

Q1. (2017)

(A)

20(a)	$\frac{1}{10}$ or 10% or 0.1	B1	oe
	Additional Guidance		
	Ratio eg 1 : 10 or 1 : 9		B0
	$\frac{1}{10}$ seen and answer 1 : 10		B1
	Expressed only in words eg 1 out of 10		B0
	1 out of 10 and $\frac{1}{10}$		B1
	$\frac{1}{10}$ seen with change to incorrect decimal or incorrect percentage eg $\frac{1}{10}$ and answer 0.01		B1
	Ignore chance words if $\frac{1}{10}$ seen eg $\frac{1}{10}$ and answer Unlikely		B1

(B)

20(b)	$\frac{1}{4}$ or 0.25 or 25%	B1	oe
	Additional Guidance		
	Ratio eg 1 : 4 or 1 : 3		B0
	$\frac{1}{4}$ seen and answer 1 : 4		B1
	Expressed only in words eg 1 out of 4		B0
	1 out of 4 and $\frac{1}{4}$		B1
	$\frac{1}{4}$ seen with change to incorrect decimal or incorrect percentage eg $\frac{1}{4}$ and answer 0.4		B1
	Ignore chance words if $\frac{1}{4}$ seen eg $\frac{1}{4}$ and answer Likely		B1

Q2. (2017)

25	Alternative method 1		
	40	B1	May be implied eg $\frac{2}{40}$
	$2 + x + 2x + 5 = \text{their } 40$ or $3x + 7 = \text{their } 40$ or $(\text{their } 40 - 2 - 5) \div 3$ or $33 \div 3$	M1	oe equation eg $3x + 5 = 38$ (scores B1M1) their 40 must be an integer
	$(x =) 11$	A1ft	ft B0M1 Does not have to be an integer Accept answer rounded or truncated to at least 2 sf
	$\frac{27}{40}$ or 0.675 or 67.5%	B1ft	Only ft evaluation of $\frac{2 \times \text{their integer } x + 5}{40}$ and $0 < \text{answer} < 1$ Denominator must be 40 (may subsequently be simplified)
	Alternative method 2		
	$\frac{2}{2 + x + 2x + 5} = \frac{1}{20}$ or $\frac{x + 2x + 5}{2 + x + 2x + 5} = \frac{19}{20}$	M2	oe equation
	$(x =) 11$	A1	
	$\frac{27}{40}$ or 0.675 or 67.5%	B1ft	Only ft evaluation of $\frac{2 \times \text{their integer } x + 5}{40}$ and $0 < \text{answer} < 1$ Denominator must be 40 (may subsequently be simplified)

25 cont	Alternative method 3		
	$3x \rightarrow 100\% - 5\% = 12.5\%$ or $3x \rightarrow 82.5\%$	M1	Using $2 \rightarrow 5\%$ and $5 \rightarrow 12.5\%$ oe
	$x \rightarrow 82.5\% \div 3$ or $x \rightarrow 27.5\%$	M1dep	oe
	$2x + 5 \rightarrow 2 \times 27.5\% + 12.5\%$	M1dep	oe
	$\frac{27}{40}$ or 0.675 or 67.5%	A1	
	Alternative method 4		
	$3x \rightarrow 1 - \frac{1}{20} - \frac{2.5}{20}$ or $3x \rightarrow \frac{16.5}{20}$	M1	Using $2 \rightarrow \frac{1}{20}$ and $5 \rightarrow \frac{2.5}{20}$ oe
	$x \rightarrow \frac{16.5}{20} \div 3$ or $x \rightarrow \frac{5.5}{20}$	M1dep	oe
	$2x + 5 \rightarrow 2 \times \frac{5.5}{20} + \frac{2.5}{20}$ or $2x + 5 \rightarrow \frac{13.5}{20}$	M1dep	oe
	$\frac{27}{40}$ or 0.675 or 67.5%	A1	

