

5C (Part 1) Friction

1. A block of mass 5kg is lying at rest on rough horizontal ground. The coefficient of friction between the block and the ground is 0.4. A horizontal force, P , is applied to the block. Find the magnitude of the frictional force acting on the block and its acceleration when:
 - a) $P = 10\text{N}$

b) $P = 19.6\text{N}$

c) $P = 30\text{N}$

2. A 5kg box lies at rest on a rough horizontal floor. The coefficient of friction between the box and the floor is 0.5. A force P is applied to the box. Calculate the value of P required to cause the box to accelerate if:

a) P is applied horizontally

b) P is applied at an angle of θ above the horizontal, where $\tan\theta = \frac{3}{4}$