Assessment Schedule – 2005

Mathematics: Manipulate algebraic expressions and solve equations (90284)

Evidence Statement

ALGEBRA AT THE ZOO

	Achievement Criteria	Q	Evidence	Code	Judgement	Sufficiency
Achievement	Manipulate algebraic expressions.	1	$2x^3 + x^2 - 7x - 6$	A1	Or equivalent.	**Achievement:** Part 1: Algebraic expressions: 2 × code A1 **AND** Part 2: Equations: 2 × code A2.
		2	$\frac{1}{8x^6}$ or $\frac{0.125}{x^6}$ or $\frac{1}{2^3 x^6}$	A1		
		3	log 27	A1	Or equivalent	
	Solve equations.	4(a)	$x = 2.75$	A2	Or equivalent.	
		4(b)	$(3x - 2)(x + 5)$ or $\left(x - \frac{2}{3}\right)(x + 5)$	A1	Both answers required.	
			$x = \frac{2}{3}, -5$	A2	Or equivalent	
		5	$2.2b + 4.8n = 133.10$ $b = n + 8$		Must form equations.	
			$b = 24.5$	A2	Or equivalent.	
Achievement with Merit	Solve problems involving equations.	6	$85 = \frac{t^2}{4} - t + 68$ $t = 10.5$ months	A2 M	Units not necessary. Accept any correct rounding in all M answers.	**Achievement with Merit:** **EITHER** Achievement **plus** 2 × code M **OR** 3 × code M.
		7	$2x^2 - x - 6 = 4x - 3$ $2x^2 - 5x - 3 = 0$ $(2x + 1)(x - 3) = 0$ $x = -0.5, 3$	A1 A2, M		
		8	$2.7 = 1.8 \times 3^{0.16t}$ $t = 2.3$ years	A1, A2 M		
Achievement with Excellence	Choose algebraic techniques and strategies to solve problem(s).	9	$x^2 + (k - 2)x + (k + 3) = 0$ For non-real roots: $b^2 - 4ac < 0$ $(k - 2)^2 - 4(k + 3) < 0$ $k^2 - 8k - 8 < 0$ $x = -0.9$ or 8.9 $-0.9 < k < 8.9$	A1 A2 M E	Must have clear explanation of the process being used to solve the problem. Need inequalities in any correct form. Any correct rounding.	**Achievement with Excellence:** Merit **plus** code E

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
Manipulate algebraic expressions Solve equations. Part 1: Algebraic expressions 2 × A1 *and* Part 2: Equations: 2 × A2	Solve problems involving equations. Achievement *plus* 2 × M *or* 3 × M	Choose algebraic techniques and strategies to solve problem(s). Merit *plus* 1 × E