25 cont	Additional Guidance		
	(Alt 1) $x = 6$ (no working) Answer $\frac{17}{40}$ (first B1 implied)	B1M0A0B1ft	
	(Alt 1) $2 + x + 2x + 5 = 20$ $x = \frac{13}{3}$ Answer $\frac{13.666}{20}$	B0M1 A1ftB0ft	
	Answer $\frac{13.5}{20}$	B1M1A1B0	
	11 by inspection or T & I scores the first 3 marks		
	Answer $\frac{2x+5}{40}$	B1M0A0B0	
	Answer $\frac{2x+5}{3x+7}$	Zero	
	Ratio eg 27 : 40	B1M1A1B0	
	Expressed only in words eg 27 out of 40	B1M1A1B0	
	27 out of 40 and $\frac{27}{40}$	B1M1A1B1	
	$\frac{27}{40}$ seen with incorrect change of form or incorrect cancelling eg $\frac{27}{40}$ and answer 0.27	B1M1A1B1	
	Ignore chance words if $\frac{27}{40}$ seen eg $\frac{27}{40}$ and answer Unlikely	B1M1A1B1	

Q3. (2019)

14(b)	$\frac{15}{135}$ or $\frac{5}{45}$ or $\frac{3}{27}$ or $\frac{1}{9}$ or $0.\dot{1}$ or 0.11(1...) or 11(1...)%	B1	oe fraction decimal or percentage
	Additional Guidance		
	Ignore attempts to simplify or convert a correct fraction to a decimal or percentage		
	15 out of 135	B0	
	0.1 without correct fraction seen	B0	
	Ratio	B0	

Q4. (2020)

(A)

Q	Answer	Mark	Comments
9(a)	Valid reason	B1	eg the percentages do not add to 100(%) or there are 10(%) too many or they add to 110(%)
	Additional Guidance		
	One of the percentages is 10(%) too big		B1
	Allow $18 + 54 + 38 = 110$		B1
	They add up to more than 100(%)		B1
	It does not equal 100(%)		B1
	It's not possible to have 110(%)		B1
	Condone eg percentages only go up to 100, percentages are out of 100, percentage = 100(%)		B1
	They don't add up correctly		B0
	There are too many adults		B0
	Seniors must also be adults		B0
	Ignore irrelevant statements alongside a correct statement eg the percentages do not add up to 100, there should be more seniors than juniors		B1
	Two statements, one correct, one incorrect eg the percentages do not add up to 100, they add up to 111		B0

(B)

Q	Answer	Mark	Comments
9(b)	2×120 or 240	M1	oe
	$(3 \times) \frac{1}{5} \times 120$ or 24 or 72	M1	oe
	312	A1	SC2 528
	Additional Guidance		
	$\frac{1}{5}$ of 120 with no correct evaluation		2nd M0
	Do not allow a misread of the fraction		
	eg $\frac{1}{5} = 2\%$ stated with no method shown and then 2% used		2nd M0
	Allow 3 adults and/or 2 juniors as a misread eg1 3×120 eg2 3×120 and $2 \times \frac{1}{5} \times 120$		M1 M2A0
	$240 \div 5$		M1M0A0
	$\frac{1}{5} \times 120 = 24$ and $120 - 24$ (working out $\frac{4}{5}$)		2nd M0 (but may score SC2)
	Using $\frac{4}{5}$ can score SC2 for the ft answer or a max of M1 for 240 seen		
	Allow up to M2 even if not subsequently used		

Q5. (2021)

Q	Answer	Mark	Comments
6(a)	$\frac{9}{16}$	B1	oe fraction, decimal or percentage eg 0.5625 or 56.25%
	Additional Guidance		
	Ignore incorrect simplification or conversion of a correct probability to a fraction, decimal or percentage but not a ratio eg1 $\frac{9}{16}$ 0.55		B1
	eg2 $\frac{9}{16}$ 9 : 16		B0
	Ignore words alongside a correct probability eg1 $\frac{9}{16}$ unlikely		B1
	eg2 9 out of 16 $\frac{9}{16}$		B1
	Do not accept answer given in words or as a ratio eg 9 out of 16		B0

Q6. (2021)

Q	Answer	Mark	Comments
12(b)	Any two of (home wins $\Rightarrow$) 7×6 or 42 or (home draws $\Rightarrow$) their 5×3 or 15 or (away wins $\Rightarrow$) their 2×6 or 12 or (away draws $\Rightarrow$) their 6×3 or 18	M1	may be implied by one of (total points for their wins) 54 or (total points for their draws) 33 or (total points for their home) 57 or (total points for their away) 30
	87	A1ft	ft their frequency tree with positive integers in all relevant sections
	Additional Guidance		
	Using non-integers		M0A0

Q7. (2021)

