2 Mechanics

2.2 Forces

Forces worksheet

1 A stationary 16 kg mass moves a distance of 84 metres in 14 seconds when a horizontal force is applied. If the level surface is frictionless, determine the applied force.

2 A 15 kg box is pushed with a constant horizontal force of 85 N along a level surface. If the box moves with a uniform velocity of 6.0 ms\(^{-1}\), how much net force is required to accelerate it uniformly to 12 ms\(^{-1}\) in 2.0 s?

3 The following system is in equilibrium. What is the mass of the object?

4 A constant force of 245 N is applied at a 48.2° angle to a mass of 62.1 kg as shown below. If the mass moves at a constant speed of 3.28 ms\(^{-1}\), determine its coefficient of dynamic friction.
5 A mass of 6.3 kg is held on an inclined plane that has an angle of 2.4° with the horizontal. If the coefficient of static friction is 0.032, will the mass slide down the plane when released?

6 Forces of 4.0 N and 6.5 N act on the 25 kg mass shown below. Find its acceleration.