

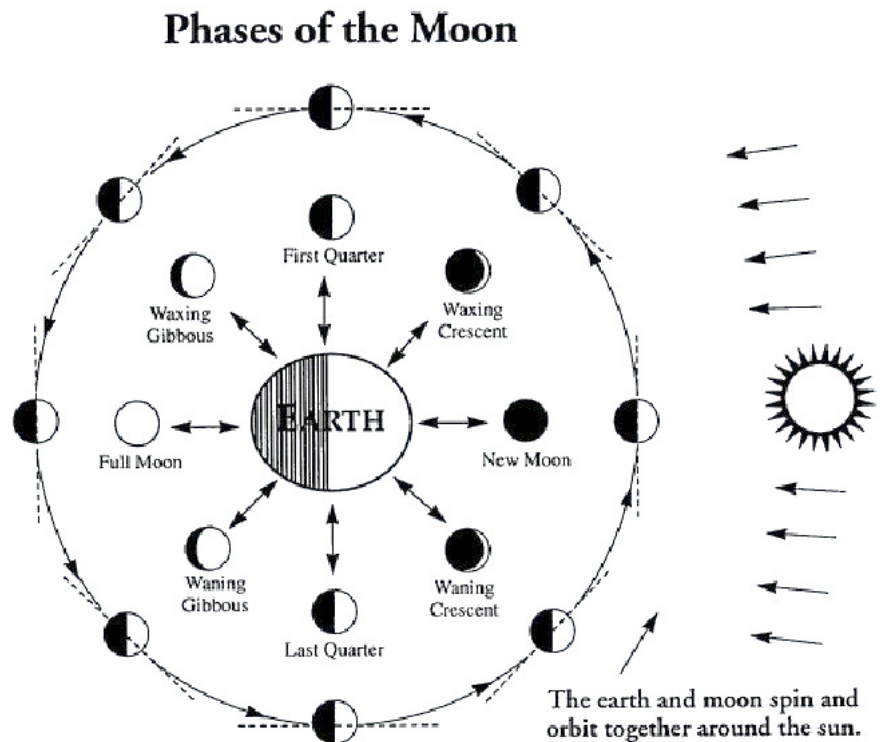
bigger	becoming	disappear	thousand	Earth	orbits
shade	clockwise	measure	perspective	Moon	regular

One of the most obvious and _____ things that we can see about the Moon is the way it appears to change shape in the sky almost every night. (Actually you can often spot the _____ in the day-time, it's just not as easy to see). We know the Moon is a giant sphere made of rock, roughly 384 _____ kilometres away. So how can it change shape?

The Moon doesn't really change shape. Just like _____, half of the Moon is always in the sunlight, half is in the _____. What we are seeing is more or less of the Moon's 'face' directed towards the Sun. As the Moon _____, or circles the Earth we get to see it from different angles. Sometimes we see the full circle of the Moon, other times a lop-sided rugby ball shape or a crescent.

Every cycle it seems to _____ altogether. To help us describe this effect, we use some old-fashioned words;

- 'Waxing' – means getting _____, or coming in.
- 'Waning' - means getting smaller, or going out.
- 'Gibbous' – is like a lop-sided rugby ball shape.
- 'Crescent' – is the thin sliver shape with pointy ends



As shown in the diagram, the Moon orbits the Earth in an anti-_____ direction. Each orbit takes a little less than a month (the word 'month' is from the old English word 'mōnath' which means to _____ time with the moon). A new moon means it is facing away from us and it is fully in shade from our _____. A full moon shows the full reflection of the Sun. First and last quarters allow you to see half of the Moon (confusingly, but it is ¼ the way around). 'Waxing gibbous' means that it's on its way to _____ a full moon. A 'waning crescent' moon tells you that a new moon is about to happen. If you can see the right hand side of the Moon it is waxing – getting bigger. If you can see the left hand side, it'll be waning.

Lunar Phases - Comprehension:

(you are allowed to re-read the story)

1. Roughly, how far away is the Moon? _____
2. Does the Moon shine with its own light? Yes / No Why, or why not:

3. Approximately how long does it take for the Moon to circle the Earth?

4. If you can't see the Moon on a clear night, what could be happening?

5. The Moon changes shape because it's actually an inflatable beach ball : True / False
6. Create a definition for the word 'gibbous' _____
7. Grammar: Waxing and waning are words we sometimes use to talk about the tides on Earth as well. What would be happening if the tide was 'waning'?

8. Why is that when you can see half of the Moon we call it a quarter?

9. What would you expect to be brighter a gibbous or a crescent moon?

10. Higher level thinking: Why don't we use the lunar phases to measure time on our calendar any longer? _____

Extra for experts: The *Dreamworks* (movie company) logo features the Moon with a



boy fishing off of it. From what you've learned; figure out where in the lunar phase it would be: _____.

Inquiry: Do people in the Northern hemisphere see the same phases of the Moon at the same time as we see them in New Zealand?

Bonus facts: We see the same side of the Moon all the time (an effect called 'tidally locked'). The part we don't see is called 'the dark side of the Moon', even though it gets the same sunlight as the rest of the satellite. The first time humans saw the other side was in 1959 when the Russian probe *Luna* took some grainy photographs.

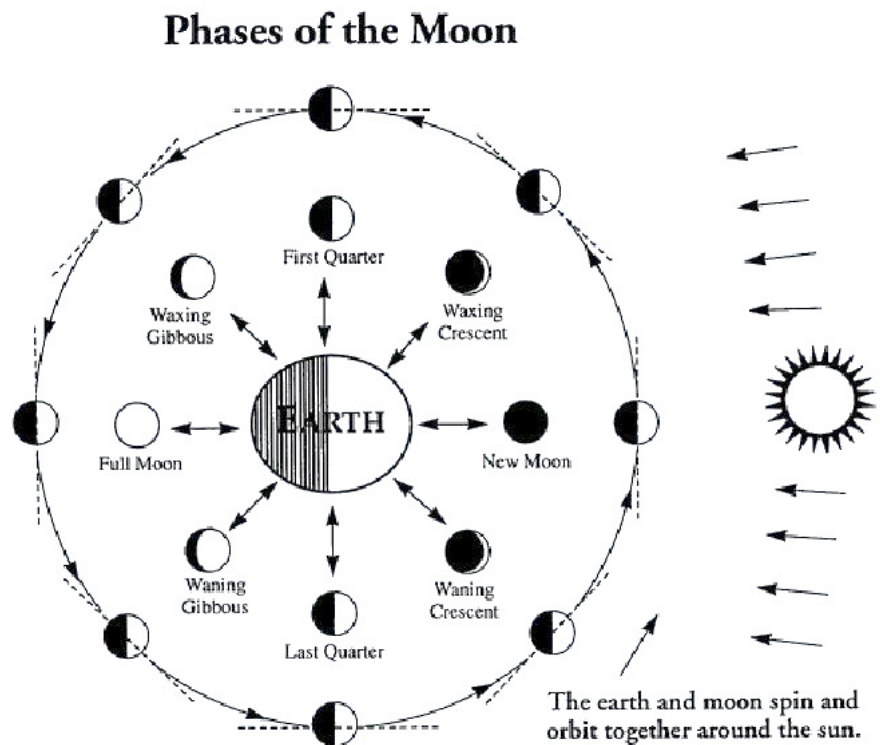
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