Question	Scheme	Marks	AOs
7 (a)	$\left(1+\frac{3}{x}\right)^2 = 1+\frac{6}{x}+\frac{9}{x^2}$	M1 A1	1.1b 1.1b
		(2)	
(b)	$\left(1+\frac{3}{4}x\right)^6 = 1+6\times\left(\frac{3}{4}x\right)+...$	B1	1.1b
	$\left(1+\frac{3}{4}x\right)^6 = 1+6\times\left(\frac{3}{4}x\right)+\frac{6\times5}{2}\times\left(\frac{3}{4}x\right)^2+\frac{6\times5\times4}{3\times2}\times\left(\frac{3}{4}x\right)^3+...$	M1 A1	1.1b 1.1b
	$= 1+\frac{9}{2}x+\frac{135}{16}x^2+\frac{135}{16}x^3+...$	A1	1.1b
		(4)	
(c)	$\left(1+\frac{3}{x}\right)^2\left(1+\frac{3}{4}x\right)^6 = \left(1+\frac{6}{x}+\frac{9}{x^2}\right)\left(1+\frac{9}{2}x+\frac{135}{16}x^2+\frac{135}{16}x^3+...\right)$		
	Coefficient of $x = \frac{9}{2}+6\times\frac{135}{16}+9\times\frac{135}{16} = \frac{2097}{16}$	M1 A1	2.1 1.1b
		(2)	
			(8 marks)

Notes:

(a)

M1: Attempts $\left(1+\frac{3}{x}\right)^2 = A+\frac{B}{x}+\frac{C}{x^2}$

A1: $\left(1+\frac{3}{x}\right)^2 = 1+\frac{6}{x}+\frac{9}{x^2}$

(b)

B1: First two terms correct, may be un-simplified

M1: Attempts the binomial expansion. Implied by the correct coefficient and power of x seen at least once in term 3 or 4

A1: Binomial expansion correct and un-simplified

A1: Binomial expansion correct and simplified.

(c)

M1: Combines all relevant terms for their $\left(1+\frac{A}{x}+\frac{B}{x^2}\right)\left(1+Cx+Dx^2+Ex^3+...\right)$ to find the coefficient of x.

A1: Fully correct