7	(a)		Anna = $30 + 9 \times 15 = 165$ mins	M1	3.3	Attempt u_{10} for AP, using correct eqn	Method must be seen
			Ben = $30 \times 1.1^9 = 71$ mins	M1	3.3	Attempt u_{10} for GP, using correct eqn	Method must be seen
			$165 - 71 = 94$ minutes **A.G.**	A1	3.4	Obtain given answer of 94 minutes www	AG so both terms need to be explicitly evaluated for the A1 Show subtraction, or give more accurate value before 94
				[3]			
	(b)		Anna: $u_X = 30 + 15(X - 1)$ Ben: $u_X = 30 \times 1.1^{X-1}$	B1	3.4	Both u_X terms correct	Condone unknown other than X
			$30 \times 1.1^{X-1} > 30 + 15(X - 1)$ $30 \times 1.1^{X-1} > 15X + 15$ $1.1^{X-1} > 0.5X + 0.5$ $X - 1 > \log_{1.1}(0.5X + 0.5)$	M1	2.1	Link correct expressions and attempt to rearrange	Condone an incorrect linking sign eg $=$ not $>$ Must be using a correct process, so allow sign errors only
			$X > \log_{1.1}(0.5X + 0.5) + 1$ **A.G.**	A1	2.1	Show given answer convincingly	Must now be $>$, with justification if $=$ used in proof, and with X
				[3]			
	(c)		18.9	B1	1.1a	Correct first iterate	Allow 19 or 18.8…
			25.1, 28.0, 29.0, 29.4, 29.6, 29.6,…	M1	1.1	Use correct iterative process to find at least two further values	Allow integer values Could be truncated not rounded
			$X = 30$	A1	3.4	Obtain $X = 30$	Must be an integer

Question			Answer	Marks	AO	Guidance	
				[3]			
	(d)	**(i)**	Eventually there will not be enough hours in the day for revision	**B1** [1]	**3.5b**	Comment on long-term behaviour	Allow other sensible reason
		(ii)	Increasing by 10% will involve decimals of minutes so will no longer be accurate	**B1**	**3.5b**	Comment on not being able to measure time that accurately	Allow long-term behaviour if not already given in **(i)** Allow other sensible reason B0 if referring to reasons that may prevent revision from happening eg illness If a correct reason is given then ISW an incorrect numerical value

Question			Answer	Marks	AO	Guidance	
				[1]			