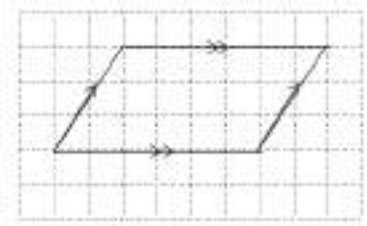
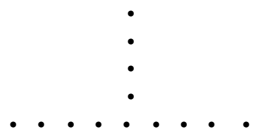
Question			Answer	Marks	Part marks and guidance	
1	(a)		Any even number	1		In all parts if more than one answer all must be correct
	(b)		A multiple of 7	1		Accept 7
	(c)		27, 64, 125 or 216	1		Do not accept e.g 6^3 but condone $6^3 = 216$
	(d)		2, 3, 5 or 7	1		
2	(a)		6	1		
	(b)		18 or -3	2	**M1** for 3 + 15 or 12 – 15	
3	(a)		133	1		Allow 131 to 135
	(b)		2 of the angles are equal oe	1		Must refer to angles not sides, statements must not be contradicted
	(c)	(i)		1	Correct parallelogram drawn	Accept reasonable freehand, tolerance ± 2mm by eye
				1 dep	**dep** on parallelogram drawn Accept other, complete, standard notations that indicate a parallelogram eg two pairs of opposite sides have equal length or two pairs of opposite angles are equal or any combination of these properties that define a parallelogram	Mark intent Arrows must be correct single/double and pointing in correct direction

Question			Answer	Marks	Part marks and guidance	
		(ii)	18 nfww	**2**	**FT** *their* parallelogram **M1** for *their* length × *their* perpendicular height oe	e.g. 6 + 3 + 6 + 3 = 18 scores 0 **M1** and **2** marks are dependent on a parallelogram being drawn in (i) Must be in cm^2 If not 6 and 3 *their* dimensions need to be verifiable eg shown on the diagram eg **M0** for $\sqrt{13}$ or 3.6… etc as *their* perpendicular height oe includes two triangles + the 4 × 3 rectangle or the 8 × 3 rectangle – two triangles Need to be certain that 3 is slant height to withhold the marks
4	**(a)**			**1**		May be drawn at the end of the sequence Ignore extras
	(b)		31 Add 3 to each pattern 3*n* + 1 or 3 × 10 + 1 or 10 + 21	**1** **1**		Answer must not come from a drawing See appendix
5			654	**2**	**M1** for 81 × 8 implied by 648	Condone flow diagrams $\frac{x-6}{8} = 81$ is not enough

Question			Answer	Marks	Part marks and guidance	
6	(a)		Activities in either order with no repeats: B and E B and R D and E D and R E and R	2	**M1** for at least 3 new correct combinations, ignoring repeats or incorrect combinations	Accept initial, word or abbreviation if clear
	(b)		$\frac{3}{6}$ oe	1FT	Strict **FT** of *their* list including the given combination	isw incorrect cancelling or changing to decimals **FT** allow repeats
7	(a)	(i)	($^-$2, $^-$3)	1		
		(ii)	Plot at (4, $^-$1).	1		
	(b)		$x = ^-2$	1		
8	(a)		36	1		
	(b)		1.5	3	**M1** for $30 = 4(c + 6)$ **M1FT** for $7.5 = c + 6$ or for $30 = 4c + 24$ OR Without formal algebra: **M1** for $30 \div 4$ implied by 7.5 **M1** for (*their* 7.5) – 6	First correct step only apply **FT** to an equivalent **M1** expression Accept any letter for *c* *c* must not be blank

