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In this question use  $g = 9.8 \text{ m s}^{-2}$

A boy attempts to move a wooden crate of mass  $20 \text{ kg}$  along horizontal ground. The coefficient of friction between the crate and the ground is  $0.85$

13 (a)

The boy applies a horizontal force of  $150 \text{ N}$ . Show that the crate remains stationary.

[3 marks]

13 (b)

Instead, the boy uses a handle to pull the crate forward. He exerts a force of  $150 \text{ N}$ , at an angle of  $15^\circ$  above the horizontal, as shown in the diagram.



Determine whether the crate remains stationary.

Fully justify your answer.

[5 marks]