**MARK SCHEME**

| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| **1** | **a** | | B | **1** | | |
| | **b** | | E | **1** | | |
| | **c** | | D | **1** | | |
| **2** | **a** | | 1 | **1** | condone 3 | |
| | **b** | | 4 | **1** | | |
| | **c** | | isosceles | **1** | | ignore spelling providing intention is clear |
| | **d** | | Valid explanation | **1** | Such as 'it does not have 2 lines of symmetry' | Any incorrect statement scores 0. See Appendix |
| **3** | | | 100 gram packet with a correct comparison ISW | **3** | **M1** for **correctly** finding the cost of 1 gram, 25 grams, 100 grams or other amount suitable for comparison<br><br>and<br><br>**M1** for attempting to find the cost of the **same** amount of tea for **each** packet weight (eg 25 grams or 100 grams) evaluation does not need to be correct | eg 100g of 25g pkt costs [£]4.2[0]<br>eg 25g of 100g pkt costs [£]1.04<br>other comparisons must be correct to 3sf or better<br><br>Or for attempt to find two values of grams per pound or grams per pence |
| **4** | | | 0 and 5 | **3** | **B1** for one correct<br>and<br>**M1** for putting times in order **isw** | given values or their 9 or their 10 values eg 0,0,2,2,6,7,7,9 |

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|---|---|---|---|---|---|---|
| 5 | | | $\frac{13}{50}$ final answer | 2 | **M1** for $\frac{26}{100}$ **seen**<br><br>After 0 scored, **SC1** for their fraction written in simplest form | SC1 dep on a fraction that reduces |
| 6 | a | i | 13*c* – 7*d* final answer | 3 | **B2** for one term correct in final answer<br>or<br>**M1** for [4(*c* + 2*d*)] = 4*c* + 8*d* **seen**<br>or [3(3*c* – 5*d*)] = 9*c* – 15*d* **seen** | 13*c* + - 7*d* scores B2 only |
| | | ii | 20*ab* final answer | 1 | | Accept 20*ba* |
| | b | i | 2(3*g* +4*h*) final answer | 1 | | Condone omission of final bracket |
| | | ii | 5*x*(*x* – 3) final answer | 2 | **M1** for 5($x^2$ – 3*x*) or *x*(5*x* – 15) or 5x(x + 3) | Condone omission of final bracket |
| 7 | a | i | 3 | 1 | | |
| | | ii | 22 | 1 | | |
| | b | i | 32 | 1 | | |
| | | ii | 20 | 1 | | Accept ± 20 |
| | c | | 10 | 3 | **M2** for two values from 20, 4 and 8 used correctly in calculation<br>or **M1** for 20 or 4 or 8 | eg $\frac{23\times 4}{8}$ or (24 ÷ 8) x 4 |
| 8 | a | | 140 **isw** | 2 | **B1** for 120 **seen** | Accept 2 h[ours] 20 m[inutes] |
| | b | | 2.5 **oe** | 2 | **B1** for 75 **seen**<br>or<br>**M1** for *their* 75 ÷ 30 correctly evaluated | To 2 significant figures or better |

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|---|---|---|---|---|---|---|
| 9 | | | 42 | 6 | **M1** for $\frac{6\times 2}{2}$ **oe**<br>**A1** for [area triangle] = 6<br>**M1** for $\frac{3+5}{2}\times 8$ **oe**<br>**A1** for [area trapezium] = 32<br>**M1** for 10 × 8 – (*their* area of triangle + *their* area of trapezium)<br>or for 2 × 2 + (*their* area of triangle + *their* area of trapezium) | Accept other equivalent methods<br>Could be implied by 24 + 8 |
| 10 | a | | 3 **:** 2 or 1.5:1 or $1:\frac{2}{3}$ | 2 | **M1** for 72 **:** 48 **oe**<br>or<br>**SC1** for 2:3 or 1:1.5 or $\frac{2}{3}:1$ | For 2 marks or SC1 do not isw |
| | b | | [cycle =] 24<br>[walk =] 16 | 3 | **M1** 80 employees to 240° equivalent to 1 employee to 3° **soi**<br>or for cycle + walk = 40 **soi**<br>**M1** for $\frac{48}{\text{their 3}}$ or $\frac{72}{\text{their 3}}$ **soi**<br>or attempt to divide 40 employees in the ratio 72 **:** 48 | eg 240 ÷ 80<br>One answer correct or correct answers reversed implies M1M1 |
| 11 | a | | 1.25 | 3 | **B2** for 125 [cm] **oe seen** or ans **figs** 125<br>or<br>**M1** for 4 ft 2 in = 50 [inches] **soi**<br>and<br>**M1** for *their* 50 × 2.5 **soi** | Condone eg 48 for *their* 50 |

| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| | **b** | | 40 | **3** | **B1** for (6 x 14) + 4 **soi**<br>and<br>**M1** for *their* 88 ÷ 2.2 **soi** | Condone eg 84 for *their* 88 |
| **12** | **a** | | 64 | **3** | **B2** for $\frac{64}{100}$<br>or **B1** for $\frac{32}{50}$<br>or **M1** for 32 ÷ 50 x 100 **oe** | |
| | **b** | | Valid explanation | **1** | Such as 'the sample size was too small' | See Appendix |
| **13** | | | [length =] 15<br>[width =] 5 | **3** | **M1** for perimeter PQRS = 16<br>or 2 × *their* length + 2 × *their* width = 40<br><br>**M1** for ratio length AB to BC **oe** = 3:1 **soi**<br>or $\frac{40}{their\ 16}$ **soi** | Condone length = 5 width = 15<br>If answer line is blank accept 15 and 5 correctly placed on the diagram |
| **14** | **a** | **i** | Valid explanation | **1** | Such as 'distance is time times speed' | Need to see 'multiply' oe<br>See Appendix |
| | | **ii** | $5 - x$ | **2** | **M1** for time to travel from A to C = 5[hours] **soi** | Must be seen in this part |
| | | **iii** | $20(5 - x) = 100 - 20x$ | **1** | | |
| | **b** | | 78 | **4** | **M1** for $26x + 100 - 20x = 118$<br><br>**M1** for *their* $6x$ = *their* 18<br><br>**M1** for $x = \frac{their\ 18}{their\ 6}$ **soi** | <br><br>Simplifying their equation to $ax = b$<br><br>Simplifying their $ax = b$ to $x = \frac{b}{a}$ |

| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| **15** | **a** | | tangent | **1** | | Ignore spelling providing intention is clear |
| | **b** | | segment | **1** | | Ignore spelling providing intention is clear |
| **16** | **a** | **i** | 13 | **1** | | Ignore subsequent terms |
| | | **ii** | 128 | **1** | | Ignore subsequent terms |
| | **b** | | $18 - 3n$ **oe** | **2** | **M1** for $-3n + k$ **oe** or for $mn + 18$ **oe** ($m \neq 0$) | For 2 or M1, condone eg $n = 18 - 3n$<br>For 2 or M1, condone use of *other* variable instead of $n$ |
| **17** | | | 122 with justification showing<br>121 or $11^2 + 1$<br>and 125 or $5^3 - 3$ | **4** | **B3** for answer 122<br><br>OR<br>**M1** for at least 5 square numbers (or 5 square numbers + 1) **isw**<br><br>**M1** for at least 3 cube numbers (or 3 cube numbers – 3) **isw**<br><br>**M1** for reducing their list to non-primes<br><br>If 0 scored,<br>**SC1** for answer 5 or 17 or 37 or 61 or 101 | <br><br><br>1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144<br>2, 5, 10, 17, 26, 37, 50, 65, 82, 101, 122, 145<br><br>1, 8, 27, 64, 125<br>5, 24, 61, 122<br><br>Implied by any non-prime answer less than 150 |

| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| **18** | **a** | | $(x – 43)(x + 43)$ final answer | **1** | | Condone omission of final bracket |
| | **b** | | 1400 | **2** | **M1** for (57 + 43) (57 – 43) FT *their* quadratic factors in (a) or better<br>or **B1** for 3249 or 1849 **seen** | M1 for FT factors $(x + 43)(x + 43)$ or $(x – 43)(x – 43)$ only |
| **19** | **a** | | 180 ÷ (1 + 2 + 3) × 3 [= 90] | **2** | **M1** for 180 ÷ (1 + 2 + 3)<br>If 0 scored, **SC1** for angles 30, 60, 90 | Condone 6 for 1 + 2 + 3 |
| | **b** | | 7.5 | **4** | **B1** for sin 30° or cos 60° = ½ **soi**<br>**M2** for 15 sin 30 **oe**<br>or **M1** for $x/15$ = sin 30 **oe** | |
| **20** | | | 80 | **4** | **M3** for 250 ÷ (8*k* +10*k* + 7*k*) × 8*k* **oe**<br><br>or **M2** for 250 ÷ (8*k* +10*k* + 7*k*) **oe**<br><br>or **M1** for two ratios with a common number of women implied by 8*k* (men) **and** 7*k* (children) seen, $k > 0$<br>or for 8 : 10 [ : 7] or [4 : ] 5 : 3.5 **seen** | M3 implied by 80, 100, 70 with 80 not selected<br><br>e.g. 0.8 and 0.7, 4 and 3.5 |
| **21** | **a** | **i** | Correct probabilities filled | **1** | First Throw $\frac{5}{6}$, Second Throw $\frac{1}{6},\frac{5}{6},\frac{1}{6},\frac{5}{6}$ | Accept equivalent fractions |
| | | **ii** | $\frac{1}{36}$ **oe** | **2** | **M1** for $\frac{1}{6}\times \textit{their}\,\frac{1}{6}$ | FT *their* tree diagram |

| Question | | | Answer | Marks | Part marks and guidance | |
|---|---|---|---|---|---|---|
| | **b** | | $\frac{5}{6}\times\frac{5}{6}$<br><br>$\frac{5}{6}\times\frac{5}{6}\times\frac{1}{6} = \frac{25}{216}$ | **M1**<br><br>**A1** | If 0 scored **SC1** for $their\frac{5}{6}\times their\frac{5}{6}\times\frac{1}{6}$ | M1 may be implied by a product of three fractions where two of them are $\frac{5}{6}$<br><br>For A1 product must be in this order<br><br>FT *their* tree diagram bottom branch |
| **22** | **a** | | Valid explanation | **1** | Such as 'because it is not in standard form' | eg because 12.3 is not a number between 1 and 10<br>See Appendix |
| | **b** | | 450 + 7300<br><br>= 7750 = $7.75 \times 10^3$ | **M1**<br><br>**A1** | or $0.45 \times 10^3 + 7.3 \times 10^3$<br>or $4.5 \times 10^2 + 73 \times 10^2$<br><br>or complete working leading to $7.75 \times 10^3$ | Or correct use of a common power of 10 |
| **23** | **a** | **i** | Valid explanation | **1** | Such as 'because 2*n* is always even so 2*n* + 1 will be odd' | Must mention even and odd<br>See Appendix |
| | | **ii** | 2*n* + 3 **oe** | **1** | | |
| | **b** | | 2*n* + 1 + 2*n* + 3<br><br>=4*n* + 4 [= 4(*n* + 1)] which is a multiple of 4 | **M1**<br><br>**A1** | If 0 scored **SC1** for 2*n* + 1 + *their (*2*n* + 3) | *their (*2*n* + 3) must be an algebraic expression in *n* |