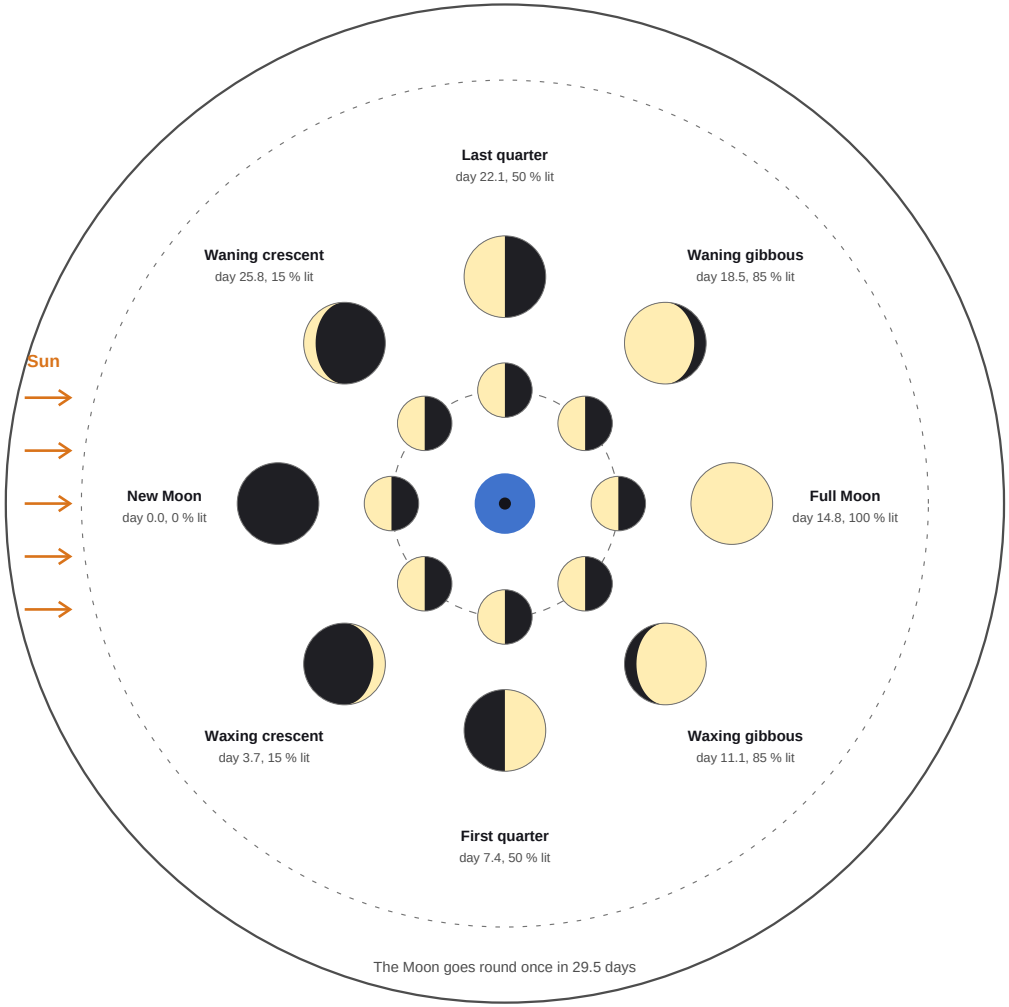
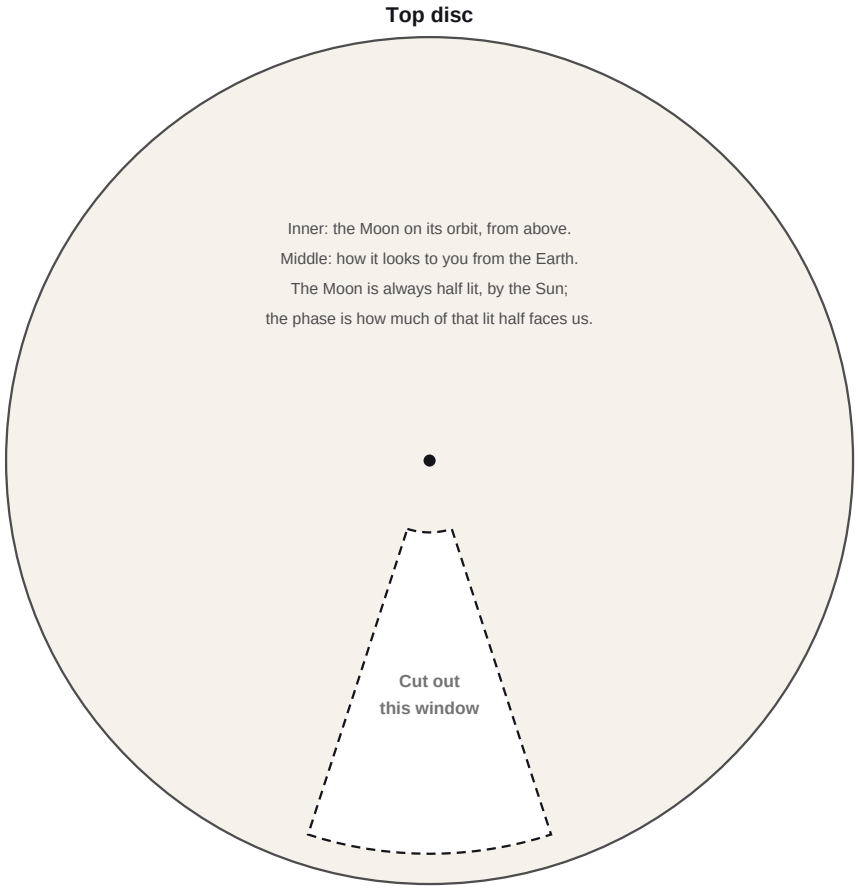
The Moon-phase wheel

Cut out both discs and pin the small one on the big one through the two centres (a split pin, or a drawing pin into a cork). Turn the top disc: its window shows where the Moon is on its orbit, seen from above the North Pole, and how it looks to you from the Earth's northern hemisphere at that place. From the southern hemisphere the Moon looks the other way round, left to right.

Base disc



Top disc



Computed, not drawn by hand: each picture is the lit share of the disc, (1 - cos e) / 2 for the Moon's angle e from the Sun, seen straight on, and the day is e / 360 of the mean synodic month, 29.53 days (NASA NSSDCA Moon Fact Sheet, nssdc.gsfc.nasa.gov/planetary/factsheet/moonfact.html). Illustrative: the sizes and the distance are not to scale (the Moon is 30 Earth-widths away), and the real orbit is tilted 5 degrees and not quite round.