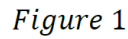**1**

A block of mass $5\ kg$ is placed on a rough plane which is inclined to the horizontal at an angle θ,

where $\tan \theta = \dfrac{4}{3}$, the coefficient of friction between the block and the plane is $\dfrac{1}{3}$.

The block is released from rest. Find the acceleration of the block.

②

40 N

30°

Q

30°

Figure 1

A block of mass 5 *kg is moving up a fixed plane at a constant speed of* $20ms^{-1}$ *under the action of a force of magnitude* 40 *N. The plane is inclined at* 30° *to the horizontal. The force acts in the vertical plane containing the line of greatest slope of the plane through Q, and acts at* 30° *to the inclined plane, as shown in Figure* 1. *The coefficient of friction between Q and the plane is μ.*

Find: (*a*) *the magnitude of the normal reaction between Q and the plane.* (*b*) *the value of μ.*

The force of magnitude 40 *N is removed.*

(*c*) *Find the distance that Q travels between the instant when the force is removed and the instant when it comes to rest.*