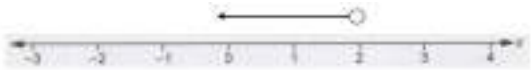
Question			Answer	Marks	Part marks and guidance	
9			$\frac{4}{7}$ 15	1 2	**B1** for 5 or 35 or **M1** for 3 : 4 = *n* : 20 oe or for 20 ÷ 4 If **0 or 1** scored instead award **SC2** for correct values in incorrect place	May be embedded within a longer valid calculation eg 20 ÷ 4 × 3 or 20 ÷ 4 × 7 [– 20]
10	(a)		2 : 5	1		If colon not used do not accept 2.5 Accept 1 : 2.5 or 0.4 : 1
	(b)		24	3	**M2** for $\frac{6 \times 1000 \times 100}{25000}$ oe or **M1** for 6 × 1000 × 100 may be implied by 600 000 or for $\frac{\text{figs } 6}{\text{figs } 25}$ may be implied by answer figs 24	Condone (figs 6 or figs 15) × 1000 × 100

11			4 with correct working	**5**	**B4** for answer 3.15 or $\frac{63}{20}$ $3\frac{3}{20}$ or 6.6[6..] or 6.7 with correct working OR **M3** for $\frac{600 \times 0.3 \times 7}{400}$ oe or for 400 ÷ 180 × 3 or for 1260 with both 4 × 400 and 3 ×400 OR **M2** for 600 × 0.3 × 7 or for $\frac{600 \times 0.3}{400}$ or for 400 ÷ 180 or for 400 – 180 – 180 or for both 4 × 400 and 3 × 400 OR **M1** for 600 × 0.3 or for 0.3 × 7 or for $\frac{600}{400}$ **0** or **1** scored, instead award **SC2** for answer 4 with no or insufficient working If **0** scored, instead award **SC1** for answer 3.15 with no or insufficient working	"Correct working" requires evidence of at least **M2** Condone for **B4** answer of 3 following 3.15 **M3** and **M2** may be seen in stages may be implied by 1260, 1600 and 1200 may be implied by 1260 or 0.45 may be implied by 2.2(22…) may be implied by 1600 and 1200 may be implied by 180 may be implied by 2.1 may be implied by 1.5

Question			Answer	Marks	Part marks and guidance	
12			110.2[0]	**3**	**M2** for 1.16 × 95 oe or **M1** for [0].16 × 95 oe	May be done in stages May be implied by 15.2 Do not accept 95 x 116% or 95 x 16% See sheet in appendix for non-calculator methods
13			2.2	**3**	**M1** for [0 × 11], 1 × 8, 2 × 10, 3 × 8, 4 × 7, 5 × 6 **M1** for *their* ∑(books × freq) ÷ 50	May be implied by [0,] 8, 20, 24, 28, 30 or 110 For **M1** allow one error or omission in calculation or answers Must be a sum of products
14			525	**4**	**M3** for $\frac{7 \times 60 \times 15}{12}$ oe OR **M2** for $\frac{7 \times 60}{12}$ oe may be implied by 35 or for $\frac{60 \times 15}{12}$ oe may be implied by 75 OR **M1** for $\frac{15}{12}$ may be implied by 1.25 or for $\frac{12}{15}$ may be implied by 0.8 or for 7 × 60 may be implied by 420 or for $\frac{60}{12}$ may be implied by 5	eg **M3** for 420 × 1.25 or 420 ÷ 0.8 or 7 × 75 eg **M2** for 7 × 5 or 60 × 1.25 **M3** and **M2** may be seen in stages

Question			Answer	Marks	Part marks and guidance	
15			83.9… or 84 or $83\frac{13}{14}$	**2**	**M1** for $\frac{47\,000}{560}$ or **B1** for answer 83 with no working	
16			75 with correct working	**5**	**M1** for $\frac{9}{10}$ × 400 oe may be implied by 360 or 90% AND **B2** for 300 or **M2** for $\frac{their360}{6}$ × 5 oe or $\frac{90}{6}$ × 5 OR **B1** for 60 or 15% or **M1** for $\frac{their360}{6}$ or $\frac{90}{6}$ AND **M1** for $\frac{their300}{400}$ [× 100] oe If **0** or **1** scored, instead award **SC2** for answer 75 with no or insufficient working	"Correct working" requires evidence of at least **M1** AND **M1** 100% = 400, 1/10 = 10% = 40 400 – 40 = 360 Award **B2** for 60 : 300 or 300 : 60 *Their* 360 must come from use of 400 *Their* 300 must come from an attempt at a correct method