Q	Answer	Mark	Comments
29(b)	0.22	B1ft	oe fraction, decimal or percentage eg $\frac{55}{250}$ ft their relative frequency for 250 trains (> 0 and < 1) given in table or plotted on graph
	Additional Guidance		
	The mark may be awarded for a correct restart or a follow through from their table or a follow through from their graph		
	Ignore attempts to convert a correct relative frequency once seen in (b)		
	NB $\frac{166}{750} = 0.2213...$ is incorrect (unless it is given as their relative frequency for 250 trains)		B0ft

Q8. (2023)

Q	Answer	Mark	Comments
8(b)	Alternative method 1		
	0.68×93 or 63.2(4)	M1	oe
	64	A1	
	Alternative method 2		
	$\frac{63}{93} = 0.67(\dots)$ or $\frac{64}{93} = [0.68, 0.69]$	M1	other trials can be ignored
	64	A1	
	Additional Guidance		
	Answer only 64		M1A1
	0.69×93 or 64.1(7) or 64.2 with answer 64 (without seeing 0.68×93 or 63.2(4))		M0A0
	For 0.68×93 , accept $68\% \times 93$ but do not accept 68% of 93 unless recovered		

Q9. (2023)

Q	Answer	Mark	Comments
11(b)	$\frac{7}{60}$ or [0.116, 0.117] or [11.6, 11.7]%	B1	oe fraction
	Additional Guidance		
	Ignore conversion attempt to decimal, fraction or percentage (but not ratio) after correct probability seen		
	Do not allow eg 7 in 60 or 7 out of 60 unless the correct probability seen		
	Do not allow ratio		
	Ignore words if correct probability seen		

Q10. (2023)

(A)

Q	Answer	Mark	Comments																																
18(a)	All values correct	B2	B1 1 or 2 rows correct																																
	Additional Guidance																																		
	<table><tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>2x</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td></tr><tr><td>3x</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td><td>18</td></tr><tr><td>x²</td><td>1</td><td>4</td><td>9</td><td>16</td><td>25</td><td>36</td></tr></table>							1	2	3	4	5	6	2x	2	4	6	8	10	12	3x	3	6	9	12	15	18	x ²	1	4	9	16	25	36	B2
		1	2	3	4	5	6																												
2x	2	4	6	8	10	12																													
3x	3	6	9	12	15	18																													
x ²	1	4	9	16	25	36																													

(B)

Q	Answer	Mark	Comments
18(b)	$\frac{8}{18}$ or $\frac{4}{9}$ or 0.44(4...) or 44(4...)%	B1ft	oe fraction, decimal or percentage ft their table with ≥ 12 values must be using 18 for the total number of possible scores
	Additional Guidance		
	Ignore simplification or conversion attempt (not ratio) after correct probability seen		
	Ratio answer eg 8 : 18, even alongside a correct probability is B0		
	ft decimals or percentages must be correct to the same accuracy as in the scheme eg 10 winning values in their table $\frac{10}{18}$ or 0.55(5...) or 0.56 or 0.556 or 55(5...) or 56% or 55.6%		B1ft

(C)

Q	Answer	Mark	Comments
18(c)	711 $\times$ their $\frac{8}{18}$	M1	oe ft their probability from (b) or if no probability in (b), ft their table with ≥ 12 values where $0 < \text{their probability} < 1$ probabilities, if rounded in (c), must be truncated or rounded to at least 2 sf
	316	A1	SC2 395
	Additional Guidance		
	Answer 316		M1A1
	$\frac{316}{711}$ on answer line		M1A0
	Condone 316 out of 711		M1A1
	Do not treat estimating by rounding as a misread eg1 700 used instead of 711		M0A0
	eg2 (b) 0.44 (c) 0.4×711 (rounded to 1sf in (c) for the probability)		M0A0
	eg3 (b) 0.4 (c) 0.4×711 (follows through their (b))		M1A0
	Do not allow ft for a ratio from (b) but may ft their (a) instead		
	For 0.44×711 , accept $44\% \times 711$ but do not accept 44% of 711 unless recovered		
	The method mark may be implied by a ft answer (decimal or truncated to the nearest integer or rounded up to the nearest integer) eg1 (b) $\frac{7}{18}$ (c) 276.5 or 276 or 277 (correct ft method implied using (b))		M1A0
	eg2 (a) completed table has 7 winning values (b) no probability shown (c) 276.5 or 276 or 277 (correct ft method implied using (a))		M1A0

