| **Paper 1MA1: 2H** |  |  |
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| **Question** | **Working** | **Answer** | **Notes** |
| 1 |  |  | $$t=\frac{w-11}{3}$$ | M1 | For isolating term in *t*, eg. 3*t* = *w* – 11 or dividing all terms by 3, eg. $\frac{w}{3}=\frac{3t}{3}+\frac{11}{3}$ |
|  |  |  |  | A1 | for $t=\frac{w-11}{3}$ oe |
| 2 |  |  | Jardins of Paris | P1P1C1 | correct process to convert one price to another currecncy, eg 1980 ÷ 1.34for a complete process leading to 3 prices in the same currencyfor 3 correct and consistent results and a correct comparison made. |
| 3 |  |  | Mean of 96 or net deviation of 0so target met | M1M1C1 | for correct interpretation of the graph, with at least one correct reading or a line drawn through 96 with at least one correct deviationcomplete method to find mean of six months sales, eg. (110+84+78+94+90+120)÷6 (= 96) or the mean of six deviations, eg. (14–12–16–2–6+24)÷6 (= 0)for a correct answer of 96 or 0 with correct conclusion  |

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| 4 | a b |  | 160 < *h* ≤ 1701. Points should be plotted at mid-interval values2. The polygon should not be closed | B1C1C1 | for identifying the correct class intervalfor a correct error identifiedfor a correct error identified |
| 5 | a |  | graph | M1 C1C1 | for method to start to find distance cycled in 36 mins, eg. line drawn of correct gradient or $15×\frac{36}{60}$for correct graph from 9.00 am to 9.36 amfor graph drawn from "(9.36, 9)" to (10.45, "9" + 8) |
|  | b |  | 4.5 | M1A1 | for 18 × 0.25oecao |
| 6 |  |  | 8112 | M1A1 | for complete method, eg. 7500 × 1.042cao |
| 7 |  |  | No with supporting evidence | P1P1C1 | for the start of a correct process, eg. two of *x*, 2*x* and 2*x*+7 oe or a fully correct trial, eg. 5 + 10 + 17 = 32for setting up an equation in *x.* eg. *x* + 2*x* + 2*x* + 7 = 57 or a correct trial totalling 57, eg. 10 + 20 + 27 = 57(dep on P2) for at least one correct result and for a correct deduction from their answers found, eg. Chris has 20 so it is impossible for all to have 20 since 60 marbles would be needed. |
| 8 |  |  | 66.9 | P1P1P1A1 | for process to find the area of one shape, eg. 19×16 (= 304) or $π×8^{2}$ (= 201.06...)for process to find the shaded area, eg. "304" – "201.06" ÷2 (= 203.46...)for a complete process to find required percentage, eg. $\frac{"203.46"}{304}×100$for answer in range 66 to 68 |
| 9 |  |  | 135 | B1P1A1 | for identifying the angle of 70o (on the diagram), showing understanding of notationfor process to find an angle in triangle *ABC,* eg. for process to find angle *BAC*, eg. (180 – 50) ÷ 2 (= 65o)for 135 |
| 10 | ab |  | –1.5 | M1A1C1 | for method to find gradient, eg. 210 ÷ 140for correct interpretation of the negative gradientfor explanation, eg. rate of change of depth of water in tank |
| 11 | ab |  | 0.490.51 | M1A1M1A1 | for 0.7 × 0.7for 0.49 oefor a correct process, eg. 1 – "0.49" or 0.7 × 0.3 + 0.3× 0.7 + 0.3 × 0.3for 0.51 oe |
| 12 | ab |  | 0.40.586 | B1B1B1 | For 0.4 oe for 3.48207..... or 17.34 or 0.200811...for 0.585 to 0.586 |
| 13 |  |  | Fully correct algebra to show given result | M1M1A1 | for method to find the product of any two linear expressions; eg. 3 correct terms or 4 terms ignoring signsfor method of 6 products, 4 of which are correct (ft their first product)for fully accurate working to give the required result |
