1	0.26	B1	

Q	Answer	Mark	Comments
2(a)	Any one of 0.24 or 0.19 or 0.22 in the correct cell	M1	oe fraction, decimal or percentage eg $\frac{36}{150}$ or $\frac{38}{200}$ or $\frac{55}{250}$ implied by any correct point for these three values
	At least two of their relative frequencies plotted accurately	M1dep	$\pm\frac{1}{2}$ square
	(150, 0.24), (200, 0.19) and (250, 0.22) plotted and graph completed with straight lines	A1	$\pm\frac{1}{2}$ square allow dotted or solid lines
	Additional Guidance		
	Mark intention for straightness of lines		
	Ignore any continuation of line after the last point or any other lines drawn on the graph, for example a line of best fit		

Q	Answer	Mark	Comments
2(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 $\frac{166}{750} = 0.2213\ldots$ is incorrect (unless it is given as their relative frequency for 250 trains)		B0ft

Q	Answer	Mark	Comments
3(a)	$\frac{33}{120}$ or $\frac{11}{40}$ or 0.275 or 27.5%	B1	oe fraction, decimal or percentage
	Additional Guidance		
	Correct answer seen with an answer of 33		B0
	Ignore simplification or conversion if correct answer seen eg1 $\frac{33}{120}$ seen Answer $\frac{3}{10}$ eg2 0.275 seen Answer 0.28 eg3 $\frac{11}{40}$ seen Answer 27.5		 B1 B1 B1
	Ignore words if correct answer seen eg1 $\frac{33}{120}$ seen Answer 11 out of 40 eg2 $\frac{33}{120}$, unlikely		 B1 B1
	Answer given as ratio (even if correct answer also seen) eg 33 : 120		 B0
	Answer only in words eg 33 out of 120		B0
	Only 27.5 (without %)		B0
	Only 27% or 28%		B0
	Only 0.27 or 0.28		B0
	Only $\frac{1.1}{4}$		B0

Q	Answer	Mark	Comments
3(b)	$\frac{6}{120} \times 500$ or [4.16, 4.17] × 6 or [24.96, 25.02] or 4.2 × 6 or 25.2 or 25 : 500 or $\frac{25}{500}$	M1	oe eg 0.05 × 500 or 500 ÷ 20
	25	A1	
	Additional Guidance		
	Working and value may be seen by table		
	24 + 1, Answer 25		M1A1
	480 = 24, Answer 25		M1A1
	Embedded but not selected as answer eg 137.5 + 337.5 + 25 = 500		M1A0
	Working for Not answered or Answered but sale not made is **not** choice eg ignore 137.5 and 337.5 seen		
	25 followed by answer 19		M1A0
	If rounded or truncated values are used, the final answer must be exactly 25 eg1 500 ÷ 120 = 4.16, 4.16 × 6 Answer 25 (may have kept full value on calculator) eg2 500 ÷ 120 = 4.16, 4.16 × 6 = 24.96 Answer 25 (comes from further rounding)		 M1 A1 M1 A0

Q	Answer	Mark	Comments
4(a)	All values correct	B2	B1 1 or 2 rows correct
	Additional Guidance		
			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

Q	Answer	Mark	Comments
4(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

Q	Answer	Mark	Comments
4(c)	711 × 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 < 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 eg2 (b) 0.44 (c) 0.4 × 711 (rounded to 1sf in (c) for the probability) eg3 (b) 0.4 (c) 0.4 × 711 (follows through their (b))		 M0A0 M0A0 M1A0
	Do not allow ft for a ratio from (b) but may ft their (a) instead		
	For 0.44 × 711, accept 44% × 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)) 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 M1A0

Q	Answer	Mark	Comments
5(a)	Ben and valid reason	B1	eg spun the most times
	Additional Guidance		
	Do not accept an incorrect reason alongside a correct response		
	Do not accept reasons which refer to the probability increasing		
	Ignore reasons that refer to results being more accurate		

Q	Answer	Mark	Comments
5(b)	Valid reason	B1	eg 14.8 is not a whole number
	Additional Guidance		
	Do not accept an incorrect reason alongside a correct response		
	0.185 × 80 is not a whole number	B1	
	Number of spins would be a decimal	B1	
	Number of spins must be a whole number	B1	
	Cannot land on the spinner 14.8 times	B1	
	Have to spin 14.8 times	B0	
	0.185 × 80 = 14.8	B0	
	14.8	B0	
	It is a decimal	B0	
	Must be a whole number	B0	

Q	Answer	Mark	Comments
5(c)	125 × 0.32 or 40 or 1 – 0.32 or 0.68	M1	oe
	85	A1	

Q	Answer	Mark	Comments
6	**Alternative method 1**		
	0.49 × (250 + 50) or 0.49 × 300 or 147	M1	oe
	their 147 – 128 or 19	M1dep	
	19 : 31	A1	SC2 answer 31 : 19
	Alternative method 2		
	(1 – 0.49) × (250 + 50) or 0.51 × 300 or 153	M1	oe
	their 153 – 122 or 31	M1dep	
	19 : 31	A1	SC2 answer 31 : 19
	Additional Guidance		
	Up to M2 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts		
	147 : 153 or 153 : 147		M1M0A0
	0.49 : 0.51		M0M0A0
	Beware of 147 and 153 from incorrect working 122 + 25 = 147 128 + 25 = 153		 M0 M0

Q	Answer	Mark	Comments
7	$\frac{1}{6}$ or 0.16(6…) or 0.167 or 0.17	M1	oe theoretical probability
	$\frac{14}{72}$ or 0.19(4…)	M1	oe relative frequency
	Yes and both values in comparable formats	A1	eg $\frac{12}{72}$ and $\frac{14}{72}$ or $\frac{6}{36}$ and $\frac{7}{36}$ or 0.16(6…) or 0.167 or 0.17 **and** 0.19(4…) SC1 Yes and 12 seen