Question			Answer	Mark	AO	Guidance
9	(a)		B$(20, \frac{1}{3})$	B1 [1]	3.3	Allow '$n = 20, p = \frac{1}{3}$' or just $(20, \frac{1}{3})$. Accept $p = 0.\dot{3}$ but not 0.333
9	(b)	(i)	${}^{20}C_x(\frac{2}{3})^{(20-x)}(\frac{1}{3})^x$	B1FT [1]	3.4	FT their values of n and p and allow $\binom{20}{x}$ as alternative to ${}^{20}C_x$ (If decimals used both must be correct to 3sf)
9	(b)	(ii)	$\{x : x \in \mathbb{Z}, 0 \leq x \leq 20\}$	B1FT [1]	1.2	FT their '20' only Any acceptable alternative in set notation Indication that x is an integer must be present (but condone 'integer' or 'whole number' or $x \in \mathbb{N}$)
9	(c)		P$(X \leq 9)$ − P$(X \leq 4)$ attempted (= 0.90810 − 0.15151) = 0.757 (3 sf)	M1 A1 [2]	3.4 1.1	Condone P$(X \leq 9)$ − P$(X \leq 5)$, or 0.90810 − 0.29721 or 0.611 May be implied by correct working or answer. Allow sum of P$(X = x)$ for x from 5 to 9. **BC** cao
9	(d)		May include too many from one year and too few from another year	B1 [1]	3.5b	For an explanation (which must be in context) showing clear recognition that a random sample (of this size) would not be representative across the year groups. Acceptable similar answers in context include: • 'should include roughly equal numbers from each year' • 'not representative of each year group' • 'may not include students from every year group' Do not accept 'may end up with more students from Y7-11 than from Y12-13' (because a representative sample would have this) Must be in context – so do not accept generic answers without context such as just: 'It might be biased' or 'It's not representative' or 'it should be a stratified sample' Do not accept answers solely referring to the suitability of the individual students within the sample to represent the school