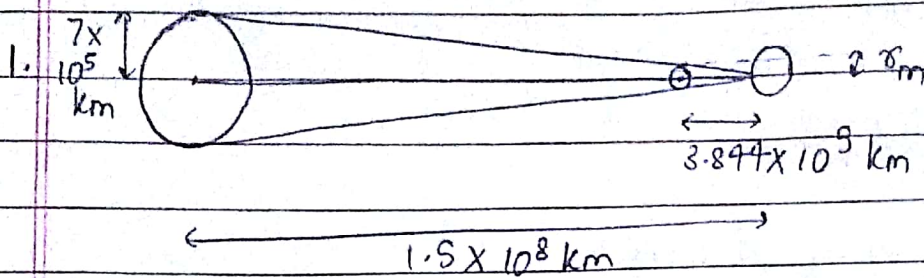


31/10/18

Astronomy - 2Aditya Rajesh
(11740060)By Δ similarity -

$$\frac{7 \times 10^5}{1.5 \times 10^8} = \frac{r_m}{3.844 \times 10^5}$$

$$\begin{aligned} r_m &= \frac{7 \times 3.844 \times 10^{10}}{1.5 \times 10^8} \text{ km} \\ &= 17.9386 \times 10^2 \text{ km} \\ &= \underline{\underline{1793.86 \text{ km}}} \end{aligned}$$

2. IIT Bhilai \rightarrow latitude (θ_1) = 21.2514° N
 longitude (ϕ_1) = 81.6296° E

Tokyo $\rightarrow \theta_2 = 35.6895^\circ \text{ N}$
 $\phi_2 = 139.6917^\circ \text{ E}$

$$\begin{aligned} d &= 2R \sin^{-1} \left(\sqrt{\sin^2 \left(\frac{\theta_1 - \theta_2}{2} \right) + \cos \theta_1 \cos \theta_2 \sin^2 \left(\frac{\phi_1 - \phi_2}{2} \right)} \right) \\ &= 2 \times 6371 \times \sin^{-1} \left(\sqrt{(0.01579 + (0.9319)(0.8122)(0.2395))} \right) \\ &= 12742 \times \sin^{-1} \left(\sqrt{0.19404} \right) = 12742 \times 0.456 \\ &= \underline{\underline{5810.352 \text{ km}}} \end{aligned}$$

3. Isaac Newton
4. Galileo ~~Galilei~~ Galilei
5. Hubble Telescope
6. ii) To see far away objects
7. ii) How much larger objects appear
8. iv) Aperture
9. Reflector telescope
10. Refractor telescope
11. Eyepiece lens
12. a) ~~Same brightness~~ ^{Same brightness} ~~AL has large aperture & more brightness~~
b) Low $f/ratio \rightarrow$ Low magnification $\rightarrow f/8$ has higher
c) High $f/ratio \rightarrow$ low field of view $\rightarrow f/4$ has higher
13. a) Telescopes collect light from faraway objects, and focuses them (either by mirrors or lens) into the eyepiece, then into the eye. The object is viewed in magnified fashion.
b) Telescopes are broadly of 2 types - reflector and refractor.

c) Telescopes allow us to see an upright magnified view of whichever object we view.

d) Telescopes should be bought with regard to intended use. For example, deep-sky viewing requires large aperture and good light-gathering → ~~refr~~ reflectors are better.

Large, bright objects like the Moon and planets are better viewed in refractors.

Mounts also have to be selected according to whether we view moving or stationary objects.

e) Use a solar filter. It removes harmful frequencies and enables us to view the Sun without burning our retinas.