| 14 |  |  | 33.8 | P1P1A1 | for recognition of similar triangles or equal ratio of sidesfor process to find *CB*, eg. $\frac{5}{13}=\frac{13}{CB}$for 33.8 |
| 15 |  |  | 18.3 | P1P1A1 | for a start to the process interpreting the information correctly, eg. *T* = *k*$\sqrt{L}$ oefor next stage in process to find percentage change in *T*, eg. √1.4for 18.3 to 18.4 |
| 16 |  |  | 84 | M1P1A1 | for correct interpretation of given information leading to a method to find fd, eg. 20 ÷ 100 (thousand)for start of process to find required frequency, eg. 0.8 $×$ 50 (= 40) or 0.6 $×$ 50 (= 30) or 0.14 $×$ 100 (= 14)for 84 cao |
| 17 |  |  | *n*2 – *n* + 1 oe | M1M1A1 | for correct deduction from differences, eg. 2nd difference of 2 implies 1*n*2 or sight of 12, 22, 32, ..for sight of 12, 22, 32, .. linked with 1, 2, 3, ...for *n*2 – *n* + 1 oe |
| 18 |  |  | 3*x*2 + 10*x* | M1M1A1 | start a chain of reasoning, eg. 3(*x*+2)2 – 2(*x*+2) – 8continue chain by expanding brackets correctly, eg. 3*x*2 + 12*x* +12 – 2*x* – 4 – 8for 3*x*2 + 10*x* (*a* = 3, *b* = 10) |
| 19 |  |  | 8.63 to 8.65 | P1P1P1P1P1 A1 | for a start of process, eg. $0.5x\left(x-2\right)= 2.5$for rearranging to give a quadratic equation,eg *x*2 – 2*x* – 5 = 0 oe.for a process to solve the quadratic equation, condoning one sign error in use of formula (*x* = 3.449... and *x* = –1.449...)for selecting the positive value of *x* and applying Pythagoras to find the hypotenuse, eg.√ (3.4492 + 1.4492) (= 3.74...) for complete process to find perimeterfor answer in the range 8.63 to 8.65 |

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| 20 | ab |  | 3 to 4452 | C1B1C1M1A1 | for a tangent drawn at *t* = 6for answer in range 3 to 4 for splitting the area into 3 strips and a method of finding the area of one shape under the graph, eg. $\frac{1}{2}×4×35$ (= 70)for complete process to find the area under the graph, eg "70" + $\frac{1}{2}×4×(35+51)$ (= 172) + $\frac{1}{2}×4×(51+54)$ (= 210) [ = 452]for 452 |
| 21 |  |  | 10169 or 10170 | P1P1C1 | for correct use of formula to find number in 2016, eg. 1.05(9500 – 250) (= 9712.5)for complete iterative process, eg. 2017: 1.05(9712.5 – 250) (= 9935.625) 2018: 1.05(9935.625 – 250) for answer of 10169.90... correctly rounded or truncated to nearest whole number |
| 22 |  |  | 1.5 | B1M1A1 | for any correct bound clearly identified, eg. 99.65 →*x* → 99.75 or 66.5 → *y*→ 67.5for method to find UB, eg. "99.75" ÷ "66.5"for 1.5  |
| 23 |  |  | *y =* $-\frac{4}{3}$ *x +* $\frac{25}{3}$oe | M1M1A1 | for method to find gradient of tangent, eg. $-1÷\frac{3}{4}=-\frac{4}{3}$ for method to find *y*-intercept using *y =* "$-\frac{4}{3}$ "*x + c**y =* $-\frac{4}{3}$ *x +* $\frac{25}{3}$oe |
| 24 |  |  | Proof | C1C1C1C1 | for joining *AO* (extended to *D*) and considering angles in two triangles (algebraic notation may be used here)for using isosceles triangle properties to find angle *BOD* (eg. *x* + *x* = 2*x*) or angle *COD* (eg. *y* + *y* = 2*y*)for angle *BOC* = 2*x* + 2*y* [= 2×angle *BAO* + 2×angle *CAO*] for completion of proof with all reasons given, eg. base angles of isosceles triangle are equal and sum of angles at a point is 360o |