Question			Answer	Mark	Part marks and guidance	
1	(a)		36	1		
1	(b)		20 or 25	1		Accept 20 and 25 with no extras
2	(a)		2	1		Condone +2
2	(b)		156	1		
2	(c)		206	1		
2	(d)		10.08	1		
3	(a)		35	1		
3	(b)		Line drawn to 55mm for May	1		Mark intention Condone freehand Allow slight inaccuracy, end of line should be on or within overlay Do not allow horizontal line drawn from 55
3	(c)		160	2	**FT** t*heir* 35 [+] 70 [+] 55 correctly evaluated **B1** for 35 [+] 70 [+] 55 or **B1FT**: t*heir* 35 [+] 70 [+] 55	FT for 2 marks "their 35" from 3(a) Values could be given on diagram in 3b
4			24	2	**M1** for 6 × 4	Extra incorrect work e.g. $\frac{6\times4}{2}$ is M0
5	(a)	(i)	35 000	1		
5	(a)	(ii)	0.203	1		
5	(a)	(iii)	400	1		

Question			Answer	Mark	Part marks and guidance	
5	(b)		2 hours 15 minutes	3	**B2** for 2.25[hours], $2\frac{1}{4}$ [hours] or 135[mins] or **M1** for 90 ÷ 40 oe or for *their* decimal hours correctly converted or for *their* minutes correctly converted to hours and minutes If 0 scored **SC1** for answer 2 hr 25 mins	Condone incorrect units for distance e.g. 9 ÷ 4 or $\frac{9}{4}$ Decimal hours must be > 0 their minutes must be > 60
6	(a)	(i)	F	1		For all (a) only condone the following values: Condone 1
6	(a)	(ii)	E	1		Condone 0.5
6	(a)	(iii)	A	1		Condone 0
6	(b)		24	2	**M1** for 8 + 8 + 8 oe or 16 + 2 + 6 If 0 scored **SC1** for answer any multiple of 3 > 24	
7	(a)		$\frac{13}{21}$ oe	2	**M1** for $\frac{7k}{21k} + \frac{6k}{21k}$	Where k is an integer ≥ 1 isw attempts to convert after the correct answer seen
7	(b)		$\frac{7}{16}$ cao	2	**M1** for $\frac{35}{80}$ o.e	e.g. $\frac{2800}{6400}$ for M1
8	(a)	(i)	59	1		Condone extra correct terms e.g. 176, ...
8	(a)	(ii)	7	2	**M1** for add 1 then divide by 3 soi	Allow embedded answer for M1: e.g.: $7 \times 3 - 1 = 20$

Question			Answer	Mark	Part marks and guidance	
8	(b)		5*n* oe	1		Condone poor notation e.g. 5 × *n* , *n* = 5*n,* 5*n* + 0, 5*n* – 0. oe e.g. n + n + n + n + n
9	(a)		2	1		
9	(b)		Correctly completes frequency tree with Football 45 Hockey 35 Athletics 33 Athletics 21	4	**B1** for each correct entry OR **M1** for option 1 sums to 80 or option 2 sums to 80 and **M1FT** *their football* – 12 and *their* hockey – 14	Do not allow empty boxes to imply 0. FT dep on no negative answers
10	(a)		Candidate clearly shows that: 27 + 560 = 587	4	**M2** for [£]0.08 × 7000 or 8[p] × 7000 and [£]0.27 × 100 or 27[p] × 100 or **M1** for [£]0.08 × 7000 or [£]0.27 × 100 or 8[p] × 7000 or 27[p] × 100 **B1** for £27 or [£]560 or for 2700[p] or 56 000[p]	"Shows that" requires evidence of at least **M2, B1** For M2, M1 & B1 if units (£ or p) are given they must be correct
10	(b)		9.5 [p]	4	**B1** for 25 × 100 or 2500[p] or [0].25 × 100 or £25 **M2** for (975 – *their* 25) ÷ 100 oe or **M1** for (975 – *their* 25) ÷ 10 000 oe If **0 or 1** scored, instead award **SC2** for figs 95 as final answer	Condone answer of 9 or 10 after 9.5[p] or [£]0.095 seen Ignore units for M2 and M1 M2 Implied by 950 ÷ 100 M1 implied by 950 ÷ 10,000 or 0.095

