



The size of the Moon and Sun

The Earth is about four times as wide as the Moon. The Sun is about 100 times as wide as the Earth. But from Earth the Moon appears to be about the same size as the Sun.

When looking into the sky, things may not appear the size they really are. Vast objects like the Sun seem the same size as much smaller objects like the Moon (Picture 1).

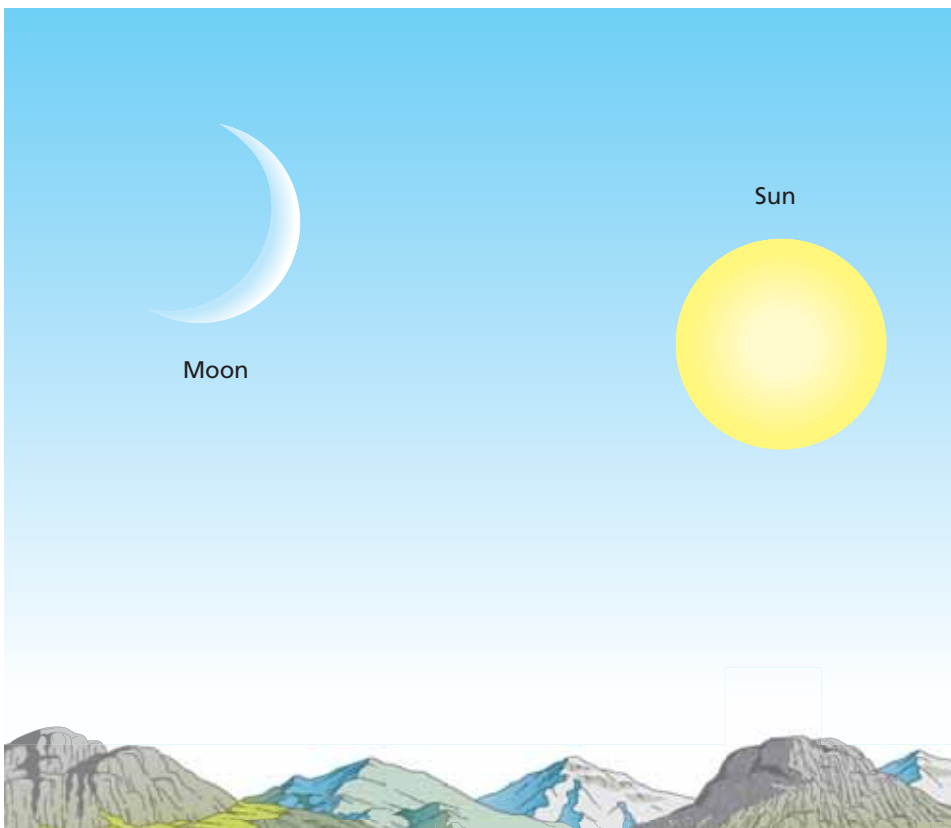
Optical illusion

When something appears to be different from what it really is, it is called an optical illusion.

The size an object appears to be depends on how much of our view it takes up.

To understand this, hold a pencil close to your face and then at arm's length (Picture 2). The further away the pencil is, the smaller it appears to be. Of course, we know the pencil is the same size far away as it was when it was close. The difference in size is an optical illusion.

