Question			Answer	Marks	Part marks and guidance	
1	(a)		One of, 1, 2, 3, 6, 9, 18	1		Accept more than one correct but no errors May be a product e.g. 2×9 but not 2×3^2 or an incorrect product e.g. 2×6
	(b)		16	1		Mark the answer line Accept $4^2 = 16$ as answer but not 4^2
	(c)		[0].25	1		Ignore additional zeros after 5
	(d)		5 and 8	2	Mark final answer **M1** for a pair seen that either multiply to give 40 or add to give 13	For **M1**, accept non-integers and negatives Accept answers 8×5 and $8 + 5$
2	(a)		2 correct lines of symmetry only	1		Mark intention condoning freehand use BOD Lines should be approx half diameter or longer by eye and intersect within the crossbar and one be within the crossbar. If more than one drawing and no clear choice, mark the worst (2a and 2ci)
	(b)		4	1		

Question			Answer	Marks	Part marks and guidance	
	(c)	**(i)**	Sketch of a quadrilateral with exactly one line of symmetry	**1**		Mark intention and condone freehand kite or isosceles trapezium or arrowhead. If kite, must not appear to have two pairs of parallel sides e.g. look square L of S need not be seen
	(c)	**(ii)**	Name consistent with sketch	**1dep**	Dep on (c)(i) being a recognisable quadrilateral	Condone poor spelling Mark name based on your decision for shape in (i)
3	**(a)**		• • • • • • • • •	**1**		May be at the end of the sequence
	(b)		15 Add 2 [each time] or goes up in 2s oe or $2n - 1$ oe or correct calculation leading to 15 using 7, 8, or values from given terms e.g. $7 + 8$ or $2 \times 7 + 1$ or 8 [dots] and 7 [dots] or [1, 3, 5, 7, 9] 11, 13, 15	**1** **1**		Ignore a drawing Do not accept "odd numbers" but accept "the eighth odd number" oe Mark the best part if no contradiction 8 + 7 may be 8 on left, one less on right 2 times previous pattern number + 1 oe
4	**(a)**		Diameter drawn	**1**		Allow freehand intended straight. No white paper seen between line and centre and line and circumference. Ends no more than 2mm by eye beyond circumference If two lines mark the worst
	(b)		Chord	**1**		Condone poor spelling

Question			Answer	Marks	Part marks and guidance	
5	(a)		H5 H6 H8 T5 T6 T7 T8	2	**B1** for 5 correct in correct place	Accept 5H etc
	(b)		$\frac{1}{4}$	2	**B1** for $\frac{\textit{their } 2}{8}$ isw If 0 scored, **SC1** for 0.25 or 25%	Follow through *their* number of "T and even number" from table in (a)
6			Kai and correct value(s) used/referred to in reason 7 or 14 and 13 [# right] Accept $\frac{13}{20}$ and $\frac{14}{20}$ or 35% and 30% [% wrong] or 70% [% right]	3	**B2** for 7 or **M1** for $\frac{35}{100} \times 20$ oe or **B2** for 13 and 14 or **M1** for $\frac{65}{100} \times 20$ oe or **B1** for 13 or **B2** for 30% and 35% or **M1** for $\frac{6}{20}$ [×100] oe or **B1** for 30% or **B2** for 70[%] or **M1** for $\frac{14}{20}$ [× 100] oe	Value(s) may be in working space. Reference may be e.g. He got more right oe with 7 or 70% seen. Ignore extra statements if no contradiction Accept [0].35 and [0].3[0] for % Accept [0].65 and [0].7[0] for %
7	(a)		He has not used [masses in] the same units or correct example of amounts e.g. [4kg and] 1kg [of butter] or 4g [of flour] [and 1g]	1		See appendix Accept amounts for masses The units are mixed/not the same Do not accept "measurements" for "units" but may be clarified later Mark the best part if no contradiction

