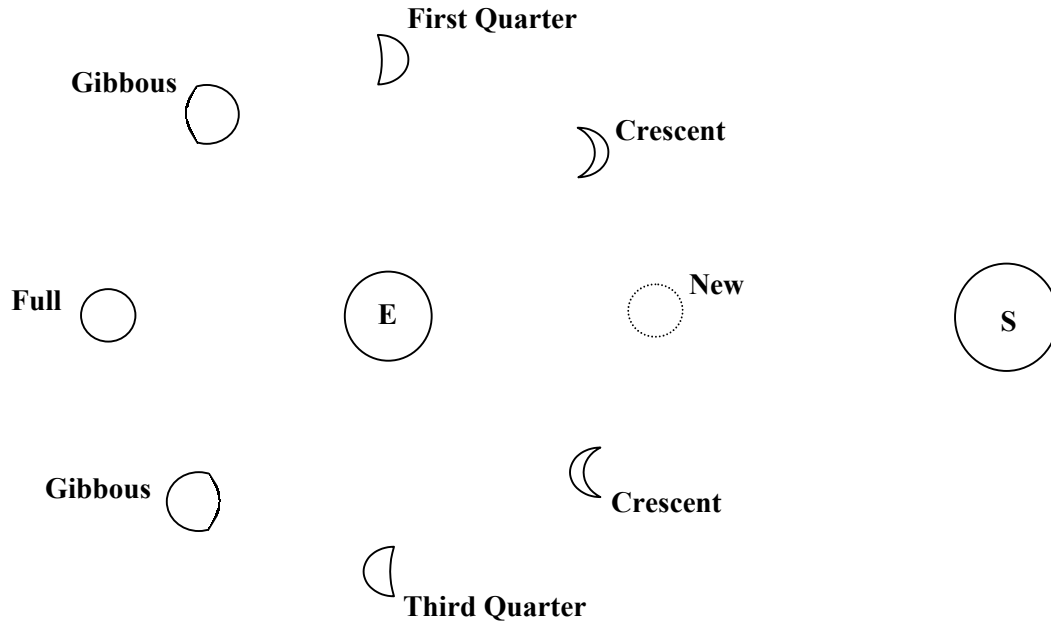


## Phases of the Moon



This diagram is a memory aid for the phases of the moon. An observer out in space, e.g. Captain Archer or T'Pol, would not see things quite as portrayed on this diagram.

((Don't read this parenthetical paragraph unless you are a 'picky' astronomer. There is no other word for this diagram than 'bastard' diagram. Note that to observe a third quarter moon, you would have to be standing upside down on the bottom of the Earth. In order to avoid making you stand or look upside down, we have instead flipped all the moon diagrams around in the bottom half of the diagram. 'Picky' astronomers prefer to stand upside down so that the moon diagrams can be 'properly oriented'. Note that our diagram has the bizarre property that sunlight comes from the right, but the third quarter moon is illuminated from the left. Furthermore, it takes the moon a month to go around the Earth, not 24 hours, see below.))

Think of this diagram in two parts: a clock on the left and the sun on the right. The clock turns in 24 hours around the center point, Earth. We use the clock as follows:

How long does it take the 'clock' to rotate so that the first quarter moon is on the right side, adjacent to the sun? Answer = 6 hours (1/4 revolution of the clock). That means the 1<sup>st</sup> Quarter moon follows 6 hrs behind the sun in the sky. Thus the sun rises at, say, 6 AM and the 1<sup>st</sup> Quarter moon rises 6 hrs later at noon. Similarly, the sun sets at, say, 6 PM and the 1<sup>st</sup> Quarter moon sets 6 hrs later, namely midnite. Finally, the sun is high in the southern sky at noontime. The 1<sup>st</sup> Quarter moon can be found high in the southern sky 6 hrs later at 6 PM.

Try this for the full moon. It is 12 hours behind the sun. If the sun rises at 6 AM, the full moon rises 12 hrs later at 6 PM.

The 3<sup>rd</sup> Quarter moon is 18 hrs behind the sun, which can also be thought of as 6 hrs ahead of the sun. Thus the sun rises at 6 AM, but the 3<sup>rd</sup> Quarter moon rises 6 hrs earlier, at midnite.

Terms: Remember, the moon is waxing before Full and waning after Full.