Question			Answer	Marks	Part marks and guidance	
1	(a)		prism	1		Mark answer line; If nothing on the answer line, may be indicated in the list Accept other correct words e.g "triangular prism"
	(b)	(i)	12	1		
	(b)	(ii)	350	2	**M1** for 7 × 10 × 5 oe	Accept e.g. 70 × 5
2			24 [kg] 12 [kg]	2	**B1** for each or **M1** for 44 ÷ 5.5 may be implied by 8 or 36 ÷ 4.5 or 36 ÷ 1.5	Accept working in g but final answer must be correct 8 used in multiplication or division e.g. 8 ÷ 2 then added to 8 Method may be seen with multipliers as e.g. 3 × (1, 3) ÷2 (1.5) 8 (A) × 3 ÷2 (B)
3	(a)	(i)	1296	1		
	(a)	(ii)	23	1		Accept ± or – or + before 23
	(b)		1728	2	**M1** for 12 × 12 × 12 oe	1.728×10^3 scores M1
4			250	2	**M1** for 207.5 ÷ 0.83 oe implied by figs 25[0]	**M1** may be implied by a list, 0.83, 1.66, 2.49,… but must reach 207.5 or beyond

Question			Answer	Marks	Part marks and guidance	
5	(a)		68.7	3	**B2** for answer 68.6 or 68.65 to 68.67[0...] or $68.\dot{6}$ or **M1** for $103 \div 3$ soi 34.3[3…] or 103×2 soi 206	$\frac{2}{3} \times 103$ implies **M1** but not $\frac{2}{3}$ **of** 103 Condone 0.66 to 0.67 or $0.\dot{6}$ for $\frac{2}{3}$ If $\frac{2}{3}$ seen = a decimal < 1 allow the decimal × 103 to imply **M1**
	(b)		$\frac{1}{5}$	3	**B2** for $\frac{400}{2000}$ oe or **B1** for 2000 [m] or [0].4 [km]	Condone $\frac{0.4}{2}$ or 0.2 or 20% for **B2** Conversion must be correct
6	(a)		C	1		If nothing on answer line look for clear indication in list Allow $\frac{3}{4} \times 14$ on answer line
	(b)		3.5[0]	2	**M1** for $\frac{1}{4} \times 14$ oe	e.g. 0.25 × 14 or 14 ÷ 2 ÷ 2 or $4 \times 3.5 = 14$ etc but not $\frac{1}{4}$ **of** 14 **M1** for $14 - \frac{3}{4} \times 14$ May be seen as 14 – 10.5

Question			Answer	Marks	Part marks and guidance	
7			201 or 201.1 or 201.06 to 201.09	**2**	**M1** for $\pi \times 8^2$ oe	Allow 64π for **2** marks π gives 201.0619... 3.142 gives 201.088 For **M1** π may be evaluated allowing $\frac{22}{7}$ or 3.14 or 3.142
8			96	**4**	**B3** for 19.04 or answer 0.96 or **B2** for 16 OR **M2** for $20 - 1.19 \times$ *their k* or **M1** for figs 2[0] ÷ figs 119 implied by figs 168…	Condone £0.96 for 4 marks *Their k* must be: • from figs 2[0] ÷ figs 119 and • $15 \leq$ *their k* integer ≤ 17 20 ÷ 1.19 may be at least 16 implied additions or subtractions of 1.19

Question			Answer	Marks	Part marks and guidance	
9	(a)		[0]8 34 oe	2	**B1** for 14 [minutes]	Accept any recognisable time format e.g. full stop, colon, gap and inclusion of am but not pm
	(b)		21	3	**FT** *their* time added to 8.20 leading to answer in (a) or stated as cycling time in (a) **B1** for 7 [minutes cycling] or *their* cycle time in (a) ÷ 2 **M1** for *their* cycle time in (a) ÷ 2 + 14	No FT if working not shown in (a) but **if 9.16 is answer in (a)** working does not need to be seen to FT **Example** *Their* time in (a) is 56 then [cycling =] (56 ÷ 2 =) 28 for **B1** [walking =] (28 ÷ 2 =) 14 **M1** for 28 + 14 **3 marks** for answer 42 (check (a) = 9.16 or cycle time = 56) Here 28 ÷ 2 = 14 minutes to walk half the distance Must be correctly evaluated
10	(a)		h^4 final answer	1		Not $h4$ unless 4 **clearly** raised
	(b)		$3g(f + 4)$ final answer	2	**B1** for $3(fg + 4g)$ or $g(3f + 12)$	Allow e.g. 1f and inclusion of × Condone missing final bracket Correct answer seen and then spoilt **B1**
11	(a)		Expression	1		Allow any clear intention e.g. arrow to expression
	(b)		Identity	1		Allow any clear intention e.g. arrow to identity

