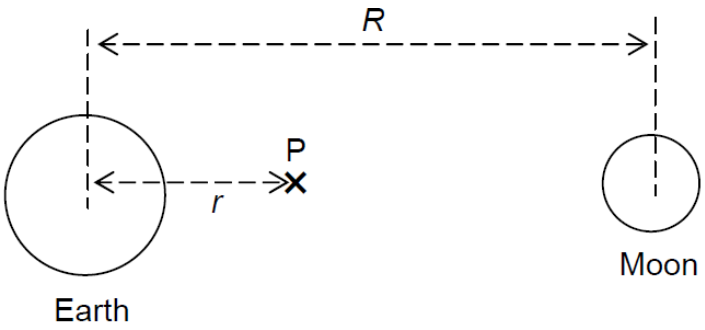
**11** A spacecraft is launched from the surface of the Earth towards the Moon. In order to reach the Moon with the least effort possible, the spacecraft needs to reach a point P, beyond which it will move towards the Moon without any further input of energy. $R$ is the distance between the Earth and the Moon, $M_E$ is the mass of the Earth and $M_M$ is the mass of the Moon.




What is the distance $r$, from the centre of the Earth to point P, in terms of $R$, $M_E$ and $M_M$?

**A** $\dfrac{R}{\sqrt{\dfrac{M_E}{M_M}}+1}$ **B** $\dfrac{R}{\sqrt{\dfrac{M_M}{M_E}}+1}$ **C** $\left(\sqrt{\dfrac{M_M}{M_E}}\right)R$ **D** $\dfrac{M_M}{M_E}R$