four times.

Circle the correct answer:

The circumference of the Earth is four times **greater / smaller** than  
the Moon.



3 How large is the Moon?



The circumference of the Moon is four times smaller than that of the Earth.

But the Moon in the sky looks much smaller than that.

Why is that?