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# TEACHERS WITHOUT BORDERS PROGRAMME

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Department:  
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In Bill Gates words, at the Mandela Day 'Living Together' address: "Maintaining the quality of this country's higher education system while expanding access to more students will not be easy. But it's critical to South Africa's future" – working together, we can help achieve this."

## Contributing schools to date:

|                |                  |                        |                    |
|----------------|------------------|------------------------|--------------------|
| Clifton School | Milnerton High   | Rustenburg Girls' High | St Peter's         |
| Durban Girls'  | Northwood High   | St Anne's DC           | St Stithians       |
| Fairmont High  | Roedean          | St John's DSG          | Wynberg Boys' High |
| Herzlia High   | Rondebosch Boys' | St Mary's DSG Kloof    | Wynberg Secondary  |



**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 10**

**MATHEMATICS P2**

**EXEMPLAR 2012**

**MEMORANDUM**

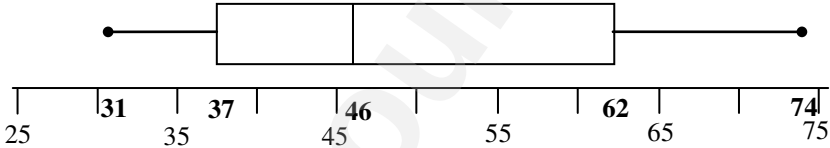
**MARKS: 100**

**This memorandum consists of 10 pages.**

**NOTE:**

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out an attempt of a question and not redone the question, mark the crossed out version.
- Consistent accuracy applies in ALL aspects of the marking memorandum.
- Assuming answers/values in order to solve a problem is NOT acceptable.

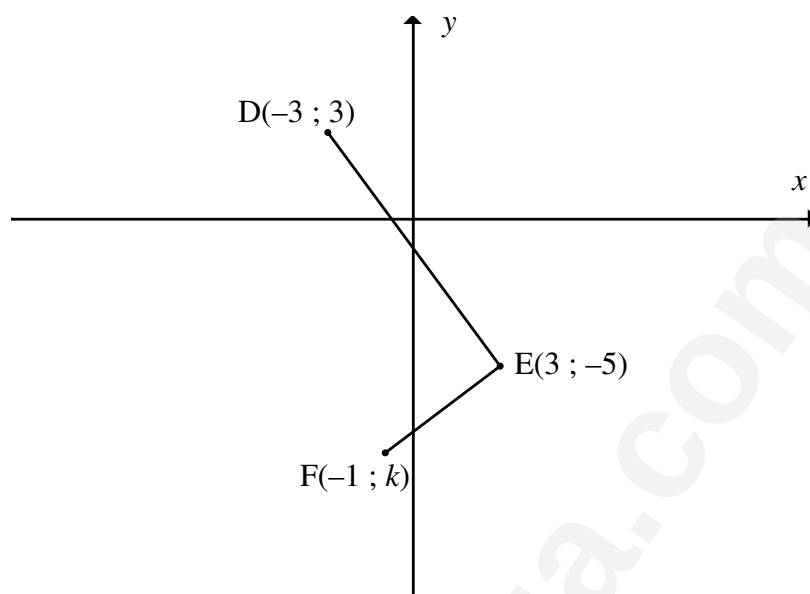
**QUESTION 1**

|     |                                                                                                                     |                                                       |
|-----|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| 1.1 | $\text{Mean} = \frac{\sum_{i=1}^n x_i}{n} = \frac{929}{19} = 48,89$                                                 | ✓ $\frac{929}{19}$<br>✓ answer<br>(2)                 |
| 1.2 | 31 ; 31 ; 34 ; 36 ; 37 ; 39 ; 40 ; 43 ; 46 ; 46 ; 48 ; 52 ; 56 ; 60 ; 62 ;<br>63 ; 65 ; 66 ; 74.<br><br>Median = 46 | ✓ arranging in ascending order<br><br>✓ median<br>(2) |
| 1.3 | Lower quartile = 37<br>Upper quartile = 62                                                                          | ✓ lower quartile<br>✓ upper quartile<br>(2)           |
| 1.4 |                                 | ✓ box with median<br>✓ whisker<br>(2)<br><b>[8]</b>   |