Question			Answer	Marks	Part marks and guidance	
12	(a)		22 8 23 55 7	3	**FT** *their* 22 – 14 for *their* 8 **B2** for 3 correct or **B1** for 2 correct	
	(b)		Tennis and [R=] 37 or 11 + 12 + 5 + 9 [S=] 20 or 3 + 5 + 5 + *their* 7 [T=] 43 or *their* 8 + 6 + 25 + 4	3	**FT** *their* (a) even if NR **M2** for two from [R=] 37 or 11 + 12 + 5 + 9 [S=] 20 or 3 + 5 + 5 + *their* 7 [T=] 43 or *their* 8 + 6 + 25 + 4 or **M1** for one from [R=] 37 or 11 + 12 + 5 + 9 [S=] 20 or 3 + 5 + 5 + *their* 7 [T=] 43 or *their* 8 + 6 + 25 + 4 If 0 or 1 scored, instead award **SC2** for Tennis = 43 which is 6 more than R and 23 more than S	Accept *their* most popular with **strict FT** from *their* three correct totals for these sports Sums must be correctly evaluated May be on diagram Accept labelled or in correct order Check 13 + *their* 7 Check 35 + *their* 8 If (a) is NR, FT all marks. The values will be: [R=] 11 + 12 + 5 + 9 or 37 [S=] 3 + 5 + 5 or 13 [T=] 6 + 25 + 4 or 35 and the answer R[afting] and the sums or totals seen

Question			Answer	Marks	Part marks and guidance	
	(c)		$\frac{57}{100}$ oe	**2**	**FT** *their* 22 or 11 + 3 + *their* 8 **B1** for *their* 22 + 35 correctly evaluated or 57 seen If (a) is **NR**, award **SC1** for answer $\frac{35}{100}$ oe or answer $\frac{1}{35}$	Ignore attempts to change form Accept fraction, decimal (e.g. 0.57) and percentage (e.g. 57%) but not ratio nor in words For **B1,** condone $\frac{1}{57}$ as 57 seen
	(d)		[That] these [100] children are representative of all children [who attend the adventure park] oe	**1**		See Appendix Representative sample

Question			Answer	Marks	Part marks and guidance	
13	(a)		Jane and two correct values in the same form	3	Reminder: mark at most accurate **Method 1** **B2** for 64% and $\frac{5}{8}$ correct in a common form or **B1** for one correct conversion **Method 2** Candidate chooses an integer amount of newspapers **B2** for $\left(64\% \text{ and } \frac{5}{8}\right)$ of *their* amount correct or **B1** for $\left(64\% \text{ or } \frac{5}{8}\right)$ of *their* amount correct If 0 scored, **SC1** for correct judgement for *their* incorrect conversion(s)	Condone 0.62 and 0.63 and 62[%] and 63[%] Sufficient to see just 62.5[%] to make comparison e.g. $\frac{128}{200}$ and $\frac{125}{200}$ or 0.64 and 0.625 Condone bad form e.g $\frac{12.8}{20}$ and $\frac{12.5}{20}$ or 64 and 62.5 or 6.4 and 6.25 e.g. 0.625 or $\frac{125}{200}$ or $\frac{128}{200}$ or 62.5 You will need to check *their* figures Answers can be non-integer e.g. Chooses 70 64% = 44.8 $\frac{5}{8}$ = 43.75 Allow accuracy sufficient to make judgement and condone truncation
	(b)		200	2	**B1** for answer 100 or answer 200*n* with *n* integer > 1	400, 600, ...
14			2.6 <	2	**B1** for each	Do not accept other figures or symbols on line with correct answer Accept trailing zeros

