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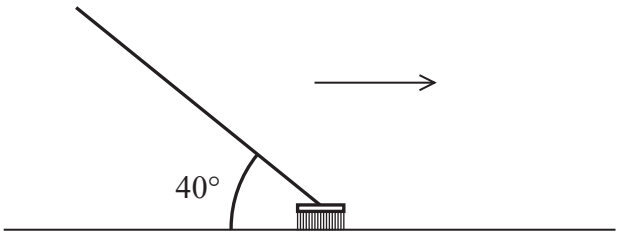


Figure 1

A broom is being used to sweep a rough horizontal floor. The handle of the broom makes a constant angle of 40° with the horizontal, as shown in Figure 1. The broom head is modelled as a particle of mass 0.5 kg and the handle of the broom is modelled as a light rod. The coefficient of friction between the broom head and the floor is $\frac{1}{4}$. The broom head is pushed along the floor in a straight line at constant speed. Find the magnitude of the force that is being applied along the handle of the broom to the broom head.

(6)

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Question 2 continued

Q2

(Total 6 marks)