Q	Marking Instructions	AO	Marks	Typical Solution
10(a)(i)	States correct value CAO	AO3.4	B1	50
(a)(ii)	States correct integer value CAO	AO3.4	B1	609
(b)	Forms correct equation and rearranges to obtain $e^{0.5t} = \ldots$	AO3.4	M1	$150 = 50e^{0.5t}$ so $e^{0.5t} = 3$
	Obtains the correct solution. Must give answer to 3 sf	AO1.1b	A1	$t = 2\ln 3 = 2.20$
(c)	1 mark for any clear valid reason, must be set in context of the question	AO3.5b	E1	No constraint on the number of rabbits (ie could go off to infinity) **OR** Model is only based on the 3 years of the study. Things may change **OR** Continuous model but number of rabbits is discrete **OR** Ignores extraneous factors such as disease, predation, limited food supply
(d)	Forms an equation with exponentials by letting $R = C$ PI	AO3.4	M1	$1000e^{0.1t} = 50e^{0.5t}$ $20 = e^{0.4t}$ $t = \ln 20 \div 0.4$ $= 7.49$ 2023
	Solves 'their' equation correctly	AO1.1a	M1	
	States correct answer as the year 2023 CAO NMS scores full marks for 2023	AO3.2a	A1	
	Total		**8**	