Q11. (2024)

(A)

Q	Answer	Mark	Comments
8(a)	56 – 17 or 39	M1	
	13	A1	
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen in multiple attempts		
	Ignore any values for blue or white cubes		
	eg G B W R 17 13 13 13 With R unambiguously linked with 13 May be seen as a ratio Unless contradicted on the answer line is awarded M1A1		
	17 (+) 13 (+) 13 (+) 13 without 13 linked to red		M1A0
	13 and answer 13 out of 56		M1A1
	13 and answer $\frac{13}{56}$		M1A0
	13 and answer 56		M1A0
	Answer $\frac{13}{56}$		M1A0

(B)

Q	Answer	Mark	Comments
8(b)	56 + 24 or 80	M1	
	0.4 × their 80 or 32	M1dep	oe eg 0.4 × 56 + 0.4 × 24 or 9.6 + 22.4
	15	A1	
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen in multiple attempts		
	15 and answer 15 out of 24		M1M1A1
	15 and answer $\frac{15}{24}$ or $\frac{3}{8}$		M1M1A0
	Answer $\frac{15}{24}$		M1M1A0
	80 seen embedded in a fraction		M1
	Answer $\frac{3}{8}$ with no other creditworthy work		M0M0A0
	Condone 80 × 40%		M1M1
	40% of 80 is 2nd M0 unless recovered		
	Build up methods for finding 40% of 80 must be completed to be awarded the M mark eg 80 followed by 10% = 8 and 4 × 8 = 32 eg 0.1 × 80 = 8 and 4 × 8 = 32 eg 80 followed by 10% = 8 and 4 × 8 = 32		M1M1 M1M1 M1M0

Q12. (2024)

Q	Answer	Mark	Comments
18(b)	$\frac{1}{4} \times \frac{3}{5}$	M1	oe fractions, decimals or percentages correct or ft their tree diagram with both probabilities > 0 and < 1
	$\frac{3}{20}$ or 0.15 or 15%	A1ft	correct or ft their tree diagram with both probabilities > 0 and < 1
	Additional Guidance		
	Further work after correct answer seen		M1A0

Q13. (2024)

Q	Answer	Mark	Comments
22(a)	The same number of 7s as even numbers	M1	any order may be in a list or on the spinner must be at least one 7
	5, 5, 6, 7, 7, 8	A1	any order may be in a list or on the spinner may be implied
	$\frac{2}{6}$	A1ft	oe fraction, decimal or percentage ft M1A0 with completed spinner or list of six numbers
	Additional Guidance		
	Ignore simplification or conversion attempt after correct answer seen		
	Accept 0.33(...) or 33.(...) % for $\frac{2}{6}$		
	A list/spinner with blanks and/or using other numbers may still score M1 eg 5, 5, 7, 10 or 5, 6, 7, 7, 8, 9		M1
	$\frac{2}{6}$ with no incorrect working eg 5, 6, 7, 8 on spinner with 2 blanks answer $\frac{2}{6}$ (M1A1 is implied)		M1A1A1
	5, 5, 6, 6, 7, 7 with answer $\frac{2}{6}$		M1A0A1ft
	5, 5, 5, 5, 6, 7 with answer $\frac{4}{6}$		M1A0A1ft
	5, 6, 6, 7, 7, 9 with answer $\frac{2}{6}$		M1A0A0ft
	5, 5, 5, 5, 5, 6 with answer $\frac{5}{6}$		M0A0A0ft

Q14. (2024)

Q	Answer	Mark	Comments
22(b)	Valid reason	B1	eg sum of probabilities is not 1
	Additional Guidance		
	Ignore irrelevant statements alongside a correct statement eg the sum of the probabilities is not 1 and the probabilities are not percentages		B1
	Do not ignore incorrect statements alongside a correct statement eg the sum of the probabilities is 0.11 not 1		B0
	They add up to 1.1		B1
	They add up to 110%		B1
	It is 0.1 too much		B1
	One of the probabilities is 0.1 too much		B1
	It should be something like 0.1, 0.2, 0.3, 0.4		B1
	B should be 0.4		B1
	They don't add up correctly		B0
	They add up to 0.11		B0
	It's not a fair spinner		B0