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An object is launched vertically from the surface of the moon to an altitude of 365 km. Determine the initial speed of the object.

* Let $E_g = 0$ at surface

$$E_{k_{surface}} \longrightarrow E_{g_{@\ 365km}}$$

$$\frac{1}{2} m v^2 = \frac{G m M_m}{r} \qquad r = \text{altitude}$$

$$v = \sqrt{\frac{2GM_m}{r}} = \sqrt{\frac{2(6.67E\text{-}11\ \frac{Nm^2}{kg^2})\ 7.35E22\,kg}{365E3\ m}}$$

$$= 5.18E3\ m/s$$