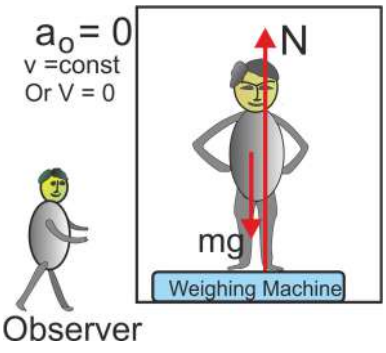
Case (A): If the lift is un-accelerated i.e. a = 0 (either v = 0 or V = constant)

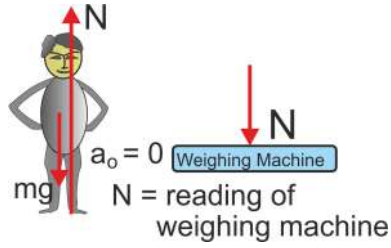


$$\sum F_y = ma_y$$

$$N - mg = 0$$

$$\boxed{N = mg} \quad \text{..... (i)}$$

That is effective weight of the body in a lift moving with constant velocity is equal to the actual weight of the body.

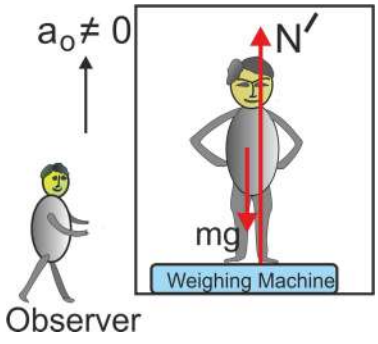


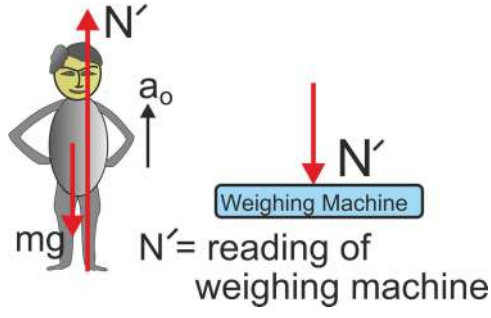
Effective value of acceleration due to gravity:

$$g' = \frac{N}{m}$$

$$\boxed{g' = g} \quad \text{..... (ii)}$$

Case (B): When the lift moves up with acceleration A





$$\sum F_y = ma_y$$

$$N' - mg = ma$$

$$N' = mg + ma$$

$$N' = m(g + a) \quad \text{..... (iii)}$$

i.e., $N' > mg$

i.e., it appears as if the weight of the body (effective weight) has become more than actual weight.

The effective value of acceleration due to gravity inside the lift