

Question		Answer	Marks	AO	Guidance	
4	(a)	Identify AP with $a = 16000$ and $d = 1200$	<b>B1</b>	<b>3.1b</b>	Seen or implied	Could be implied by use in $u_n$ , even if $n \neq 10$ , or by use in $S_n$
		$u_{10} = 16000 + 9 \times 1200 = \text{£}26,800$	<b>B1</b>	<b>3.3</b>	Obtain $\text{£}26,800$	Units required Answer only of 26,800 would be B1B0, as AP implied but no units
	(b)	$S_N = 0.5N(32000 + (N - 1)1200)$	<b>M1</b>	<b>3.4</b>	Attempt $S_N$ of AP, with their $a$ and $d$	FT their $a$ and $d$ from part (a)
		$600N^2 + 15400N - 500000 = 0$	<b>A1</b>	<b>3.1a</b>	Equate sum of AP to 500000 and rearrange to any correct 3 term quadratic	Allow =, or any inequality sign
		$N = 18.8$ (and possibly $N = -44.4$ )	<b>A1</b>	<b>1.1</b>	At least correct positive root soi	<b>BC</b> Condone 18.7 (ie truncated not rounded) Sight of 19 implies A1, even if 18.8 never seen If other root given then must be correct
		19 years	<b>B1FT</b>	<b>3.2a</b>	Conclude with 19 (years) FT on their positive non-integer root being rounded up	Allow just 19, rather than 19 years B0 for $\geq 19$ , or equivalent in words the FT is just on their incorrect root (which must have come from an attempt at the sum of an AP, but could follow M0), and not any other aspect of the question Must see a non-integer value first to get the B1FT
			<b>[4]</b>			

Question		Answer	Marks	AO	Guidance
	(c)	<p>‘not realistic’ or ‘unlikely to be realistic’ along with a reason such as: Sam is unlikely to stay in the same role for that long</p> <p>Unlikely that salary will increase by same amount as may be an upper limit on annual salary eg ‘pay cap’, ‘level off’, ‘plateau’</p> <p>Could reach a point where the company cannot afford to pay that salary</p> <p>Unlikely that salary will increase by same amount as likely to be a percentage increase</p>	<b>B1</b>	<b>3.5a</b>	<p>Identify that model is not (very) realistic, with a sensible, specific reason which refers why the increase is unlikely to remain constant</p> <p>Could use other language such as ‘model may not hold’, or ‘model may not be valid’</p> <p>Could also identify that salary might increase by more eg Sam might get a promotion, be paid a bonus or be paid more due to inflation</p> <p>B0 for statements that do not pertain to this model, eg death, retirement or changing companies (allow B1 BOD for changing jobs as this could refer to a different role within the same company)</p> <p>If a correct reason has been given, then ignore other incorrect or irrelevant reasons, unless directly contradictory</p>
			[1]		