Question			Answer	Marks	Part marks and guidance	
	(b)		1 : 9	**2**	**B1** for $\frac{1}{10} : \frac{9}{10}$ or 10 : 90 or 2 : 18 or 0.1 : 0.9 If 0 scored **SC1** for answer 9 : 1	Must be a ratio to earn marks
8	**(a)**		$6a$ final answer	**1**		Condone poor algebra e.g. $6\times a$ and $a \times 6$ but not a^6
	(b)		$\frac{1}{2}x^4$ or $\frac{x^4}{2}$ or $0.5x^4$ final answer	**2**	**B1** for $0.5x^k$ $k \neq 0$ or gx^4 $g \neq 0$ as answer	Condone 1 before term in x Allow $\frac{x^5}{2x}$ and $\frac{2x^4}{4}$ for B1
9			249.6[0]	**3**	**M2** for $\frac{4}{3} \times 23.4[0] \times 8$ oe or **M1** for $\frac{4}{3} \times 23.4[0]$ oe soi by 31.2[0] or $23.4[0] \times 8$ soi by 187.2[0]	Accept only 249.6[0] for 3 marks Accept $1\frac{1}{3}$ or 1.3[33...] for $\frac{4}{3}$ oe $=23.4 \div 3 = a$, $a \times 4 \times 8$ oe $=23.4 \div 3 = a$, $a \times 4$
10	**(a)**		$\frac{2}{8}$	**1**		Accept equivalent fractions eg $\frac{1}{4}$ or $\frac{4}{16}$

Question			Answer	Marks	Part marks and guidance	
	(b)		15 ÷ 4 oe or 15 ÷ 8 × [2 or 6] oe 3.75 oe or 1.875 or 11.25 and recognise not integer OR $\frac{R}{R+B} = \frac{3}{12}$ and $\frac{4}{16}$ or R:B = 3:9 and 12 sides and 4:12 and 16 sides 15 is missing oe	**M1** **A1** **M1** **A1**	If 0 scored, **SC1** for 15 is not a multiple of 4 or 8 oe	No FT as the scale can be used but allow 15 × (0.25 or 0.75) for **M1** May be fractions $\frac{R}{B} = \frac{3}{9}$ and 12 sides etc oe e.g. 4, 8, 12, 16 and 15 is not here
11			60	**2**	**M1** for $\frac{400 \times 3 \times 5}{100}$ oe If 0 scored, **SC1** for answer 460	Any attempt at compound interest scores 0 M1 May be in stages eg $400 \times \frac{3}{100} = 12$ and 12 × 5 M1 Allow 4 × 3 × 5 or 12 × 5
12			167	**4**	**M1** for 375 × 1.15 soi by 431.25 **M1** for (*their* euros) – 217.49 **M1** for *their* 213.76 ÷ 1.28 oe	 213.76 implies **M1M1** Must be linked to 375 but do not accept 375 as euros May be *their* 213.76 × 0.781[...]

Question			Answer	Marks	Part marks and guidance	
13			120 with correct working	**5**	**M2** for $1 - (\frac{2}{5} + \frac{5}{12})$ oe soi $\frac{11}{60}$ or **M1** for $\frac{2}{5} + \frac{5}{12}$ oe soi $\frac{49}{60}$ AND **M2** for $22 \div$ *their* $\frac{11}{60}$ oe or **M1** *their* $\frac{11}{60}$ equated to 22 If 0 or M1 scored, instead award **SC2** for 120 as final answer with no or insufficient working.	Correct working requires evidence of at least **M1M1** or **M2** Equivalent fraction or [0].183 to [0].184 Equivalent fraction or [0].816 to [0].817 Accept in decimals but *their* $\frac{11}{60}$ must come from some working May be $22 \div 11 \times 60$ May be $22 \div$ *their* 11 or *their* $\frac{11}{60} = \frac{22}{k}$
14	**(a)**		30	**3**	**B1** for [median =] 3.5 **M1** for *their* median $\times$ 10 – 5	Accept only 30 for 3 marks If 4 (mode) or 3 (mean) or other wrong value from 1 to 4 used **M1** still available.