Question			Answer	Mark	Part marks and guidance	
11	(a)		Triangle drawn with vertices at (4, 1), (8, 1), (4, 7)	3	**B2** for scale factor 2 but wrong centre or for correct centre but wrong scale factor or for 3 correct plots but no triangle drawn OR **B1** for 2 vertices correct	Condone freehand and mark intention e.g. for a translation of the correct image e.g. proportionate triangle within pink overlay lines For B2 and B1 image must fit entirely on grid
11	(b)		$\frac{1}{2}$ oe and (0, 1)	2	**B1** for each	Do not accept ÷2 as oe Condone missing brackets for co-ordinate
12	(a)		60	2	**M1** for 0.2 × 300 oe	e.g. $\frac{300}{5}$. Final answer $\frac{60}{300}$ implies M1
12	(b)		Fair/Yes oe and valid reason	1	**FT** *their* 60 from 12(a) to appropriate conclusion with correct reasons.	Candidates must either: compare their answer to 12(a) approximately to the number 58 or compares their 12(a) answer to 58 and correctly explain why the spinner is or isn't fair or state that 300 spins is enough/a lot of spins Accept "maybe/don't know because 300 is not enough spins" Do not allow incorrect statements See appendix 1

Question			Answer	Mark	Part marks and guidance	
13	**(a)**	**(i)**	32	**2**	**M1** for 2 × 2 × 2 × 2 × 2	May be completed in stages
13	**(a)**	**(ii)**	10	**1**		
13	**(b)**		y^8	**1**		
13	**(c)**		[p=] –2	**2**	**B1** for 5^{-1} or answer 5^{-2} or **M1** for [5^p =] $\frac{1}{25}$ or 5^{p+1} or for $p + 1 = -1$ oe	
14			$\frac{8}{64}$ cao	**3**	**B2** for a fraction with numerator a cube number >1 **and** denominator a square number as final answer or for $\frac{8}{64}$ seen in workings but not their final answer OR **B1** for a fraction with numerator a cube number >1 **or** denominator a square number as final answer **B1** for answer $\frac{1k}{8k}$ OR **B1** for [1,] 8,27,64, [125] **B1** for [1,] 4,9,16,25,36,49,64,81,[100]	Condone $\frac{8}{64} = \frac{1}{8}$ on answer line for 3 marks e.g. answers $\frac{27}{36}$, $\frac{64}{25}$ scores B2 For B1 allow e.g. $\frac{x}{64}$ or $\frac{\square}{64}$ e.g. answer $\frac{2}{16}$ scores B1B1 Where k is an integer >1 No other numbers are allowed in these lists

Question			Answer	Mark	Part marks and guidance	
15	**(a)**		30	**3**	**M2** for $\frac{90}{60+150+90}$ [× 100] oe or **M1** for 60 + 150 + 90 oe seen	M2 implied by 0.3 oe M1 for 300 seen
15	**(b)**		200	**3**	**M2** for $150 \div \frac{100-25}{100}$ oe or **M1** for $\frac{100-25}{100}$ oe isw	M1 implied by 75%, $\frac{75}{100}$ or 0.75
16			30 + 22*n* oe final answer	**2**	**B1** for final answer 30 + *kn* or *k* + 22*n* (*k* > 0) or for correct answer seen then spoiled If 0 scored, **SC1** for $30 + 22^n$	Ignore units Condone poor notation, use of other letters for 2 marks or B1 e.g. 30 + 22 × *n*, 30 + 22*y*, *n* = 30 + 22*n*

Question			Answer	Mark	Part marks and guidance	
17			1.6 with correct working	5	**M2** for $\frac{79.6-2\times5}{3.4}$ oe or **M1** for 79.6 – 2 × 5 oe implied by 69.6 AND **B1** for 20 [. …] or [total length of books =] 68 [cm] AND **M1** for 79.6 – (*their* 20 × 3.4 + 2 × 5) If **0** or **1** scored, instead award **SC2** for answer 1.6 with no working or insufficient working	"Correct working" requires evidence of at least **M2** For M2 allow for use of trials to try to make 69.6 e.g. 3.4 × 20 [= 68] with 79.6 – 2 × 5 oe seen Accept attempt with repeated addition/subtraction of 3.4 for M2 isw using estimation only after correct values shown for M2 20[. …] seen or used as max number of books For B1 ignore remainders with 20 68 must be *their* total length of books and not just a value in working *their* 20 must be written and working shown for M1. M1 Dep on answer < 3.4 Could be implied by e.g. repeated subtraction Alternative method: **M2B1M1** or **M2B0M1** depending on "20" for $(\frac{79.6-2\times5}{3.4}$ – *their* 20) × 3.4 Alt scheme if <u>consistent</u> omission of two paperweights or one paperweight with no adjustment later **M1** for $\frac{79.6[-5]}{3.4}$ oe **B2** for answer 11.6 or **B1** for 68 [cm] OR **M1** for $\frac{79.6[-5]}{3.4}$ oe **B1** for 23.[…] ignore remainders or for 78.2 or 21.[…] ignore remainders or for 71.4 **A1** for answer 1.4 or 3.2

