

Exploring the Moon

The Moon is Earth's only natural satellite, our closest neighbour in space.

The Moon is our constant companion, making our nights brighter and our tides stronger. Not only that, but scientists believe that the gravitational effects of the moon help our planet to 'wobble' less on its axis which means that our climate is less changeable and more favourable for life.



Moon Myths & Legends

The Moon has been the subject of debate, scientific enquiry, observation, history and wonder for as long as humans have been able to look up at the night sky. This has led to countless moon stories and myths from diverse cultures found all across the globe.

Some cultures believe that they can see a rabbit on the Moon's surface, sometimes said to be pouncing on a pestle (an instrument used to grind up medicine or herbs). In China, this is sometimes known as the Jade Rabbit and it is sent to Earth by the moon goddess to help families to overcome disease. The first robotic probe sent by China to explore the Moon was named Jade Rabbit to honour this legend. The Aztecs also shared stories about the moon rabbit. They believed that a rabbit sacrificed itself to the starving god Quetzalcoatl, and he was so touched by the rabbit's selflessness that he put her image on the moon forever.

You may have also heard of the Man on the Moon. Nowadays when we hear this phrase we might think of Neil Armstrong or one of the other 11 Apollo astronauts who journeyed to the Moon, but this legend dates back much farther than when we took one giant leap for mankind. It refers to the image of a human-like face that can be seen on the Moon's surface from the Northern hemisphere and in many ancient European myths and cultures it is believed that the man on the moon was banished there for a crime, including stealing sheep, working on a Sunday and being disrespectful to the moon itself.



Right: This image shows one version of the rabbit that is said to live on the moon. Left: The man on the moon can be interpreted in many ways, but this image shows the most common way that people identify a human face when looking at the moon from Europe.

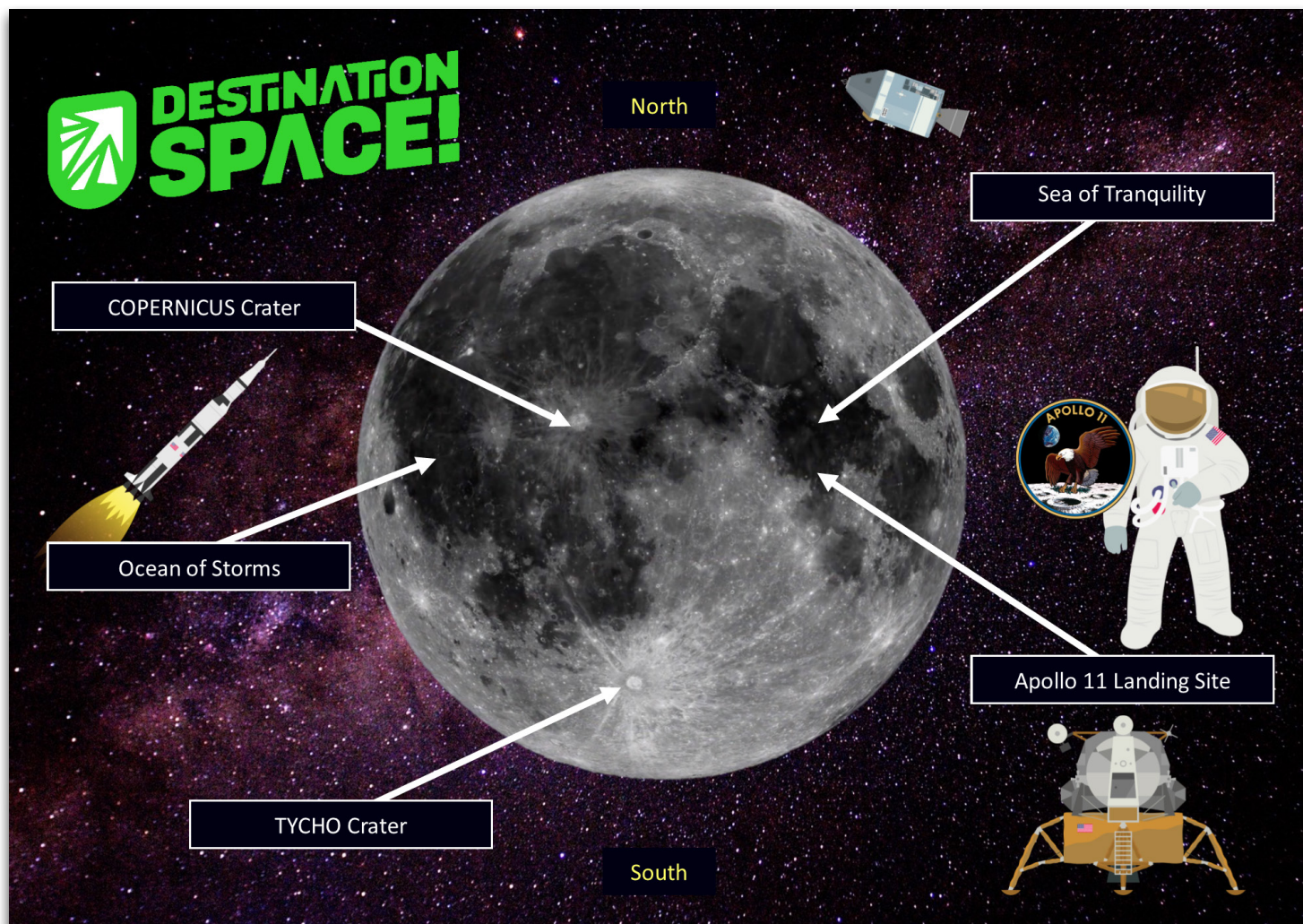
What are The Moon Markings?

