Question Number	Answer		Mark
13(a)	Moments due to force on wheel and force on handle must be equal (magnitude about any point)	**(1)**	
	Moment is force times (perpendicular) distance [accept "F x" but no other symbols unless in question or defined by candidate]	**(1)**	
	[Accept for MP1 and MP2 Force × (perpendicular) distance must be same for both moments]		
	Handle is futher from centre of gravity than wheel (so less force for equal moment) [NB independent mark]	**(1)**	**3**
13(b)	Uses weight = 400 N	**(1)**	
	Or		
	Uses x and $(1.5 - x)$	**(1)**	
	Use of moment = Fx about a stated point [accept pivot point clearly indicated on diagram]	**(1)**	
	Use of principle of moments	**(1)**	**4**
	$x = 0.3$ m		
	Example calculation Weight = 320 + 80 = 400 N Taking moments about line of action of 320 N force 400 N × x = 80 N × 1.5 m x = 120 Nm ÷ 400 N = 0.30 m		
	Total for question 13		**7**