Question	Scheme	Marks	AOs
14(a)	Attempts $\binom{8}{2}(kx)^2$	M1	1.1b
	$(p=)28k^2$	A1	1.1b
		(2)	
(b)	Attempts $a-16k=-21$ or $8ak-56k^2=-90$	M1	1.1b
	$a-16k=-21$ and $8ak-56k^2=-90$	A1ft	1.1b
	$a=16k-21\Rightarrow 8k(16k-21)-56k^2=-90\Rightarrow 12k^2-28k+15=0\Rightarrow k=...$ or $a=16k-21\Rightarrow k=\dfrac{a+21}{16}\Rightarrow 8a\left(\dfrac{a+21}{16}\right)-56\left(\dfrac{a+21}{16}\right)^2=-90$ $\Rightarrow 9a^2+42a-207=0\Rightarrow a=...$	dM1	2.1
	Any of $(a=)3$, $(k=)\dfrac{3}{2}$, $(a=)-\dfrac{23}{3}$, $(k=)\dfrac{5}{6}$	A1	1.1b
	$a=3$, $k=\dfrac{3}{2}$ and $a=-\dfrac{23}{3}$, $k=\dfrac{5}{6}$	A1	2.2a
		(5)	
		(7 marks)	

Notes:

(a) **Note that marks in (a) can be scored in (b) as long as they are not contradictory.**

M1: Correct expression for the coefficient of the third term e.g. $\binom{8}{2}k^2$

or correct expression for the third term $\binom{8}{2}(kx)^2$ but condone $\binom{8}{2}kx^2$

May be seen embedded in an expansion.

A1: cao $(p=)28k^2$ Must be extracted or e.g. underlined for this mark if seen in an expansion.

Correct answer only scores both marks. The "$p=$" is not required.

Isw after a correct answer is seen.

(b) **Note that candidates can score a maximum M1A1ftdM0A0A0 in (b) for the correct use of "p" rather than "$28k^2$"**

M1: Attempts to find an equation for the constant or for the coefficient of x

Condone slips on signs so award for $\pm a \pm 16k = \pm 21$ **or** $\pm 8ak \pm 2\times"28k^2"=\pm 90$

Allow if x's are present for this mark e.g. $\pm 8akx \pm 2\times"28k^2"x=\pm 90x$ and if awarding for the second equation, condone the omission of one x if they are present.

A1ft: Two correct equations following through on their answer for (a)

Look for $a-16k=-21$ o.e. and $8ak-2\times"28k^2"=-90$ o.e.

This may be implied but there must be no x's so e.g. $8akx-2\times"28k^2"x=-90x$ followed by $8ak-2\times"28k^2"-90=0$ would imply this mark.

dM1: Valid attempt to solve their equations simultaneously, via a 3TQ in a or k set $=0$, leading to a value for either a or k. Note that the correct quadratic for a is also $3a^2+14a-69=0$

Their 3TQ can be solved by any valid means including a calculator (you may need to check) and condone slips in reaching their 3TQ.

A1: cso Any correct value for a or k from correct work so depends on all previous marks.

A1: cso Both possible pairs of values for a and k, correctly paired and clearly identified as a and k. Depends on all previous marks.

Apply isw if they are subsequently written as coordinates e.g. $\left(3, \dfrac{3}{2}\right), \left(-\dfrac{23}{3}, \dfrac{5}{6}\right)$