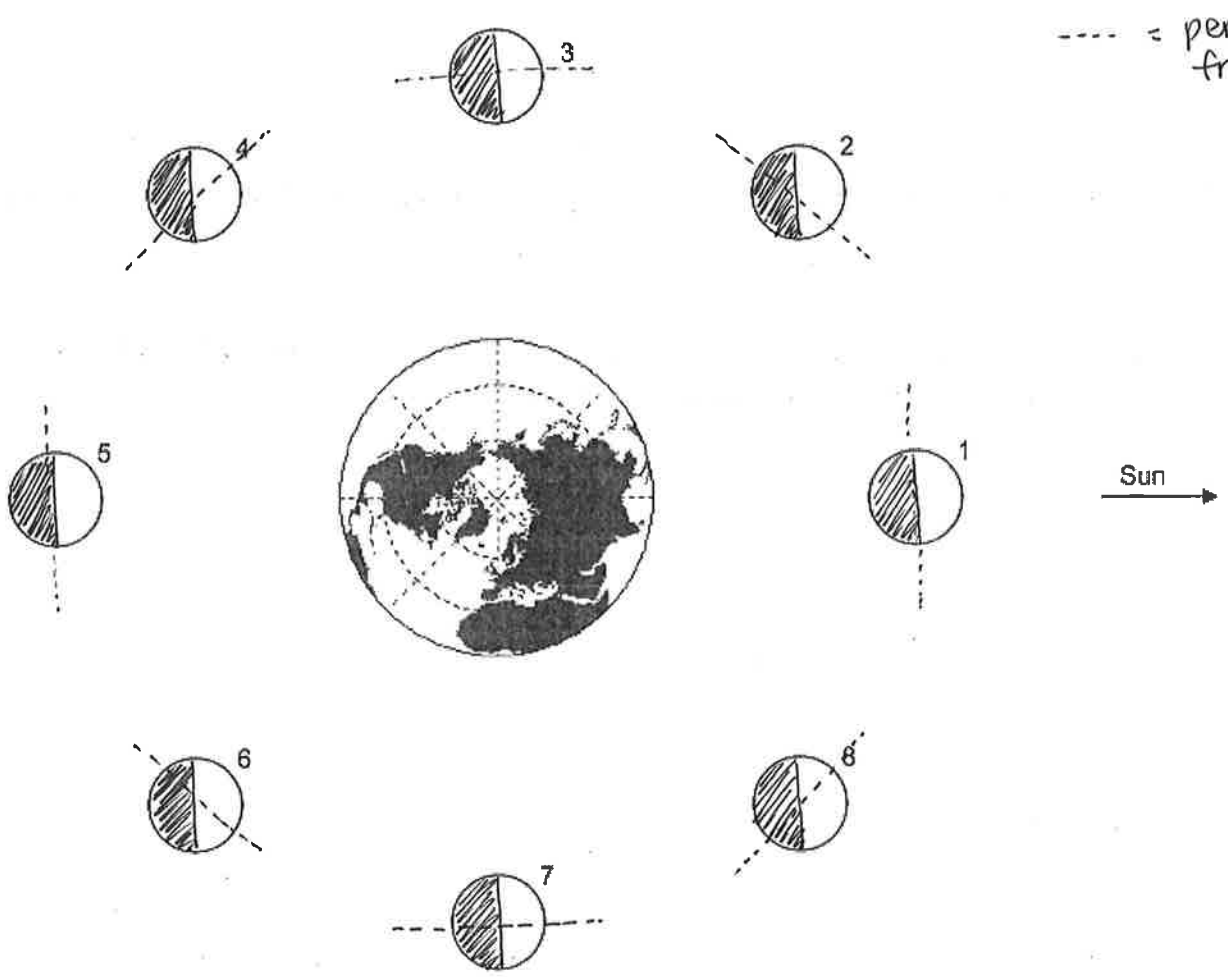
Astronomy C10 Discussion Section
Phases of the Moon

One of the best ways to learn about the phases of the moon is to draw them! Use a pencil to shade the **dark** half of the moon in each of the following phases.



Write the names of each of the 8 moon phases (full, new, 1st quarter, 3rd quarter, waxing crescent, waning crescent, waxing gibbous, waning gibbous) in the boxes below (hint: a full moon shows an entirely lit up face towards Earth).

The approximate rise and set times for the moon can also be deduced (hint: a full moon rises and sets opposite from the Sun, which is why it appears so bright, and a new moon rises and sets with the Sun, which is why it is difficult to see).

1 New Visible from 6am to 6pm	2 waxing crescent Visible from 9am to 9pm	3 1st Quarter Visible from 12pm to 12am	4 waxing Gibbous Visible from 3pm to 3am
5 Full Visible from 6pm to 6am	6 waning Gibbous Visible from 9pm to 9am	7 3rd Quarter Visible from 12am to 12pm	8 waning crescent Visible from 3am to 3pm

TELESCOPES

If you want your telescope to have *good* resolution, referred to as Θ (theta), do you want theta to be small or large? Recall the resolution equation, $\Theta = \lambda/D$. To get the best resolution, would you want to observe long wavelengths or short wavelengths? Would you want a large or small diameter for your telescope?

$\theta = \frac{\lambda}{D}$ Theta is the angle for which you can resolve 2 objects.

→ want small θ → small λ, large D

If a telescope's main purpose is to collect light, what issues could a telescope have if located on Earth's surface? What types of telescopes do we put in space?

① Atmosphere blurs images ("twinkling") by bending light

② ozone layer & other molecules in the atmosphere block certain light altogether (only radio, visible, & some infrared make it to Earth's surface)

How much more light can the new Campbell hall telescope ([redacted]-inch diameter) collect than the temporary star party telescope (6-inch diameter)? Recall that light gathering power is proportional to D^2.

LGP = light gathering power

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$$\frac{LGP_{campbell}}{LGP_{starparty}} = \frac{D_c^2}{D_{sp}^2} = \left(\frac{18\text{ in}}{6\text{ in}}\right)^2 = 3^2 = 9 \times \text{more light}$$