Question Number	Scheme	Marks
6(a)	8, 11, 14, 17, 20	M1
	$\left[\mathrm{P}(\text{even})=\right]\frac{1}{5}$ and $\left[\mathrm{P}(\text{odd})=\right]\frac{4}{5}$	M1
	$\left[\mathrm{P}(X=8)=\right]\left(\frac{4}{5}\right)^4$ or $\left[\mathrm{P}(X=20)=\right]\left(\frac{1}{5}\right)^4$	M1
	$\left[\mathrm{P}(X=11)=\right]4\times\left(\frac{1}{5}\right)\left(\frac{4}{5}\right)^3$ or $\left[\mathrm{P}(X=17)=\right]4\times\left(\frac{4}{5}\right)\left(\frac{1}{5}\right)^3$	M1
	$\left[\mathrm{P}(X=14)=\right]{}^4C_2\times\left(\frac{1}{5}\right)^2\left(\frac{4}{5}\right)^2$	M1
	X: 8 (0.4096); 11 (0.4096); 14 (0.1536); 17 (0.0256); 20 (0.0016) P($X = x$): $\frac{256}{625}$; $\frac{256}{625}$; $\frac{96}{625}$; $\frac{16}{625}$; $\frac{1}{625}$	A1
		(6)
(b)	$1-(1-"0.1536")^n>0.95$ or $("0.8464")^n<0.05$	M1
	$n>17.96$ or $n>\frac{\log(0.05)}{\log("0.8464")}$ or $n>\log_{"0.8464"}(0.05)$	M1
	$n=18$	A1
		(3)
	Notes	**Total 9**

(a)	**M1**	For at least 2 scores correct and no more than 3 incorrect
	M1	for writing or using $\frac{4}{5}$ and $\frac{1}{5}$. May be implied by a correct probability
	M1	for p^4 where $0 < p < 1$
	M1	for $4\times(1-p)p^3$ where $0 < p < 1$
	M1	for $6\times(1-p)^2p^2$ where $0 < p < 1$ or probabilities that add to 1 (at least 2 but not more than 5)
	A1	for all 5 probabilities correct and associated with the correct values. Need not be in a table but probabilities must be attached to the correct total
(b)	**M1**	for using $1-(1-\mathrm{P}(Y=0))^n>0.95$ allow = instead of >/⩾. condone </⩽ or allow for at least 2 trials for n between 10 and 20 ft their P(X = 14)
	M1	for $n >$ awrt 17.96 or $n>\frac{\log(0.05)}{\log("0.8464")}$ ft their 0.8464 or $n>\log_{"0.8464"}(0.05)$ ft their 0.8464 or for the two trials for n = 17 and 18 Allow = instead of >/⩾. condone </⩽ May be implied by a correct answer ft their 0.8464
	A1	Cao (Do not allow any inequality for this mark)