Question			Answer	Mark	Part marks and guidance	
18			The two events are not mutually exclusive oe and $\frac{6}{10}$ oe	**2**	**B1** for correct reason or $\frac{6}{10}$ oe	e.g. He has counted the same card/number/20 twice It should be $\frac{1}{10}+\frac{5}{10}$ or $\frac{2}{10}+\frac{4}{10}$ No contradictory statements for the reason See appendix 2
19	**(a)**		30	**3**	**M2** for $\frac{4\times60}{40}\times5$ oe or **M1** for interpreting the proportional relationship given e.g. 1 figure takes 8 mins or for $\frac{4\times60}{40}$ [×5] oe or $\frac{5\times60}{40}$ [×4] oe	10 figures take 80 mins, 7.5 figures take 1 hr etc
19	**(b)**		108	**3**	**M2** for $40\times\frac{15}{5}\times\frac{100-10}{100}$ oe **M1** for $\frac{90}{100}\times$ *their* time or [*their* time $-$] $\frac{10}{100}\times$ *their* time seen If 0 scored, **SC1** for answer 132	M2 e.g. 3 × 0.9 × 40 or 7.2 × 15 *their* time = 8, 40 or 120 M1 implied by 12, 36, 4, 7.2, 0.8 seen or as part of a subtraction

Question			Answer	Mark	Part marks and guidance	
20			Reason includes *a*4 should be written as 4*a* oe or the 4 is written after the *a* oe and 6 × *b* should be written as 6*b* oe or the 6 and *b* should not be separated oe	**2**	**B1** for correct explanation for one term *a*4 should be written as 4*a* oe or the 4 is written after the *a* oe or 6 × *b* should be written as 6*b* oe or the 6 and b should not be separated oe or correct expression written 4*a* + 6*b*	Must refer to error in each term for 2 marks Incorrect statements apply penalty 1 mark if 2 marks earned See appendix 3
21	**(a)**		$x^2 + 3x – 5x – 15$ $[= x^2 – 2x – 15]$	**1**		All four terms must be seen Could be seen in a grid
21	**(b)**		$^-15$ [y-intercept] -3 and 5 [roots]	**1** **1**	 Must be in correct place.	Allow (0, -15) Allow (-3, 0) and (5, 0)
21	**(c)**		(1, $^-16$)	**2**	**B1FT** for 1 **B1FT** for $^-16$	**B1FT** is mid-point of their two roots from 12(b) provided one is positive and one negative. *Their* 1 must be > 0 **B1FT** for their value of *x* *their* -16 must be < 0

Question			Answer	Mark	Part marks and guidance	
22			28[cm] with correct working	6		Correct working requires evidence of at least **M1M1A1M1** or **M1M1A1M2**
					M1 for $5x + 4 = 3x + 7$	FT *their* equation if wrong sides equated
					M1 for $5x - 3x = 7 - 4$ oe	Accept only: $4x - 1 = 5x + 4$ or $4x - 1 = 3x + 7$
					A1 for $x = 1.5$ oe	After **M1**, $x = 1.5$ implies **M1M1A1**
						Do not penalise if their value of x is not subsequently used in their work leading to an **algebraic** final answer e.g. $12x + 10$.
					M1 for $5x + 4 + 3x + 7 + 4x - 1$ soi	implied by $12x + 10$
					M1 for substitution of *their* x into $5x + 4$ or $3x + 7$ or $4x - 1$ or *their* $12x + 10$	*their* x must be > 0 and clearly stated as $x =$…. Substitution of their x into $5x + 4$, $3x + 7$ and $4x - 1$ and then adding implies **M1 M1**.
						<u>Alternative method using trials:</u>
					If **0** or **1** scored, instead award **SC2** for answer 28 If **0** scored, instead award **SC1** for $x = 1.5$	In all trials x must be > 0 **M1M1A1** for both $5x + 4$ and $3x + 7$ correctly evaluated with $x = 1.5$ or **M1M1** for three correctly evaluated trials of both $5x + 4$ and $3x + 7$ with consistent value of x or **M1** for two correctly evaluated trials of both $5x + 4$ and $3x + 7$ with consistent value of x AND **M2** dep on at least **M1** for their x substituted into their $12x + 10$ oe or **M1** dep on at least **M1** for their x substituted into $4x - 1$ **M1** dep on previous **M1** adding their three lengths

Question			Answer	Mark	Part marks and guidance	
23			60 [°] with correct working	**5**		Correct working requires evidence of at least **M2A1M1**
					M2 for $\sqrt{12^2 + 5^2}$ oe	Condone stating 5, 12, 13 or $5^2 + 12^2 = 13^2$ for M2
					or **M1** for $5^2 + 12^2$ oe	After M1, [BC =] 13 implies M2A1
					A1 for [BC =] 13	[BC =] 13 might be on the diagram
						Do not penalise if Pythagoras is not subsequently used in work leading to their answer.
					M1 for $\frac{their13}{26}$ = cos […] oe	
					If **0** or **1** scored, instead award **SC2** for final answer of 60 nfww If **0** scored, instead award **SC1** for [BC =] 13	Note that: 5 x 12 = 60 is SC0