Question			Answer	Marks	Part marks and guidance	
	(b)		At least one from 1, 4, 5, 5 2, 4, 5, 5 3, 4, 5, 5 or one judge awards 1, 2 or 3 oe and 4, 5, 5 [stay the same]	**2**	**B1** for four values in order with median 4.5 with one not from 1 to 5 or for one judge awards 1, 2 or 3 without mentioning 4, 5, 5	Condone inclusion of 4, 4, 5, 5, with another correct list. Accept 1 to 3 for 1, 2 or 3 and condone 4 included e.g. 1 to 4 Accept "the rest stay the same" oe for 4, 5, 5
15			5 nfww	**4**	**B2** for [a =] 4 or **M1** for $9a = 36$ or better and **M1** for showing substitution/use of their a e.g. $4 \times$ *their* 4 + $4b = 36$ oe or better or [b =] 9 – *their* 4	If another value for a is used to find b do not award B2 T&I only scores if ending at 4 or better may be e.g. $a + b = 9$ or $\frac{36 - 4 \times \textit{their } 4}{4}$
16	**(a)**		6	**1**		
	(b)		-3	**1**		

Question			Answer	Marks	Part marks and guidance	
17			315	4	**B3** for answer 630 or 945 or 1260 or **M3** for $3 \times 3 \times 5 \times 7$ or $5 \times 7 \times 9$ OR **M1** for [35 =] 5 and 7 **M1** for [45 =] 3 and 3 and 5 OR **M1** for 35, 70, 105, 140, (... 280, 315) **M1** for 45, 90, 135, 180, (... 270, 315)	Accept final answer 3.15 m for 4 marks. Ideally "cm" would be crossed out but BOD if not May be in factor tree Allow 9 and 5 Must have first 4 correct in each list
18	(a)		425	2	**M1** for 680 ÷ 1.6[0] oe	e.g. [0].68[0] ÷ [0].0016
	(b)		1600 or 1.6×10^3	1		
19	(a)		x^2 + [1]x – 20 final answer	2	**M1** for at least three of x^2 , [+]5x , − 4x , – 20	M1 may be seen in a table e.g. |	x | – 4 | | x | x^2 | –4x | | [+] 5 | [+]5x | –20 | [1]x counts as two terms M1 for x^2 + [1]x + – 20 Do not accept poor algebra e.g x5 for 5x or $x \times x$ for x^2
	(b)		(x – 5)(x + 5) final answer	1		Condone missing final bracket.
20	(a)		All branches completed with 0.55 and 0.05 in correct places	3	**B1** for 0.55 correctly placed at least once **B1** for 0.05 correctly placed at least once	

Question			Answer	Marks	Part marks and guidance	
	(b)		0.4 × 0.4 + 0.55 × 0.55 + 0.05 × 0.05 [=0.465]	**3**	**M2** for 0.4×0.4, 0.55×0.55 and 0.05×0.05 may be 0.16 0.3025 0.0025 or **M1** for 0.4×0.4 or 0.55×0.55 or 0.05×0.05 may be 0.16, 0.3025, 0.0025	Answer given: for 3 marks products and additions must be explicitly seen Accept e.g. $(0.4)^2$ for 0.4×0.4 Values may be seen on diagram in (a) If all values shown on ends of tree, must select 3 values to use for **M2** and 1 value for **M1** Equivalent fractions are OK but, for 3 marks must convert to the decimal
21			[x =] 4 [y =] −1	**3**	**M1** for correct method to eliminate one variable **B1** for x = 4 **B1** for y = −1 If 0 scored **SC1** for a pair of values that satisfy one of the original equations	Allow one arithmetic error in subtraction of terms or in rearrangement If previously rearranged must be correct rearrangement

Question			Answer	Marks	Part marks and guidance	
22			Yes, with full supporting evidence	5	**B2** for 175 or **M1** for 250×0.7 oe AND **M2** for $\frac{250-10}{11+3+1} \times 11$ soi 176 or **M1** for $\frac{250-10}{11+3+1}$ soi 16 <u>Alternative Method</u> **M2** for $\frac{250-10}{11+3+1} \times 11$ soi 176 or **M1** for $\frac{250-10}{11+3+1}$ soi 16 AND **M2** for $\frac{\textit{their}\ 176}{250} \times 100$ soi 70.4 or 0.7 and 0.704 seen or **M1** for $\frac{\textit{their}\ 176}{250}$ soi 0.704	"Full supporting evidence" requires **B2M2** or **M2M2** Non-Calculator methods e.g. $250 \div 10 = [\ ], [\ ] \times 7 = 176$ M1 Allow $\frac{240}{15}$ for $\frac{250-10}{11+3+1}$ If using 250 for 240, *their* 176 will be 183[. ...]