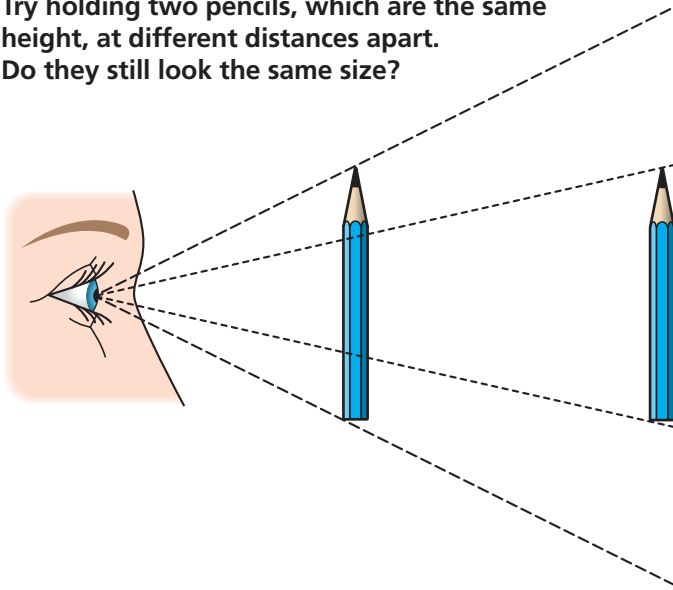
When we look at the Moon and the Sun we cannot easily see that one is closer than the other, so even though the Moon is much smaller than the Sun, it appears to be about the same size (Pictures 3 and 4).



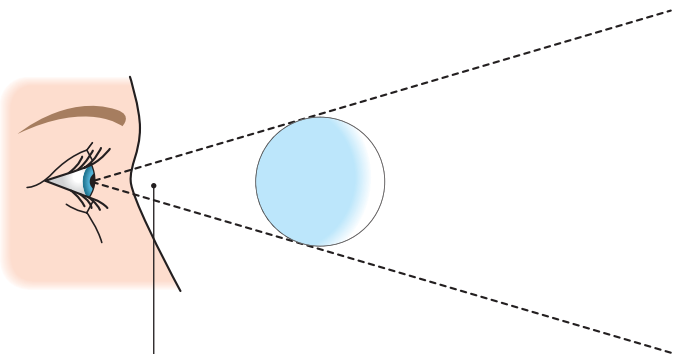
◀ (Picture 1) The way we see things can create an optical illusion. When we see both the Moon and the Sun together in the sky, they appear to be about the same size. You can see this in the partial eclipse picture below.



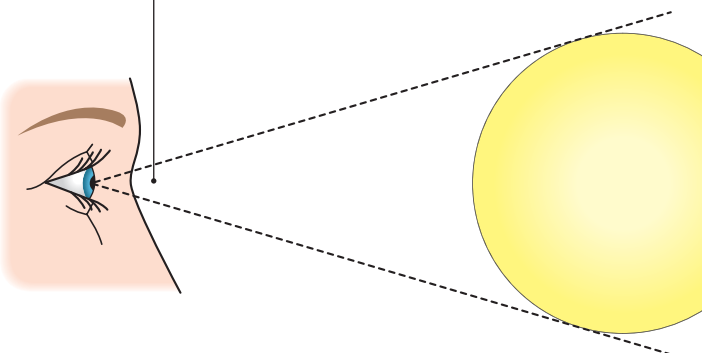
▼ (Picture 2) Create your own optical illusion. Try holding two pencils, which are the same height, at different distances apart. Do they still look the same size?



▼ (Picture 3) The Moon is closer to the Earth than the Sun. This is why it looks about the same size as the Sun.



These angles are the same.



▲ (Picture 4) The Sun is much bigger than the Moon, but because it is so much farther away, it appears to be a similar size to the Moon.



◀ (Picture 5) Here is the Earth seen with the Moon in about their correct proportions, the Earth being four times the diameter of the Moon.

The real sizes of Earth, Moon and Sun

The Sun is almost 1,400,000 kilometres across. The Earth is nearly 13,000 kilometres across, just a hundredth of the diameter of the Sun. The Moon is 3,500 kilometres across, only a quarter of the diameter of the Earth (Pictures 5 and 6).

▼ (Picture 6) Another illusion. The Moon is much smaller than the Earth, but when you see the Earth from the Moon, it is the Earth that appears small!



Summary

- The Sun is much bigger than the Moon, but because the Moon is much closer, the Moon and the Sun appear to be about the same size.