Question			Answer	Marks	AO	Guidance	
7	**(a)**		Identify AP with $a = 5000$ and $d = 1500$ $\dfrac{n}{2}(2(5000) + (n-1)1500)$ $= n(750n + 4250)$	**M1** **A1** **[2]**	**3.1b** **1.1**	Identification recognised by an attempt at the sum formula or nth term formula for an AP Or $750n^2 + 4250n$	
7	**(b)**		$\dfrac{5000(1 - (0.9)^n)}{1 - 0.9}$ Obtain $50000(1 - (0.9)^n)$	**M1** **A1** **A1** **[3]**	**3.1b** **3.1b** **1.1**	Identification recognised by an attempt at the sum formula with n, $n-1$ or $n+1$ or with a positive sign in numerator Obtain correct unsimplified sum Or $50000 - 50000(0.9)^n$	
7	**(c)**		Obtain $750n^2 + 4250n - 385000 = 0$ $n = 20$ or $n = -\frac{77}{3}$ State 20 years	**M1** **A1** **A1** **[3]**	**3.1b** **1.1** **3.4**	Equate to $385\,000$ and solve a 3 term quadratic $= 0$ BC both required Allow different methods for solving the quadratic	**OR** **M1** For writing down and summing the total profit for at least the first four years (may be implied BC) **A1** For finding that the total is equal to 385 000 for $n = 20$ **A1** state 20 years
7	**(d)**		Business A's profits continue to grow Business B's profits eventually plateau at £50 000 as $(0.9)^n$ tends to 0 with large enough n	**E1** **E1** **[2]**	**3.4** **3.2a**	 Some mention is required about the effect of $(0.9)^n$	