

Question Number	Answer	Mark
12(a)	$\varepsilon = 1.50 \text{ V}$ (accept answers in the range 1.48 V to 1.52 V) (1)	3
	Attempt to calculate gradient of graph to find $r$ (1)	
	$r = 0.75 \Omega$ (accept answers in the range 0.72 $\Omega$ to 0.78 $\Omega$ ) (1)	
12(b)	Gradient is doubled (1)	2
	y-intercept is doubled (1)	
	(If no other marks scored, allow “new graph has steeper gradient <b>and</b> y-intercept has a greater value” for 1 mark)  (If no other marks scored, allow new values for $\varepsilon$ and $r$ , consistent with their answers to (a))	
Total for question 12		5