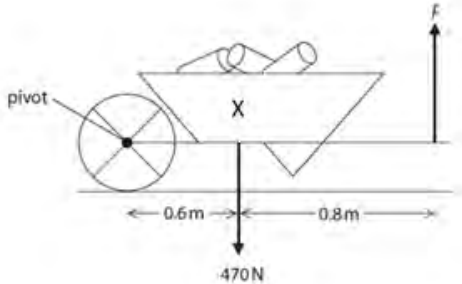


Question number	Answer	Notes	Marks
5 (a) (i)	work done = force × distance (moved);	Accept correct symbols e.g. $W = F \times d$ $W = F \times s$	1
(ii)	substitution; evaluation; e.g. (work =) 140×39 5500 (J)	5460	2
(iii)	same answer as 5(a)(ii)	allow 'the same'	1
(b) (i)	<p>X in line with the weight arrow and vertically between the tail of the arrow and the top of the wheelbarrow (not including the logs);</p> 	<p>judge alignment with weight arrow by eye</p>	1
(ii)	moment = force × (perpendicular) distance (from pivot);	condone $M = F \times d$ $M = F \times s$	1
(iii)	<p>principle of moments (stated or implied); total distance hand to pivot calculated;</p> <p>substitution showing either correct moment (or both); final rearrangement and evaluation;</p> <p>e.g. (total) clockwise (moment) = (total) anticlockwise (moment) (distance) = $0.6 + 0.8 = 1.4 \text{ m}$ $470 \times 0.6 = F \times 1.4$ $F = 470 \times 0.6 / 1.4 = 200 \text{ (N)}$</p>	<p>accept 1.4 or $0.6 + 0.8$ seen in working accept 282 seen in working</p> <p>allow 201, 201.43</p> <p>350, 352, 353, 352.5 gets 2 marks</p>	4

Total 10 marks