

Mathematics Questions by Topic

Motion and Force

Answer 24

Source: K13SM2Q13

Question 24

A girl of mass 50 kg is standing in a lift. The reaction of the lift floor on the girl is equal to 60 kg-wt. Then the lift is moving

- A. with constant speed.
- B. down with an acceleration equal to 1.96 ms^{-2} .
- C. up with an acceleration equal to 1.96 ms^{-2} .
- D. down with an acceleration equal to 0.2 ms^{-2} .
- E. up with an acceleration equal to 0.2 ms^{-2} .

ANSWER C

If the lift is moving up, the equation of motion is

$$ma = N - mg$$

$$m = 50 \text{ kg} \quad \text{and} \quad N = 60 \text{ kg-wt} = 60g \text{ newtons}$$

$$50a = 60g - 50g = 10g$$

$$a = \frac{g}{5} = 1.96 \text{ ms}^{-2}$$

C. is correct, the lift moves up with an acceleration equal to 1.96 ms^{-2} .

