Question Number	Answer		Mark
17(a)(i)	Equates horizontal component with force from current	**(1)**	
	F = 480 (N)	**(1)**	**2**
	Example calculation F sin 33° = 260 N F = 260 N ÷ sin 33° = 477 N		
17(a)(ii)	Resolves vertical component of F	**(1)**	
	Equates vertical forces	**(1)**	
	Weight of buoy = 2500 N (ecf from (a)(i))	**(1)**	**3**
	Example calculation 477 N cos 33° = 400 N 400 N + Weight of buoy = 2.9×10^3 N Weight of buoy = 2900 N − 400 N = 2500 N		
17(b)	**EITHER** Horizontal component of F increases (to maintain equilibrium) **and** Vertical component of F remains the same (because vertical forces do not change, upthrust and weight are constant)	**(1)**	
	$F^2 = F_h^2 + F_v^2$ so F increases [dependent on MP1]	**(1)**	
	tan $\theta = F_h/F_v$ so θ increases [dependent on MP1]	**(1)**	
	OR Horizontal component of F increases (to maintain equilibrium) **and** Vertical component of F remains the same (because vertical forces do not change, upthrust and weight are constant)	**(1)**	
	$F^2 = F_h^2 + F_v^2$ so F increases [dependent on MP1] **Or** tan $\theta = F_h/F_v$ so θ increases [dependent on MP1]	**(1)**	
	F cos θ is constant so increase in either F or θ implies an increase in the other [dependent on MP2]	**(1)**	**3**
	Total for question 17		**8**