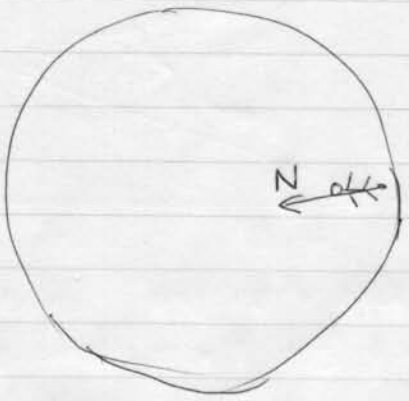
6. (a).



m: the mass of the person

Newton's 2nd law: $N = ma = m\omega^2 r$

If we want the person feel the exact "effective gravity" as on earth, $N = mg$ (to)

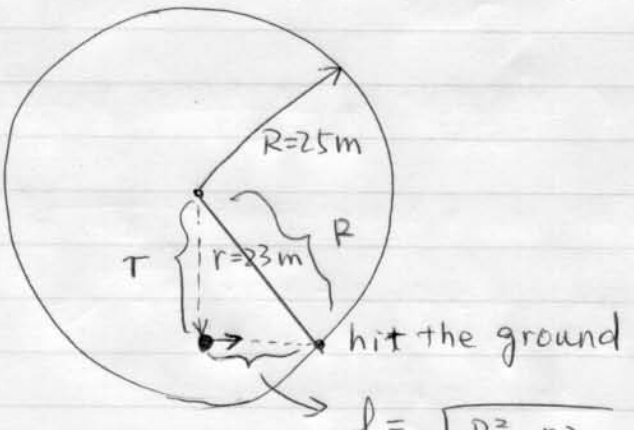
$$N = mg = m\omega^2 R \Rightarrow \omega^2 R = g \qquad \omega = \sqrt{\frac{g}{R}}$$

$$\omega \doteq 0.63\ s^{-1} \qquad T = \frac{2\pi}{\omega} \qquad \# = \frac{1\ \text{minute}}{T}$$

(T: period)

So the # $\doteq 6$

(b) In a non-accelerating reference



$$l = \sqrt{R^2 - r^2}$$

$$v = \omega' r \qquad \omega' = \sqrt{\frac{g}{r}}$$

$$t = \frac{l}{v} = \frac{\sqrt{R^2 - r^2}}{\omega' r} \doteq 0.655$$

On earth, $t' = \sqrt{\frac{2h}{g}} \doteq 0.64\ s$

The reason is that the ~~effe~~ effective gravity field is ~~not un~~ not uniform here.