8/12/2020
TUESDAY

PHYSICS

STD - XI
class-06

1) When the planet Jupiter is at a distance of 824.7 million kilometres from the Earth, its angular diameter is measured to be 35.72" of arc. Calculate the diameter of Jupiter.

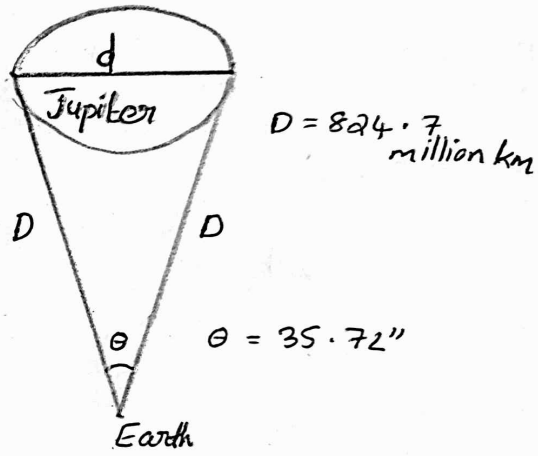
Ans)

Distance of Jupiter from the Earth,

$D = 824.7 \times 10^6$ km

Angular diameter, $\theta = 35.72''$

$= 35.72 \times 4.874 \times 10^{-6}$ rad



Diameter of Jupiter, d -

$\theta = \frac{d}{D}$

$\therefore d = \theta \times D = 824.7 \times 10^9 \times 35.72 \times 4.872 \times 10^{-6}$

$= 143520.76 \times 10^3 = \underline{1.435 \times 10^5}$ km