Level 2 Mathematics, 2005

90284 Manipulate algebraic expressions and solve equations

QUESTION ONE

Expand and simplify: $(2x + 3)(x - 2)(x + 1)$

QUESTION TWO

Simplify and write your answer with positive indices: $(2x^2)^{-3}$

QUESTION THREE

Write as the log of a single number: $2 \log 9 - \log 3$

QUESTION FOUR

Solve the following equations:

(a) $5 - 3(x - 2) = x$

(b) $3x^2 + 13x - 10 = 0$

QUESTION FIVE

A zookeeper spends $133.10 altogether on bananas and nuts for the monkeys. He buys 8 kilograms more bananas than nuts.

Bananas cost $2.20 per kilogram and nuts cost $4.80 per kilogram.

How many kilograms of bananas did the zookeeper buy?
You **must** show the equations that you use to solve the problem.

ANSWERS

	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
		2	$\dfrac{1}{8x^6}$ or $\dfrac{0.125}{x^6}$ or $\dfrac{1}{2^3 x^6}$	A1		
		3	$\log 27$	A1	Or equivalent	**AND**
	Solve equations.	4(a)	$x = 2.75$	A2	Or equivalent.	Part 2: Equations: 2 × code A2.
		4(b)	$(3x - 2)(x + 5)$ or $\left(x - \dfrac{2}{3}\right)(x + 5)$	A1	Both answers required.	
			$x = \dfrac{2}{3}, -5$	A2	Or equivalent	
		5	$2.2b + 4.8n = 133.10$ $b = n + 8$		Must form equations.	
			$b = 24.5$	A2	Or equivalent.	