While it can be fun to explore the ancient moon myths and legends (there are many more than those listed here!), we now understand why the Moon has these dark and light patches that became inspiration for so many incredible tales.

When we look at the Moon from our windows, we can see that it seems to be made of light-coloured parts and darker parts. The light parts are known as the Highlands, and have lots of rock called anorthosite. Anorthosite has lots of white minerals in it, which gives the lunar highlands their colour. The darker areas are craters and places where magma poured out of the centre of the Moon when it still had a liquid core. Just like on Earth, when this liquid cools on the surface it forms dark rock called basalt.

Identifying Areas on the Moon

Use this moon map to identify some important areas on the surface of the Moon that can be seen with the naked eye from Earth.



This activity is much easier if the Moon is full (or nearly full) and it is a clear night with few clouds. You can also use a telescope or binoculars to see the areas more clearly, but be careful as the moon is very bright so don't look for too long.

Apollo 11 Landing Site (& the Sea of Tranquity):

This area is also known as Tranquility Base, due to its location in the Sea of Tranquility. This is where Neil Armstrong became the first human to step out on to the lunar surface in July 1969.

"That's one small step for man, one giant leap for mankind." – Neil Armstrong

Ocean of Storms:

The Ocean of Storms is the largest of all our moon's dark spots. It is thought to be one of the oldest craters on the surface and could be key to scientists' understanding of what the Moon was like when it first formed. The Apollo 12 mission landed in the Ocean of Storms at a site that is now known as Mare Cognitum (Latin for Known Sea).

Copernicus crater:

58 miles wide (that's roughly the same as the distance between Dynamic Earth and the Firth of Clyde on the West Coast of Scotland). Copernicus is a young crater – scientists think it might even be less than one billion years old (yes, that's young in crater years!).



*Copernicus crater, December 1972
Photo credit: NASA*

Understanding crater sites on the Moon and across the solar system can help us understand our own planet's history.

Why are so many areas on the Moon called 'seas'?

Most of the darker areas of the Moon are called seas or oceans (or Maria which is Latin for sea) because early astronomers who looked at the night sky thought that these areas were darker because they contained water, like the seas on Earth.



*Apollo 12 mission patch. The image shows a ship on a voyage (which represents the Naval crew members) and the Ocean of Storms in the background.
Photo credit: NASA*

If you look really closely you might be able to spot some bright lines that seem to be spreading out from the crater. These are called radial rays and are made from ejecta (moon dust thrown out when something crashed into the surface and made the crater).

Tycho Crater:

Speaking of young craters, the Tycho crater is just a baby at around 108 million years old (many of the other lunar craters are around 3.9 billion years old!). Just like with Copernicus, the radial rays coming from the centre of Tycho are clear from Earth. Scientists are really interested in Tycho as it is really well preserved.

Try this!

We talked about some of the moon craters having radial rays made when something crashed into the Moon throwing moon dust and rock up into the air and creating these lines that come from the centre of the crater. You can try this using things you can find around your house.

- Fill a bowl with something granular (made of lots of tiny bits of stuff!) like sugar, flour or washing up powder...
- Find a few items that are all different sizes and roughly round.
- Hold the items above the bowl and drop them in from the same height each time.
 - Do you get a crater in the sugar/flour/powder?
 - Can you see the radial rays coming from the centre?
 - What differences can you see in the craters that you make with different items?

Google Moon

www.google.co.uk/moon/ (Like Google Earth, but for the Moon!)

To explore the Moon's surface in even more detail, why not visit Google Moon and zoom into incredible satellite images of the lunar surface.

You can even visit the 6 Apollo landing sites to see the experiments, equipment and tracks left by the astronauts. If you have the newest version of the software (which is all free to download!), it also includes:

- Tours of lunar landing sites, narrated by Apollo astronauts
- 3D models of rovers and landers
- 360-degree photo panoramas
- Rare TV footage of the Apollo missions

For more information on the Destination Space programme please visit www.destination-space.uk and for the entire suite of Dynamic Earth Online resources, visit www.dynamicearthonline.co.uk

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