Probability Past Paper Questions (MS)

Q1.

		Working	Answer	Mark	Notes
	(a)		$^{15}/_{100}$	5	M1 for fraction with 15 as the numerator or 100 as the denominator A1 for $^{15}/_{100}$ oe or 0.15 or 15%
	(b)		0	1	B1 oe Accept $^{0}/_{100}$, 0%, 0 out of 100 but not 0:100
	(c)		$^{1}/_{10}$		M1 for 100 – (50 + 25 + 15) A1 oe

Q2.

Question	Working	Answer	Mark	Notes
*		Bag A (supported)	3	M1 for $\frac{3}{7}$ or $\frac{5}{12}$ M1 (dep) for method to compare the two probabilities, e.g using a common denominator, eg $\frac{3}{7}=\frac{36}{84}$; $\frac{5}{12}=\frac{35}{84}$ or writing as decimals eg $\frac{3}{7}=0.428571...$ and $\frac{5}{12}=0.416666...$ C1 (dep on M2) for Bag A and correct method of comparison with correct figures using $\frac{3}{7}$ and $\frac{5}{12}$

Q3.

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Question		Working	Answer	Mark	Notes
(a)		(4, 4) (4, 5) (4, 6) (5, 4) (5, 5) (5, 6) (6, 4) (6, 5) (6, 6)	Complete diagram	1	B1 cao
(b)			$\frac{1}{36}$	1	B1 for $\frac{1}{36}$
*(c)			7 has greater probability with correct reason	1	C1 for 7 has greater probability oe with correct reason, eg gets a total of 7 more often

Q4.

Question		Working	Answer	Mark	Notes
	(i)		$^{7}/_{18}$	3	B1 for $^{7}/_{18}$ oe
	(ii)		$^{12}/_{18}$		B1 for $^{12}/_{18}$ **or** $^{2}/_{3}$ oe
	(iii)		0		B1 for 0 or $^{0}/_{18}$ or zero oe

Q5.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	D	B1	cao	
(b)	B	B1	cao	
(c)	Shown	M1	for number of green counters, eg 12 − (3+1+2) = 6 **OR** for $\frac{3}{12}$ oe **or** $\frac{1}{12}$ oe **or** $\frac{2}{12}$ oe linked to the appropriate colour	This is awarded for a correct first step
		M1	for 1 − ("$\frac{3}{12}$" + "$\frac{1}{12}$") (=$\frac{8}{12}$) or "$\frac{2}{12}$"+"$\frac{6}{12}$" (=$\frac{8}{12}$) **OR** for method to find $\frac{2}{3}$ of 12, eg. 12 ÷ 3 × 2 (= 8)	This is awarded for a fully correct method from which the correct answer of $\frac{2}{3}$ can be found Sight of $\frac{8}{12}$ gets M2
		C1	for correct conclusion supported by accurate figures, eg $\frac{8}{12}=\frac{2}{3}$ **or** $\frac{2}{3}$ of 12 = 8 **and** number of yellow + green = 2 + 6 = 8	

Q6.

Question	Working	Answer	Mark	Notes
		$\frac{7}{17}$	M1	for $\frac{a}{17}$ where a ≠7 but < 17 or $\frac{7}{b}$ where b≠17 but > 7
			A1	oe

Q7.

Question	Answer	Mark	Mark scheme	Additional guidance
	$\frac{338}{350}$	M1	for $350 - 12$ (=338) **or** $\frac{y}{350}$ oe where $y < 350$ **and** $y \neq 12$ **or** $1 - \frac{12}{350}$ oe	For the method mark probability fractions can be expressed as equivalent expressions, even if not correct probability notation eg. 338 : 350 scores M1 A0
		A1	oe	Using correct probability notation Allow 0.96 to 0.97 or 96% to 97%

Q8.

Question		Working	Answer	Mark	Notes
	(a)		No + reason	1	B1 for No because she has 1 choice out of 3 which is the same as Mike oe
	(b)	(r,g)(r,b) (g,b)(g,r)(b,g) (b,r) (r,r)(b,b)(g,g)	Complete list	2	M1 for listing pairs (at least 5 correct pairs) A1 for fully correct list (ignore repeats)
	(c)		$\frac{1}{9}$	1	B1 for $\frac{1}{9}$ oe (If M1A0 in (b), then SC B1 in (c) for $\frac{\text{their number of (b,g)}}{\text{their total number of outcomes}}$)

Q9.

Question		Working	Answer	Mark	Notes
	(a)		$\frac{3}{10}$	2	M1 for $\frac{a}{10}$ or $\frac{3}{b}$ where $a < 10$ and $b > 3$ A1 for $\frac{3}{10}$ oe
	(b)		$\frac{7}{10}$	1	B1 ft or for $\frac{7}{10}$ oe

Q10.

Question	Working	Answer	Mark	Notes
		$\frac{16}{29}$	P1	process to start, e.g. $29 - 13$ (= 16) or $\frac{16}{a}$ where a > 16 or $\frac{b}{29}$ where b < 29 or $\frac{(29-13)}{c}$ where c > 29 – 13
			A1	$\frac{16}{29}$ oe

Q11.

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Question	**Working**	**Answer**	**Mark**	**Notes**
(a)		$\frac{9}{20}$	2	M1 for $\frac{n}{9+11}$ where $1 \leq n < 20$ **or** $\frac{9}{m}$ where $9 < m < 20$ A1 $\frac{9}{20}$ oe
(b)		3	3	M1 $\frac{2}{5} \times (10+20)$ (=12) M1 "12" - 9 A1 cao or M1 $\frac{2}{5} = \frac{2 \times "6"}{10+20} \left(= \frac{12}{30}\right)$ M1 '12' - 9 A1cao