Question			Answer	Marks	Part marks and guidance	
17			Triangle drawn with vertices at (2, 2), (4, 2), (4, 3)	3		Condone freehand, mark intent Red overlay scores 3
					B2 for scale factor $\frac{1}{2}$ but wrong centre or for correct centre but wrong scale factor or for 3 correct vertices but no triangle drawn or **B1** for 2 correct vertices or a proportional enlargement with incorrect centre	**B2** includes enlargement in correct proportions with horizontal side touching both the green and red lines For **B1** and **B2** sf ≠ 1 Similar shape with correct orientation

Question			Answer	Marks	Part marks and guidance	
18			$x < 2$	4	**B2** for $x < 2$ or **M1** for $7x < 11 + 3$ or better	Solution to inequality Allow **M1** for this expression with other inequality symbols or equals sign or [x =] 2 as solution (can be implied by mark/circle on the diagram) or trials leading to selection of 2 or final correct trial using 2 Displaying the solution:
			AND 		AND **B2FT** for *their* inequality correctly shown or **B1FT** for correctly placed circle for *their* $x < 2$ but with hollow circle and incorrect arrow or for filled circle with correct arrow	Display must show an inequality that fits on the number line for **FT** Mark to candidate's advantage either $x < 2$ or *their* inequality Accept an arrow of any length or a line reaching –3 If no solution to inequality seen: Hollow circle at 2 arrow to left **M1B2** Hollow circle at 2 arrow to right **M1B1** Solid circle at 2 arrow to left **M1B1** Solid circle at 2 arrow to right **M1B0** Mark at 2 no line or arrow **M1B0** Circle and/or arrow at other than 2 **M0B0**

Question			Answer	Marks	Part marks and guidance	
19			46.34	3	**B2** for 46.33[7…] or **B1** for 99 493[.836…] or 144 266[.0625] If **0** scored **SC1** for *their* answer to more than 4 figures correctly rounded to 4 s.f.	for **B1** accept these numbers rot to at least integers
20			$\frac{1}{2} \times 18 \times 6.4$ $\frac{9+15}{2} \times 4.8$ oe [both answers] 57.6 or $\frac{288}{5}$ oe	**M1** **M1** **A1**	**A1 dep** on **M1 M1**	Allow equivalents for both **M1**s but it must be full and correct working and allow any correct method e.g. **M1** for $\frac{9+15}{2} \times 4.8 = 57.6$ **M1** for 57.6 ÷ 9 = 6.4 = height **A1** for 6.4 Condone 24 for 9 + 15 and 9 for $\frac{1}{2} \times 18$ e.g. $\frac{115.2}{2}$
21	(a)	(i)	(360 – 52) ÷ (1 + 2 + 4) or better [= 44]	2	**M1** for 360 – 52 or 308 or *their*(360 – 52) ÷ (1 + 2 + 4) Alternative method 1 : **M2** for 7*x* = 360 – 52 or 7*x* = 308 then *x* = 44 or **M1** for *x*, 2*x* and 4*x* or 360 – 52 or 308 Alternative method 2 : **M2** for 52 + 44 + 2 × 44 + 4 × 44 = 360 oe or **M1** for 52 + 44 + 2 × 44 + 4 × 44 oe	better includes 308 ÷ 7 Mark the work in the answer space and if blank, mark any work round the diagram Allow any letter For **M2** and **M1** accept 88 for 2 x 44 and 176 for 88 x 2

