

A block is kept on the floor of an elevator at rest. The elevator starts descending with an acceleration of 12 m/s^2 . Find the displacement of the block during the first 0.2 s after the start. (Take, $g = 10 \text{ m/s}^2$)

A 30 cm

B zero

C 20 cm

D 25 cm

Correct option is C)

Effective gravity is $10 - 12 = -2\text{m/s}^2$

The block will lose the contact with the elevator.

Thus, the acceleration of the block is 10m/s^2 and the displacement of the block

in first 0.2 s is $\frac{1}{2} \times 10 \times (0.2)^2 = 0.2\text{m} = 20\text{cm}$