Question			Answer	Marks	Part marks and guidance	
15	(a)		The length is twice the width oe or The width is half the length	1		"Twice" or "double" or "half" is not enough unless it is clear that length = 2 × width Accept 2*k* is double *k* oe or L = 2W oe Do not accept values or length = 2 × *k* Mark the best response as long as it is not contradictory or has an incorrect statement
	(b)		$2k^2 - g^2$ final answer	2	**M1** for $2k \times k - g \times g$ oe	Ignore units if included oe for M1 may be e.g. $2k \times k - g^2$
	(c)	(i)	6*k* final answer	3	**B2** for correct answer unsimplified or **B2** for 6*k* – 2*g* [+ g + g] or **M2** for 2*k* + *k* + 2*k* – *g* + *k* – *g* [+ g + g] oe or **M1** for [height =] *k* – *g* or [length =] 2*k* – *g*	Condone 6*k* + 0[*g*] for 3 marks Accept in any order Accept e.g. 2*g* for *g* + *g* Identified or seen on diagram in correct position
		(ii)	10.4 nfww	2	**M1** for *their* **part (i)** = 62.4 or $\frac{62.4}{6}$	*Their* part (i) must be algebraic in terms of *k* or *k* and *g* *Their* (a) can be rearranged Note : 6*k* – 2*g* = 62.4 scores M1 but does not score the second mark as from wrong working

Question			Answer	Marks	Part marks and guidance	
16	**(a)**		Correct curve through given points	**3**	**B2** for 6 points correctly plotted or **B1** for 4 points correctly plotted	Half square accuracy. Use overlay as guide For curve: No line segments used Condone **minor** feathering or doubling Max half square vertically or horizontally from any point
	(b)		*their* –1.1 and *their* 2.6	**2**	Strict **FT** from *their* graph. **B1** for each or ruled $y = 6$ cutting *their* curve twice or points indicated on *their* curve where $y = 6$	Must have graph to score Do not accept coordinates Half square accuracy or better For thick lines mark centre of line Ruled line within half square of $y = 6$ throughout *Their* curve may be a polygon or straight line If intersection at mid-point of small square e.g. –1.15 accept –1.2 or –1.1

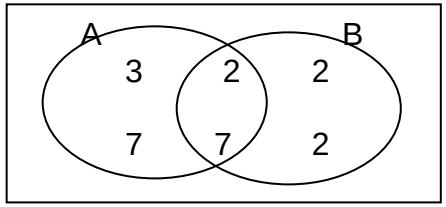
Question			Answer	Marks	Part marks and guidance	
17			2160 with correct working	5	**Method 1** **M3** for $\frac{360}{5 \times 0.04}$ oe may be implied by 1800 or **M2** for $\frac{360}{0.04}$ oe or $\frac{360}{5} \div 4$ or $\frac{360}{4} \div 5$ or **M1** for $\frac{360}{5}$ or $\frac{360}{4}$ or $\frac{P \times 4 \times 5}{100} = 360$ oe AND **M1dep** for *their* 1800 + 360	Correct working for 5 marks requires evidence of at least **M2** N/C methods need labels or operators oe 360 = 1800 × 5 × (0.04 or 4 / 100) or $\frac{360}{20}$ × 100 or N/C e.g. 4% = 72, 1% = 18, 100% = 1800 or 20% = 360, 10% = 180, 100% = 1800 or 20% = 360, 360 × 5 = 1800 or or 1 year = 90, 1% = 18, 100% = 1800 NB 360 × 5 = 1800 **alone** scores **M0** May be implied by 9000 or 18 or N/C e.g. 4% = 72, 1% = 18 or 20% = 360, 10% = 180 May be implied by 72 or 90 or N/C e.g. 4% = 72 or 20% = 360 "May be implied" tells you to look for the correct working associated with these values *Their* 1800 dependent on **M3** and not spoiled
					OR **Method 2 Trials** **M2** for two complete trials bracketing 360 and resulting in 360 ±10 or **M1** for one complete trial ≠ 360	Trials must show substitution and evaluation e.g. 1850 × 0.04 × 5 oe = 370 1750 × 0.04 × 5 oe = 350 e.g. 500 × 0.04 × 5 oe =100
					If **0** or **1** scored, instead award **SC2** for 2160 If **0** scored, **SC1** for £1661[.64]	with no working or insufficient working

Question			Answer	Marks	Part marks and guidance	
18			*BPC* or *CPB* and [vertically] opposite	**B2**	**B1** for *BPC* or *CPB*	Must use 3-letter notation
			DAP or *PAD* *CBP* or *PBC* alternate	**B1**	Must have angle and reason	Condone • *A* and *B* if clear for e.g. *A* for *PAD* and *B* for *CBP* • Changed order e.g. *CBP* and *PAD* • Use of *B* or *C* for *P* e.g. *DAB* for *DAP* For reason, condone poor spelling (alternative) and accept "third angle in triangle" oe
			AAA oe	**B1dep**	Dependent on previous **B2** and **B1**	Accept completely correct statements e.g."All corresponding angles equal" but not "All angles equal" or "They have the same angles" See Appendix
19			Two from: • Horizontal scale uneven • No vertical scale • Vertical scale does not start at 0	**2**	**B1** for each	See Appendix Mark the best part of a statement if no contradiction If more than two reasons (often two in one statement), mark the worst two

