

Level 2 Mathematics, 2007

90284 Manipulate algebraic expressions and solve equations

QUESTION ONE

Factorise $4x^2 + 5x - 6$

QUESTION TWO

Simplify fully $\log a + \log b - \log b^2$

QUESTION THREE

Simplify fully $\frac{3}{x} + \frac{2x}{(x+2)}$

QUESTION FOUR

Solve

(a) $7x - 14 = 5(2x - 5)$

(b) $\log_x 125 = 3$

QUESTION FIVE

Emma and George both have mobile phones.

Emma's pricing plan is different from George's.

Emma pays 55 cents a call and 3 cents a minute.

George pays 51 cents a call and 4 cents a minute.

If a call costs the same on both plans, how long is the call?

You must show the equation(s) you use to solve the problem.

ANSWERS

	Achievement Criteria	No.	Evidence	Code	Judgement	Sufficiency
ACHIEVEMENT	Manipulate algebraic expressions and solve equations.	1	$(4x - 3)(x + 2)$	A	Any order. $4(x - \frac{3}{4})(x + 2)$	ACHIEVEMENT: FOUR A
		2	$\log \frac{a}{b}$	A	$\log ab^{-1}$	
		3	$\frac{2x^2 + 3x + 6}{x(x + 2)}$	A	Or equivalent, including $\frac{3(x + 2) + 2x^2}{x(x + 2)}$	
		4(a)	$x = \frac{11}{3}$	A	Or equivalent. Incorrect rounding without working not accepted.	
		4(b)	$x = 5$	A	Or equivalent.	
		5	$3t + 55 = 4t + 51$ $t = 4 \text{ min}$	A	Accept without unit. Must show equation.	