Question			Answer	Marks	Part marks and guidance	
23	(a)		16	1		Do not accept coordinates Condone $y = 16$
	(b)		5	1		Do not accept coordinates Condone $x = 5$
24	(a)		1852 1945	3	**B2** for 1852 or 1945 or 1852.2 with either 1944.[6] or 1944.8[1] or **M1** for $1764 \times \frac{5}{100} + 1764$ oe soi 1852.2	 e.g. 1764×1.05 e.g. 1600×1.05^3 NC% methods M1 for e.g.1764 ÷ 10 = [x]. [x] ÷ 2 = [y]. [y] + 1764
	(b)		Correct curved graph	3	**B2** for 5 of *their* points plotted correctly or **B1** for 4 of *their* points plotted correctly or 5 of *their* points plotted at correct height but incorrect time	½ square accuracy <u>Stick graph</u> mark heights as points max **B2** If stick graph and curve regard as choice and mark points/heights only <u>Bar chart</u> If points clearly marked, mark the points If points not clear **B0** Ruled line or line segments max **B2**
	(c)		Increases [to 2000] Flattens/levels off/plateaus/horizontal [at 2000]	1 1		See Appendix 2000/the maximum must be seen once for 2 marks Accept approx/about 2000 Condone embellishments such as “slight fall” after correct statement or reference to line of best fit

Question			Answer	Marks	Part marks and guidance	
25			25[%] with correct working	5	**B2** for 12 600 or **M1 for** 18 000 × $\frac{70}{100}$ oe or 18 000 × $\frac{30}{100}$ oe AND **M2** for $\frac{their\ 12600-9450}{their\ 12600}$ [× 100] oe or **M1** for $\frac{9450}{their\ 12\ 600}$ [× 100] oe If 0 or **M1** scored, instead award **SC2** for answer 25[%] with no or insufficient working If 0 scored, award **SC1** for 0.25 or 0.75 or 75[%]with no or insufficient working	"correct working" requires at least **M2** or **M1M1** the first **M1** implied by **B2** **M0** for e.g. 70% of 18 000 **M0** for e.g. 70% ×18 000 Accept 3150 for numerator **M2** may be $\left(1-their\ \frac{9450}{their\ 12\,600}\right)$[×100] **M1** may be seen as $\frac{9450}{18\,000}$ = 0.525 and then followed by $\frac{0.525}{0.7}$ <u>Trials for second M marks</u> **M2** for 12600 × 0.25 = 3150 or **M1** for 12600 × 0.75 = 9450 <u>Equation method</u> B2M2 p/100 x 12600 = 3150; leading to p = 25 (scores 5 marks) B2M1 p/100 x 12600 = 9450; leading to p = 75 B2M1 18000 x 0.7 x m = 9450 leading to m = 0.75, as 12600 implied within this

Question			Answer	Marks	Part marks and guidance	
26			864 with correct working	6	**M1** for $\frac{12\times16}{2}\times18$ oe **A1** for 1728 or **M1** for $\frac{12\times16}{2}$ oe AND **M1** for $\sqrt[3]{\textit{their } 1728}$ **A1** for 12 AND **M1** for 6 × (*their* 12)^2 If 0, 1 or 2 scored, instead award **SC3** for 864 as final answer with no working or insufficient working If 0 or **M1** scored, instead award **SC2** for 12 seen as dimension of cube or $\left(\sqrt[3]{3456}\right)^2\times6$ soi 1371 to 1372 with no working or insufficient working If 0 scored, award **SC1** for 1728 or $\sqrt[3]{3456}$ soi 15.1[...]with no working or insufficient working	”correct working” requires at least **M1M1** Accept e.g. 12 × 8 × 18 or 96 × 18 Allow 12^3 = 1728 for M1A1 1728 must be from correct method for volume of triangular prism *Their* 12 must come from use of volume of triangular prism and cube root