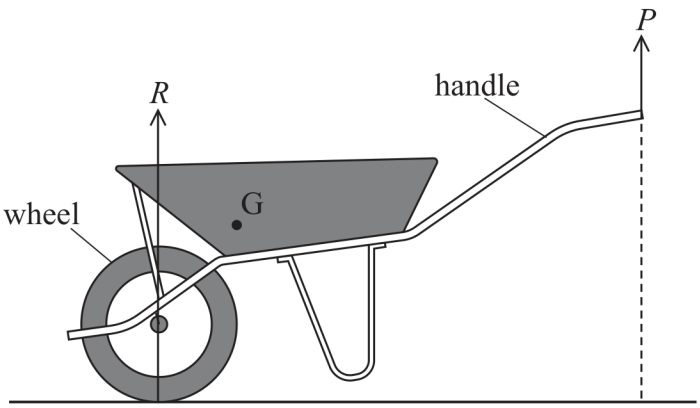
13 A woman supports a stationary wheelbarrow by exerting an upward force *P* on the handles. An upward force *R* from the ground acts on the wheel, as shown.

The centre of gravity G of the wheelbarrow is marked on the diagram.

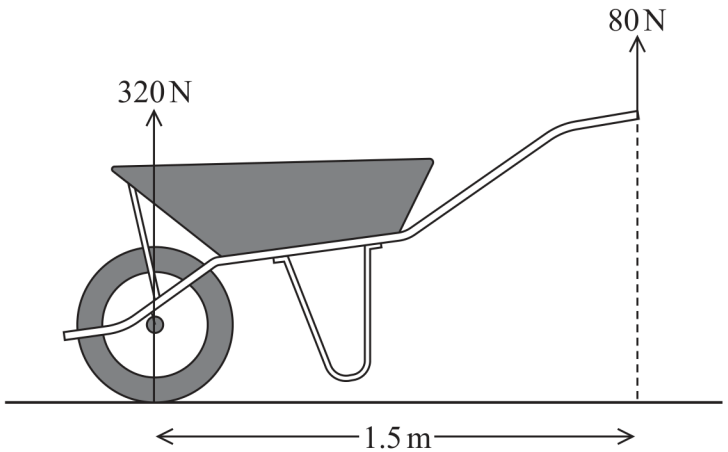
(Source: © Cavan Images/Alamy Stock Photo)



(a) Explain, by considering moments about G, why *P* is less than *R*.

(3)

(b) The horizontal distance between the centre of the wheel and the handles is 1.5 m. The magnitudes of P and R are as shown.



Determine the horizontal distance between the centre of gravity of the wheelbarrow and the centre of the wheel.

(4)

Horizontal distance = ...

(Total for Question 13 = 7 marks)