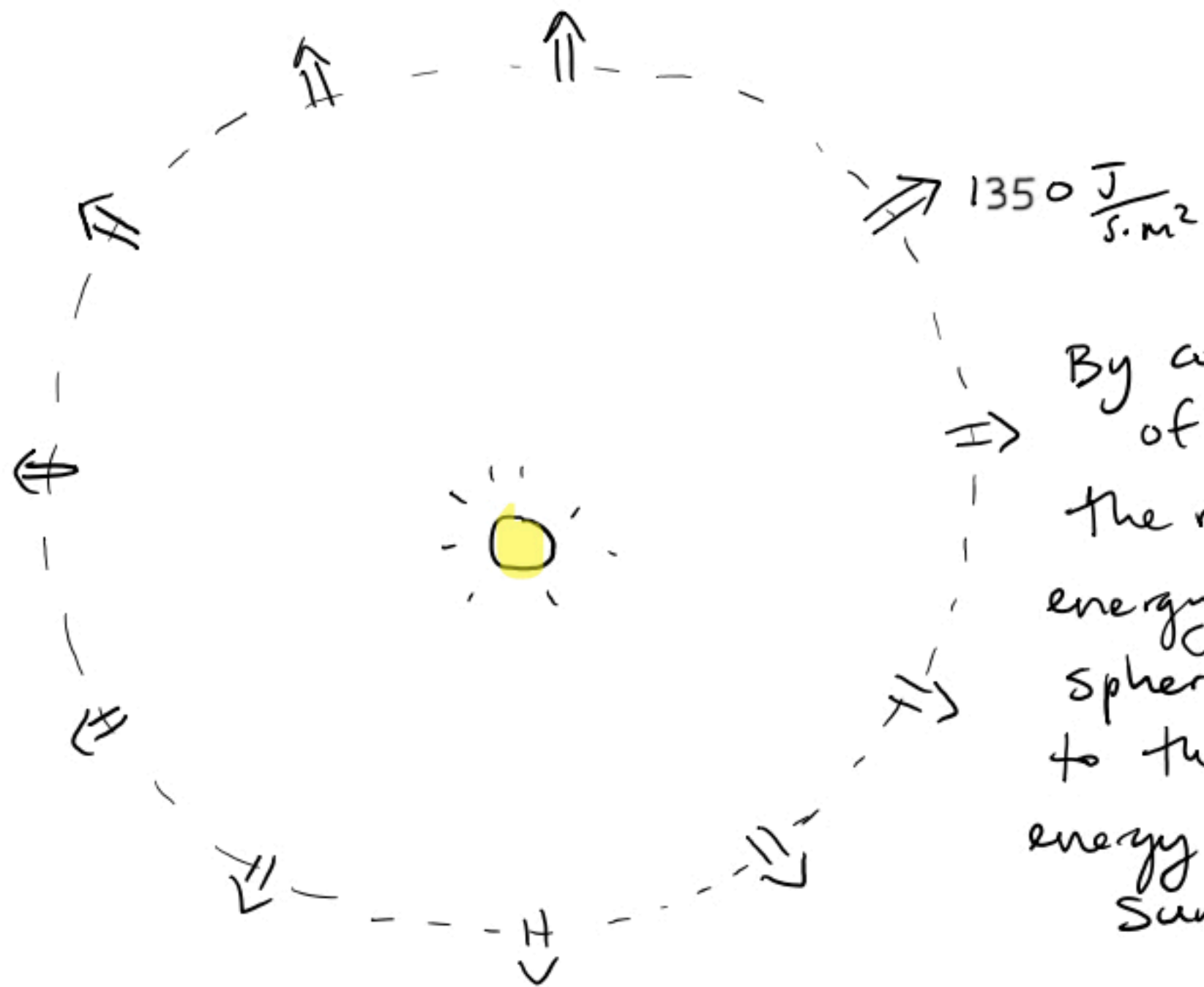


a)



By conservation of energy, the rate that energy leaves the big sphere is equal to the rate that energy leaves the Sun.

Area is  $4\pi r^2$