| **Paper 1MA1: 2H** | | |  |  | |
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| **Question** | | **Working** | **Answer** | **Notes** | |
| 1 |  |  |  | M1 | For isolating term in *t*, eg. 3*t* = *w* – 11 or dividing all terms by 3, eg. |
|  |  |  |  | A1 | for oe |
| 2 |  |  | Jardins of Paris | P1  P1  C1 | correct process to convert one price to another currecncy, eg 1980 ÷ 1.34  for a complete process leading to 3 prices in the same currency  for 3 correct and consistent results and a correct comparison made. |
| 3 |  |  | Mean of 96 or net deviation of 0  so target met | M1  M1  C1 | for correct interpretation of the graph, with at least one correct reading or a line drawn through 96 with at least one correct deviation  complete 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* ≤ 170  1. Points should be plotted at mid-interval values  2. The polygon should not be closed | B1  C1  C1 | for identifying the correct class interval  for a correct error identified  for a correct error identified |
| 5 | a |  | graph | M1  C1  C1 | for method to start to find distance cycled in 36 mins, eg. line drawn of correct gradient or  for correct graph from 9.00 am to 9.36 am  for graph drawn from "(9.36, 9)" to  (10.45, "9" + 8) |
|  | b |  | 4.5 | M1  A1 | for 18 × 0.25oe  cao |
| 6 |  |  | 8112 | M1  A1 | for complete method, eg. 7500 × 1.042  cao |
| 7 |  |  | No with supporting evidence | P1  P1  C1 | 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 = 32  for 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 | P1  P1  P1  A1 | for process to find the area of one shape, eg. 19×16 (= 304) or (= 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.  for answer in range 66 to 68 |
| 9 |  |  | 135 | B1  P1  A1 | for identifying the angle of 70o (on the diagram), showing understanding of notation  for process to find an angle in triangle *ABC,* eg. for process to find angle *BAC*, eg. (180 – 50) ÷ 2 (= 65o)  for 135 |
| 10 | a  b |  | –1.5 | M1  A1  C1 | for method to find gradient, eg. 210 ÷ 140  for correct interpretation of the negative gradient  for explanation, eg. rate of change of depth of water in tank |
| 11 | a  b |  | 0.49  0.51 | M1  A1  M1  A1 | for 0.7 × 0.7  for 0.49 oe  for a correct process, eg. 1 – "0.49"  or 0.7 × 0.3 + 0.3× 0.7 + 0.3 × 0.3  for 0.51 oe |
| 12 | a  b |  | 0.4  0.586 | B1  B1  B1 | 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 | M1  M1  A1 | for method to find the product of any two linear expressions; eg. 3 correct terms or 4 terms ignoring signs  for 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 | P1  P1  A1 | for recognition of similar triangles or equal ratio of sides  for process to find *CB*, eg.  for 33.8 |
| 15 |  |  | 18.3 | P1  P1  A1 | for a start to the process interpreting the information correctly, eg. *T* = *k* oe  for next stage in process to find percentage change in *T*, eg. √1.4  for 18.3 to 18.4 |
| 16 |  |  | 84 | M1  P1  A1 | 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 | M1  M1  A1 | 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* | M1  M1  A1 | start a chain of reasoning,  eg. 3(*x*+2)2 – 2(*x*+2) – 8  continue chain by expanding brackets correctly,  eg. 3*x*2 + 12*x* +12 – 2*x* – 4 – 8  for 3*x*2 + 10*x* (*a* = 3, *b* = 10) |
| 19 |  |  | 8.63 to 8.65 | P1  P1  P1  P1  P1  A1 | for a start of process, eg.  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 perimeter  for answer in the range 8.63 to 8.65 |

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| 20 | a  b |  | 3 to 4  452 | C1  B1  C1  M1  A1 | for a tangent drawn at *t* = 6  for 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. (= 70)  for complete process to find the area under the graph, eg "70" + (= 172) + (= 210) [ = 452]  for 452 |
| 21 |  |  | 10169 or 10170 | P1  P1  C1 | 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 | B1  M1  A1 | for any correct bound clearly identified,  eg. 99.65 →*x* → 99.75  or 66.5 → *y*→ 67.5  for method to find UB, eg. "99.75" ÷ "66.5"  for 1.5 |
| 23 |  |  | *y =*  *x +* oe | M1  M1  A1 | for method to find gradient of tangent,  eg.  for method to find *y*-intercept using *y =* " "*x + c*  *y =*  *x +* oe |
| 24 |  |  | Proof | C1  C1  C1  C1 | 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 |