



# ASTROEDU

Peer-reviewed Astronomy Education Activities

## Lunar Day

**Through a fun-learning activity,  
understand why moon always keeps  
the same face towards Earth.**

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#### KEYWORDS

Month, Earth, Lunar day, Moon



#### CATEGORY

Astrometry and celestial mechanics, Planetary systems



#### LOCATION

Small Indoor Setting (e.g. classroom)



#### AGE

4 - 8



#### LEVEL

Primary, Secondary



### TIME

30min



### GROUP

Group



### SUPERVISED

No



### COST

Free



### SKILLS

Asking questions, Developing and using models, Analysing and interpreting data, Constructing explanations, Communicating information



### TYPE OF LEARNING

Modelling, Simulation focussed, Fun activity



### GOALS

- To demonstrate why the Moon always keeps the same face towards Earth.
- To determine the length of the lunar day.



### LEARNING OBJECTIVES

- Children mimic the Earth-Moon system, one representing the Earth and the other representing the Moon. As the children swing around each other, they will notice that the Moon always keeps the same face towards the Earth.
- They should also learn that the Earth and Moon rotate at different rates: once a day for the Earth and once every 29.5 days for the Moon.



## BACKGROUND



A lunar day is the period of time it takes for the Earth's Moon to complete one full rotation on its axis with respect to the Sun. Equivalently, it is the time it takes the Moon to make one complete orbit around the Earth and come back to the same phase. It is marked from a new moon to the next new moon.

The Moon keeps the same face towards Earth; the Earth does not keep the same face towards the Moon. So they have different rates of rotation: once a day for the Earth, and once every 29.5 days for the Moon.



## FULL DESCRIPTION

## Preparation:



### Step 1:

Print the Moon and the Earth images, neatly cut them out.

*Tip: You can also print the images on sticker paper and paste on the paper plates or thicker paper and use them directly.*

### Step 2:

Stick them onto the paper plates using glue. Leave it few minutes to dry.

### Step 3:

Then cut secure holes on the sides to tie an elastic band for the masks. Punch out the eyes, nose and mouth.

## Exercise:



**Step 1:**

Form children into groups of two. One child wears the Earth mask. The other child wears the Moon mask.

**Step 2:**

Ask them to hold hands and slowly spin around.

**Step 3:**

The Earth child tries to stay in the same spot as the Moon child turns.

**Step 4:**

The two children will see that the Moon always keeps the same face towards the Earth. Once around the Earth is one lunar day of 29.5 Earth days.

**Step 5:**

The other children note that the Moon orbits the Earth. They can also count the number of spins for the Moon. To illustrate one lunar day, the Moon child will spin 29.5 times.

**Step 6:**

The two children drop hands.

**Step 7:**

The Earth-child spins around in place, while the Moon-child moves slowly around the spinning Earth, always facing the Earth.

## Step 8:

The other children note that the Moon sees different views of Earth as the two children spin.

*Tip: You should realise that the Earth isn't depicted in the correct way in this activity. The earth child should actually spin around its axis much faster. However, this is not possible when the children are holding hands. In reality, the Earth doesn't always have the same side directed at the Moon. Every person on earth has seen the Moon, no matter on which side he/she lives!*

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### EVALUATION

By asking questions about the Earth-Moon system:

- What did the other students notice about the Earth as the pair swung around?
  - What did the Earth child notice about the Moon as the pair swung around?
  - Can the students explain why the length of a lunar day is 29.5 Earth days?
  - The Earth shows different aspects to the Moon. Can the students describe what happens?
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### CURRICULUM

Country | Level | Subject | Exam Board | Section --- | --- | --- | --- UK | KS2: Year 5 | Science | - | Earth and Space: describe the movement of the Moon relative to the Earth.

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### ADDITIONAL INFORMATION

Ten second animation showing the tidal locked Moon orbiting the Earth: <http://goo.gl/qZSI8>.

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### CONCLUSION

By mimicking the orbit of the Moon about the Earth, the children demonstrate how the Moon always keeps the same face towards Earth. They can explain why the lunar day is 29.5 days long. They learn that the Earth rotates about its axis once a day, the Moon rotates about its axis once every 29.5 days.

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### CITATION

Howard, S., , *Lunar Day*, [astroEDU, 1504](#) [doi:10.14586/astroedu/1504](#)

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## **ACKNOWLEDGEMENT**

UNAWA, Universe in a Box

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