

Probability GCSE Past Papers Answers

1.

Answer	Mark	Mark scheme
$\frac{11}{21}$	P1	for any product of 3 probabilities of the form $\frac{a}{9} \times \frac{b}{8} \times \frac{c}{7}$ where $a < 9, b < 8, c < 7$
	P1	for a product of 3 probabilities giving an even sum, eg. E,E,E = $\frac{4}{9} \times \frac{3}{8} \times \frac{2}{7}$ or E,O,O = $\frac{4}{9} \times \frac{5}{8} \times \frac{4}{7}$
	P1	for summing the product of at least three correct triples, eg (E,E,E + E,O,O + O,O,E =) $\frac{4}{9} \times \frac{3}{8} \times \frac{2}{7} + \frac{4}{9} \times \frac{5}{8} \times \frac{4}{7} + \frac{5}{9} \times \frac{4}{8} \times \frac{4}{7}$ OR $3(\frac{4}{9} \times \frac{5}{8} \times \frac{4}{7})$
	A1	for $\frac{11}{21}$ oe  SCB1 for answer of $\frac{364}{729}$ (replacement)

2.

(a)	0.5, 0.3	P1	for $1 - 0.05 - 0.15 (= 0.8)$
		A1	oe
(b)	120	M1	$18 \div 0.15$ oe or $6 + 18 + a + b$ where $a + b = 96$
		A1	cao

3.

0.748	P1	for a process to find a correct probability product for 2 consecutive days, eg. $0.7 \times 0.8$ (rain M + T) or $0.7 \times 0.2$ (rain M + no rain T) or $0.3 \times 0.6$ (no rain M + rain on T) or $0.3 \times 0.4$ (no rain M + T)
	P1	for process to find a correct triple probability product for it raining on Wednesday, eg. $0.7 \times 0.8 \times 0.8$ (rain M + T + W) (= $0.448$ or $\frac{56}{125}$ oe) or $0.7 \times 0.2 \times 0.6$ (rain M + no rain T + rain W) (= $0.084$ or $\frac{21}{250}$ oe) or $0.3 \times 0.6 \times 0.8$ (no rain M + rain T + rain W) (= $0.144$ or $\frac{18}{125}$ oe) or $0.3 \times 0.4 \times 0.6$ (no rain M + no rain T + rain W) (= $0.072$ or $\frac{9}{125}$ oe)
	P1	for complete process, eg. “0.448” + “0.084” + “0.144” + “0.072”
	A1	oe eg, $\frac{187}{250}$

4.

(a)	0.5, 0.3	P1	for $1 - 0.05 - 0.15 (= 0.8)$
		A1	oe
(b)	120	M1	$18 \div 0.15$ oe <b>or</b> $6 + 18 + a + b$ where $a + b = 96$
		A1	cao

5,

Shown	M1	for $\frac{n}{n+8}$ <b>or</b> starts to work with ratios, eg 3:7
	M1	forms equation and clears fractions, eg $10n = 7n + 56$ or $10n + 3(n+8) = 10(n+8)$ <b>or</b> equates $\frac{3}{10} = \frac{8}{x}$ or $\frac{3}{10} = \frac{8}{n+8}$ <b>or</b> continues to work with ratios, eg 3:7 = 24:56
	C1	gives the total sweets eg $\frac{80}{3}$ oe <b>or</b> number of red sweets $n = \frac{56}{3}$ oe <b>or</b> gives number of red as $\frac{56}{3}$  <b>OR</b> award 3 marks for a complete written argument, eg, $P(y) = \frac{3}{10}$ and there are 8 yellows. This cannot work as 3 is not a factor of 8 (and $\frac{3}{10}$ is in its simplest form)

6.

Answer	Mark	Mark scheme
24	P1	for start to process of working out the unknown probabilities, eg $1 - 0.32 - 0.20 (= 0.48)$ <b>or</b> assigning probabilities as $5x$ and $x$ <b>or</b> process to work out the number of blue or green counters, eg $0.32 \times 300 (= 96)$ or $0.20 \times 300 (= 60)$ or $0.52 \times 300 (= 156)$
	P1	for process to find the probability, eg $5x + x = "0.48"$ or $"0.48" \div 6 (= 0.08)$ <b>or</b> process to find the number of red or yellow counters, eg $300 - "96" - "60"$ or $300 \times "0.48"$
	A1	cao

7.

(a)	0.455	M1	for $0.65 \times (1 - 0.65)$ or $0.65 \times 0.35 (=0.2275 \text{ or } \frac{91}{400})$ or $2 \times 0.2275$ oe	Could be shown on a tree diagram but must show an intention to multiply  Acceptable equivalents are 45.5% or $\frac{91}{200}$ oe
		A1	oe	
(b)	42	M1	for a start of the process eg $78 \div 0.65 (= 120)$ or $78 \times 0.35 (=27.3)$	$\frac{78 \times 0.35}{0.65}$ , $\frac{78}{0.65} - 78$
		A1	cao	

8.

Answer	Mark	Mark scheme
$\frac{3}{22}$	P1	for a process to find a first value eg male/Britain = $32 - 11 (=21)$ <b>or</b> Italy/total = $60 - (32+12) (=16)$ <b>or</b> female/total = $60 - 38 (=22)$
	P1	for process to find a secondary value, eg male/Spain = $38 - ("21" + 8) (=9)$ <b>or</b> female/Italy = $"16" - 8 (=8)$
	P1	complete process to find female/Spain, eg $12 - "9"$ <b>or</b> $"22" - (11 + "8") (=3)$
	A1	oe accept 0.136 to 0.14  SC B3 for $\frac{3}{60}$