Question			Answer	Marks	Part marks and guidance	
20			18 nfww	**3**	**B2** for answer $\frac{18}{99}$ or **M2** for $\frac{2 \times 99}{11}$ oe or **B1** for $\frac{\mathbf{2}}{\mathbf{11}}$ or **M1** for [k ×] $\frac{\mathbf{99}}{\mathbf{11}}$ or **M1** for $\frac{a}{b} \times 99$	e.g. $\frac{99}{11} = 9$ and then 2×9 For **B1** accept $\frac{\mathbf{2}}{\mathbf{11}}$, 0.181 to 0.182 or 18.1% to 18.2% Condone k as 0.5 or 1 or an integer $3 \leq k \leq 10$ Do not imply **M1** from just 9 seen $0 < \frac{a}{b} < 1$ and either $a = 2$ or $b = 11$

Question			Answer	Marks	Part marks and guidance	
21	(a)	(i)	30 nfww	4	**M1** for 5 × 150 implied by 750 [km] **M2** for *their* 750 ÷ (2.5 × 10) oe or **M1** for 2.5 ×10 implied by 25 OR **M1** for 5 × 150 implied by 750 [km] **M2** for *their* 750 ÷ 2.5 ÷ 10 oe or **M1** for *their* 750 ÷ 2.5 implied by 300	Not from 150 ÷ 5 A correct answer in working, subsequently spoilt, scores max **M1M1** *Their* 750 from attempt at 5 ×150 Condone 150 for *their* 750 *Their* 750 from attempt at 5 ×150 Condone 150 for *their* 750
		(ii)	Correct reason indicating roads/paths unlikely to be straight oe	1		See Appendix
	(b)		The units are not the same oe [1 :] 15 000 000	1 1		See Appendix eg should have multiplied by 100 000 or one is cm and the other is km Condone: • poorly placed zero separators e.g. 150, 000, 00 • correct other forms • inclusion of units

Question			Answer	Marks	Part marks and guidance	
22	(a)				Allocate marks similarly for other methods such as five triangles using an angle of 72. If in doubt consult TL There must be evidence of angle or trig work to score any marks e.g. working back from 247.75 to *h* = 8.258…is likely to score 0 or B1	
			[angle =] 36 or 54	**B1**	in correct place if only shown on diagram	Do not award 36 or 54 if calculated as an area
			$[h =] \frac{6}{\tan 36}$ or 6 × tan 54 or $\frac{6sin54}{sin36}$ may be implied by 8.258 to 8.259 or 8.26 following **M1** but **not** from area	**M2**	**M1** for $\tan 36 = \frac{6}{h}$ or $\tan 54 = \frac{h}{6}$ or $\frac{6}{\sin 36} = \frac{h}{\sin 54}$ or $\frac{\sin 36}{6} = \frac{\sin 54}{h}$	Accept other notation for '*h*'
			10 × $\frac{1}{2}$ × 6 × *their h* oe	**M2dep**	**M1** for $\frac{1}{2} \times 6 \times$ *their h* oe may be implied by 24.774 to 24.775	*Their h* **dep** on previous **M2** or **M1** Accept correct use of $\frac{1}{2}absinC$
			247.748 to 247.749	**A1**		
	(b)		5.45 or 5.449 to 5.450 nfww	**3**	**M2** for $h = \frac{450 \times 3}{247.75}$ oe or **M1** for $\frac{1}{3}h \times 247.75 = 450$ oe	247.75 may be *their* more accurate 247.748 to 247.749 or 247.7 247.8 or 247.74 from **(a)** Use of incorrect formula is not **MR**

Question			Answer	Marks	Part marks and guidance	
23	**(a)**		1176	**2**	**M1** for $2^3 \times 3 \times 7^2$ oe or for  or for listing at least 3 correct in each list 294, 588, 882, ... AND 56, 112, 168, ...	e.g. $2 \times 2 \times 2 \times 3 \times 7 \times 7$ Accept no box but need to see A and B
	(b)		13 nfww	**2**	**M1** for [26 =] 2 [×] 13 oe	For **M1** accept 2, 13 or similar possibly seen in a factor tree, diagram etc