Question	Scheme	Marks	AOs
6(a)	Use sum of probs = 1: $1=\frac{1}{k}(2+4+...+2n)$ Allow $1=\frac{S_r}{k}$ where $S_r=\sum_{r=1}^{n}2r$	M1	3.1a
	Sum e.g. $\frac{n}{2}[4+2(n-1)]$ <u>or</u> $\frac{n}{2}[2+2n]$ <u>or</u> use $\sum_{1}^{n}r=\frac{n(n+1)}{2}$	M1	2.1
	Use sum formula: e.g. $1=\frac{1}{k}\times\frac{n}{2}[4+2(n-1)]$ <u>or</u> $1=\frac{n}{2}\left[\frac{2}{k}+\frac{2n}{k}\right]$	A1	1.1b
	$k = n(n + 1)$ *	A1*cso	1.1b
		(4)	
6(b)	Cases: R = 16, 18, 20, 22 and 24	M1	3.4
	Probability = $\left[\frac{16+18+20+22+24}{20\times21}\right]=\underline{\underline{\frac{5}{21}}}$	A1	1.1b
		(2)	
6(c)	[No real roots $\Rightarrow\Delta<0$] so $g^2-4(3g-5)[<0]$	M1	3.1a
	$[g^2-12g+20<0\Rightarrow]$ $(g-10)(g-2)[<0]$	M1	2.1
	So require $2 < g < 10$ <u>or</u> $4\le g\le 8$	M1	1.1b
	So require g = 4, 6, 8 only	dM1	1.1b
	Probability = $\left[\frac{4+6+8}{20\times21}\right]=\underline{\underline{\frac{18}{420}}}=\underline{\underline{\frac{3}{70}}}$	A1	3.2a
		(5)	
			(11 marks)

Notes:

(a)	M1	for clear attempt/intention to use sum of probs = 1 for n terms. Must see k and "= 1" Condone missing … $\sum_{2}^{2n}r$ is M0 since not n terms
	M1	for using an arithmetic series or Σr to find sum to n terms. No need for k
	A1	(dep on M1M1) for a correct working leading to a correct equation in k and n
	A1*	cso for correct solution with both Ms clearly scored and no incorrect working seen
	SC	Start with $1=\frac{n}{2}\left[\frac{2}{k}+\frac{2n}{k}\right]$ or $1=\frac{1}{k}\times\frac{n}{2}[4+2(n-1)]$ and no mention of a and l or a and d Score **SC B2** (M1M0A1A0) 1st B1 for the start and 2nd B1cso for completing to printed answer.
(b)	M1	for identifying the correct values of R
	A1	for a correct probability (any exact equivalent) Allow $0.\dot{2}3809\dot{5}$ Correct answer with no working scores 2 marks
(c)	M1	for attempt to use discriminant [< 0 not needed here]. Condone g^2-12g
	M1	for attempting to factorise or find critical values for their 3TQ (ignore their < & allow = 0)
	M1	for choosing the correct (inside) region, ft their critical values from a 3TQ with < 0
	dM1	(dep on 3rd M1) for choosing/identifying the appropriate values of g (ft their critical values from 3TQ with < 0 used)
	A1	for an exact probability in any form. Allow $0.0\dot{4}28571\dot{4}$ A correct answer with no incorrect working will score full marks
Acc	**If scored A0 for an answer of awrt 0.238 in (b), allow A1 in (c) for awrt 0.0429**	