Assessment Schedule – 2007

Mathematics: Demonstrate an understanding of straightforward algebraic methods (90799)

Evidence Statement

	Criteria	Q. No	Evidence	Code	Judgement	Sufficiency
ACHIEVEMENT	Demonstrate an understanding of straightforward algebraic strategies.	1	Any combination where the coefficients MULTIPLY to 24 and the exponents ADD to 6.	A	Both correct to gain the grade.	**ACHIEVEMENT:** THREE A's
		2	$t = -0.381n + c$ $83.243 = -0.381(7) + c$ $83.243 = -2.667 + c$ $c = 83.243 + 2.667$ $c = 85.91$ $t = -0.381n + 85.91$	A	OR equivalent. Accept t = 0.381n + 80.58 in view of the confusion over times "improving"	
		3	$-3(2x - 4) = 40$ $-6x + 12 = 40$ $-6x = 28$ $x = \frac{-28}{6} = -4.\dot{6}$	A	showing correct working alone is sufficient	
		4	expanded $(x+8)^2 - 4 = x^2 + 16x + 60$ expanded $(x+7)(x+9) - 3 = x^2 + 16x + 60$ therefore they are equivalent. **OR** $((x+8)^2 - 4) - ((x+7)(x+9) - 3) = 0$ therefore they are equivalent. **OR** $\frac{(x+8)^2 - 4}{(x+7)(x+9) - 3} = 1$ therefore they are equivalent.	A	Or equivalent	

	Assessment Criteria	Q. No	Evidence	Code	Judgement	Sufficiency
ACHIEVEMENT WITH MERIT	Demonstrate an understanding of a range of algebraic methods in solving problem(s).	5	let original number = x $(x+2)(x+3)=5550$ $x^2+5x+6=5550$ $x^2+5x-5544=0$ $x \in \{-77, 72\}$ x positive number $x=72$	A M	Must show appropriate equation (in any equivalent form) Rejection of negative solution (where shown) should be explicit.	**ACHIEVEMENT WITH MERIT:** Achievement **plus** TWO M's OR THREE M's
		6	$A = w(75-w)$ or $A = -w^2+75w$	M	Or equivalent expression.	
		7	$A = b^2 - \frac{\pi(b-0.5)^2}{4}$ $A = 0.2146b^2 + 0.7854b - 0.1963$ A = 15.817 (3dp)	A / M	Accept any rounding.	

	Assessment Criteria	Q. No	Evidence	Code	Judgement	Sufficiency
ACHIEVEMENT WITH EXCELLENCE	Demonstrate an understanding of algebraic methods in investigating and solving complex problems.	8a	$x = -1$ $y = 2$	M	For both sets of equations	**ACHIEVEMENT WITH EXCELLENCE:** Merit **plus** E OR Achieved **plus** 3 M's (one of which is Q7 or Q8b).
		8b	x = -1, y = 2			
		8c	$\begin{cases} ax+(a+1)y=a+2 \\ bx+(b-1)y=b-2 \end{cases}$ $\begin{cases} abx+b(a+1)y=b(a+2) \\ abx+a(b-1)y=a(b-2) \end{cases}$ $\begin{cases} abx+(ab+b)y=ab+2b \\ abx+(ab-a)y=ab-2b \end{cases}$ *subtract* $(ab+b)y-(ab-a)y=(ab+2b)-(ab-2b)$ $(ab+b-ab+a)y=ab+2b-ab+2b$ $(a+b)y=2(a+b)$ $y=\frac{2(a+b)}{(a+b)}$ $y=2$ substitute into first or second equation to get x $ax+2(a+1)=a+2$ $ax+2a+2=a+2$ $ax+2a=a$ $ax=-a$ $x=-1$ Therefore the solution is independent of the values of a or b and always the same. $x=-1$ $y=2$ Conjecture is true.	M E	Must include final sentence for excellence.	

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate an understanding of straightforward algebraic strategies. $3 \times$ A	Demonstrate an understanding of a range of algebraic methods in solving problem(s). **Achievement** *plus* 2 x M *or* $3 \times$ M	Demonstrate an understanding of algebraic methods in investigating and solving complex problem(s). **Merit** *plus* $1 \times$ E *or* $3 \times$ A *plus* $3 \times$ M (one of which is Q7 or Q8b)

The following Mathematics-specific marking conventions may also have been used when marking this paper:

- Errors are circled.
- Omissions are indicated by a caret (^).
- **NS** may have been used when there was not sufficient evidence to award a grade.
- **CON** may have been used to indicate 'consistency' where an answer is obtained using a prior, but incorrect answer and **NC** if the answer is not consistent with wrong working.
- **CAO** is used when the 'correct answer only' is given and the assessment schedule indicates that more evidence was required.
- # may have been used when a correct answer is obtained but then further (unnecessary) working results in an incorrect final answer being offered.
- **RAWW** indicates right answer, wrong working.
- **R** for 'rounding error' and **PR** for 'premature rounding' resulting in a significant round-off error in the answer (if the question required evidence for rounding).
- **U** for incorrect or omitted units (if the question required evidence for units).
- **MEI** may have been used to indicate where a minor error has been made and ignored.