Question			Answer	Marks	Part marks and guidance	
	(a)	**(ii)**	Correct labelled pie chart with ruled lines and sector angles 44, 88 and 176	**3**	**B2** for two additional correct sectors within tolerance or a correct unlabelled/incorrectly labelled pie chart with ruled lines or correct labelled pie chart with unruled lines or **B1** for one correct sector within tolerance, ignore label	Use online protractor and apply an angle tolerance of ± 2°. For **3** marks we need only four sectors and condone one sector unlabelled. Labels must be letters not angles
	(b)		270	**2**	**M1** for any correct method e.g. $\frac{39}{52} \times 360$ oe or 39 + $\frac{176}{\frac{52}{39}} + \frac{88}{\frac{52}{39}} + \frac{44}{\frac{52}{39}}$	e.g. $\frac{360}{\frac{52}{39}}$ or $\frac{39}{52 \div 360}$ condone $\frac{52}{39}$ = 1.3
	(c)	**(i)**	Accept any correct advantage e.g. Information is immediately displayed as part of a whole	**1**		See appendix and mark best response as long as it is not contradictory or has an incorrect statement
	(c)	**(ii)**	Accept any correct disadvantage e.g. you cannot read the exact frequencies from it	**1**		See appendix and mark best response as long as it is not contradictory or has an incorrect statement
22			Any unambiguous indication of correct pack (5 kg) with three accurate comparable figures	**3**	Allow any correct comparison e.g.(converting all to 1 kg) **B2** for three accurate comparable figures or **B1** for two accurate comparable figures OR **M1** for one correct appropriate calculation e.g. 7.70 ÷ 0.7 oe or 32.40 ÷ 3 oe	See appendix for other calculations and values Mark *their* figures at the most accurate

Question			Answer	Marks	Part marks and guidance	
23			Accept any correctly matched pair where car > garage matched pair of values or non-overlapping ranges and the values quoted are 4.5 ≤ garage < 4.55 4.5 < car < 4.55	**3**	**B1** for a value in 4.5 ≤ garage < 5 **B1** for a value in 4.5 < car < 4.55	Ranges must not overlap for 3 marks Values must be clearly associated with garage (or 5) or car (or 4.5) as appropriate. For **B1** if choice of values given all must be in range, unless acceptable value(s) indicated
24			146 with correct working	**5**	**M2** for $3x + 36 = 180$ oe or **M1** for $(x – 14) + (2x + 50) = 180$ oe AND **A1** for [x =] 48 **M1** for 2 × *their* x + 50 If **0 or 1** scored, instead award **SC2** for 146 with no or insufficient working If **0** scored, instead award **SC1** for [x =] 48 or $y = 2x + 50$	"Correct working" requires evidence of at least **M2 or M1M1** <u>Trials:</u> Correct answer from trials scores 5 Allow correct substitution into $(x – 14) + (2x + 50)$ to imply **M1** if 180 also stated Dep on at least **M1** *their* x < 65 **SC** marks may be seen on diagram

Question			Answer	Marks	Part marks and guidance	
25			17	**4**	**M3** for $\sqrt{(\text{their } 8)^2 + 15^2}$ or $\sqrt{289}$ or **M2** for (*their* 8)^2 + 15^2 or **B1** for 8	*their* 8 must be from an attempt at 20 - 12 8 must be their missing base length **B1** for 8 may be implied by use of 8^2 in a Pythagoras statement eg $15^2 = 8^2 + x^2$
26			[*x* =] 7 [*y*=] 4 final answer	**3**	**M1** for correct method to eliminate one variable **A1** for *x* = 7 **A1** for *y* = 4 If 0 scored **SC1** for a pair of values that satisfies one of the original equations	Allow one error Or correct substitution of one equation into the other and getting to *kx* = *n* Correct answer from trials scores **3**
27			[2^{-2} =] [0].25 [2×10^{-2} =] [0].02 2×10^{-2} , 0.2 , 2^{-2}	**M2** **B1**	**M1** for each accept answer in alternate form e.g fractions or decimals	Alternative methods: eg **M2** for finding $\frac{1}{5}$, $\frac{1}{4}$, $\frac{1}{50}$ or 20[%], 25[%], 2[%] or other comparable forms or **M1** for two of these