Assessment Schedule – 2006

Mathematics: Solve straightforward problems involving arithmetic and geometric sequences (90290)

Evidence Statement

	Assessment Criteria	No.	Evidence	Code	Judgement	Sufficiency
ACHIEVEMENT	Solve straight-forward problems involving both arithmetic and geometric sequences.	1	$S\infty = \dfrac{750}{1-0.85}$ $= 5000$	A2	Units not required anywhere in this activity.	Achievement: **3 × A** including at least **1 of A1** and **1 of A2.**
		2(a)	$t_4 = 175 + (4-1)\times 290 = 1045$	A1		
		2(b)	$S_5 = \dfrac{5}{2}\left[2\times 175 + 4\times 290\right]$ $= 3775$	A1		
		2(c)	$S_4 = \dfrac{100\left(1-3^4\right)}{1-3}$ $= 4\,000$	A2		
MERIT	Solve problems involving sequences.	2(d)	$5\,000 = \dfrac{700\left(1-0.9^n\right)}{1-0.9}$ $n = \dfrac{\log\left(\frac{2}{7}\right)}{\log 0.9}$ $n = 11.89$ ie finished by the end of day 12	A2 M		Merit: Achievement **Plus 2 × M** **OR 3 × M**
		3	$a = 4 \quad d = 7$ (and any correctly calc tn) $t_{20} = 4 + (20-1)\times 7$ $= 137$	A1 M		
		4	$t_{120} = 800\left(1+\dfrac{0.07}{12}\right)^{120}$ $= \$1\,607.73$	M		

EXCELLENCE	Explore situations and interpret the results of problems involving sequences.	5	$F = 1006.25$ or 1020.3125 and $d = 14.0625$ $25.75n \geq 1020.3125 + (n - 1) \times 14.025$ or $25.75n \geq 1006.25 + n \times 14.025$ $n = 86.1$ Therefore 87 books needed to make a profit.	A1 M E	"=" acceptable Accept values with premature rounding.	Excellence: **Merit plus E.**

Judgement Statement

Mathematics: Solve straightforward problems involving arithmetic and geometric sequences (90290)

Achievement	Achievement with Merit	Achievement with Excellence
Solve straightforward problems involving both arithmetic and geometric sequences. $3 \times$ A including at least one each of A1 and A2	Solve problems involving sequences. Achievement *plus* $2 \times$ M **OR** $3 \times$ M	Explore situations and interpret the results of problems involving sequences. Merit *plus* $1 \times$ E