## QUESTION 2

| 2.1                              | The modal class is $2500 \leq x < 4500$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ✓<br>$2500 \leq x < 4500$<br>(1)               |                      |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------|----------|----------------------|----------------------|-----|------|---------|----------------------|----|------|---------|----------------------|----|------|---------|-----------------------|----|------|---------|------------------------|----|-------|---------|------------------------|----|-------|-----------|-----|-----|--|-----------|--------------------------------------------------------------------------------|
| 2.2                              | <table><tr><th>Gross Vehicle Mass (GVM) (in kg)</th><th>Frequency</th><th>Midpoint</th><th>Frequency × midpoint</th></tr><tr><td><math>2500 \leq x &lt; 4500</math></td><td>103</td><td>3500</td><td>360 500</td></tr><tr><td><math>4500 \leq x &lt; 6500</math></td><td>19</td><td>5500</td><td>104 500</td></tr><tr><td><math>6500 \leq x &lt; 8500</math></td><td>70</td><td>7500</td><td>525 000</td></tr><tr><td><math>8500 \leq x &lt; 10500</math></td><td>77</td><td>9500</td><td>731 500</td></tr><tr><td><math>10500 \leq x &lt; 12500</math></td><td>85</td><td>11500</td><td>977 500</td></tr><tr><td><math>12500 \leq x &lt; 14500</math></td><td>99</td><td>13500</td><td>1 336 500</td></tr><tr><td>Sum</td><td>453</td><td></td><td>4 035 500</td></tr></table> <p>Estimated mean <math>(\bar{X}) = \frac{4035500}{453} = 8908,39 \text{ kg.}</math></p> | Gross Vehicle Mass (GVM) (in kg)               | Frequency            | Midpoint | Frequency × midpoint | $2500 \leq x < 4500$ | 103 | 3500 | 360 500 | $4500 \leq x < 6500$ | 19 | 5500 | 104 500 | $6500 \leq x < 8500$ | 70 | 7500 | 525 000 | $8500 \leq x < 10500$ | 77 | 9500 | 731 500 | $10500 \leq x < 12500$ | 85 | 11500 | 977 500 | $12500 \leq x < 14500$ | 99 | 13500 | 1 336 500 | Sum | 453 |  | 4 035 500 | ✓ midpoints<br>✓✓ frequencies × midpoint<br><br>✓ 4 035 500<br>✓ answer<br>(5) |
| Gross Vehicle Mass (GVM) (in kg) | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Midpoint                                       | Frequency × midpoint |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |
| $2500 \leq x < 4500$             | 103                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3500                                           | 360 500              |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |
| $4500 \leq x < 6500$             | 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5500                                           | 104 500              |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |
| $6500 \leq x < 8500$             | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7500                                           | 525 000              |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |
| $8500 \leq x < 10500$            | 77                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 9500                                           | 731 500              |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |
| $10500 \leq x < 12500$           | 85                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 11500                                          | 977 500              |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |
| $12500 \leq x < 14500$           | 99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 13500                                          | 1 336 500            |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |
| Sum                              | 453                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                | 4 035 500            |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |
| 2.3                              | The estimated mean.<br>It is more at the centre of the data set. The modal class is found at the extreme left-hand side of the data set.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ✓ estimated mean with reason<br><br>(1)<br>[7] |                      |          |                      |                      |     |      |         |                      |    |      |         |                      |    |      |         |                       |    |      |         |                        |    |       |         |                        |    |       |           |     |     |  |           |                                                                                |

QUESTION 3



|       |                                                                                                                                               |                                                                                                                        |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 3.1.1 | $DE = \sqrt{(-3-3)^2 + (3-(-5))^2}$ $= \sqrt{100}$ $= 10$                                                                                     | ✓ substitution into distance formula<br>✓ answer<br>(2)                                                                |
| 3.1.2 | $m_{DE} = \frac{-5-3}{3-(-3)}$ $= -\frac{4}{3}$                                                                                               | ✓ substitution into gradient formula<br>✓ answer<br>(2)                                                                |
| 3.1.3 | $m_{EF} = \frac{3}{4} \quad EF \perp DE$ $\frac{-5-k}{3-(-1)} = \frac{3}{4}$ $\frac{-5-k}{4} = \frac{3}{4}$ $-20-4k = 12$ $-4k = 32$ $k = -8$ | $\checkmark m_{EF} = \frac{3}{4}$ $\checkmark \frac{-5-k}{3-(-1)} = \frac{3}{4}$ ✓ simplification<br>✓ $k = -8$<br>(4) |
| 3.1.4 | $M\left(\frac{(-3)+(-1)}{2}; \frac{3+(-8)}{2}\right)$ $= \left(-2; -\frac{5}{2}\right)$                                                       | ✓ substitution into midpoint formula<br>✓ answer<br>(2)                                                                |

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>3.1.5</p> | <p>If DEFG is a rectangle then M is also the midpoint of EG.<br/>Let the coordinates of G be <math>(x ; y)</math><br/> <math display="block">\left( \frac{x+3}{2} ; \frac{y+(-5)}{2} \right) = \left( -2 ; -\frac{5}{2} \right)</math></p> $\frac{x+3}{2} = -2 \qquad \frac{y-5}{2} = -\frac{5}{2}$ $x+3 = -4 \qquad \text{and} \qquad y-5 = -5$ $x = -7 \qquad \qquad \qquad y = 0$ <p><math>\therefore G(-7 ; 0)</math></p> <p style="text-align: center;"><b>OR</b></p> <p>The translation that sends <math>E(3 ; -5)</math> to <math>F(-1 ; -8)</math> also sends <math>D(-3 ; 3)</math> to G.<br/> <math>(-1 ; -8) = (3 - 4 ; -5 - 3)</math><br/> <math>\therefore G = (-3 - 4 ; 3 - 3) = (-7 ; 0)</math></p> <p style="text-align: center;"><b>OR</b></p> <p>The translation that sends <math>E(3 ; -5)</math> to <math>D(-3 ; 3)</math> also sends <math>F(-1 ; -8)</math> to G.<br/> <math>(-3 ; 3) = (3 - 6 ; -5 + 8)</math><br/> <math>\therefore G = (-1 - 6 ; -8 + 8) = (-7 ; 0)</math></p> | $\checkmark \frac{x+3}{2} = -2$ $\checkmark x = -7$ $\checkmark \frac{y-5}{2} = -\frac{5}{2}$ $\checkmark y = 0$ <p style="text-align: right;">(4)</p><br>$\checkmark \text{method}$ $\checkmark x - 4$ $\checkmark y - 3$ $\checkmark \text{answer}$ <p style="text-align: right;">(4)</p><br>$\checkmark \text{method}$ $\checkmark x - 6$ $\checkmark y + 8$ $\checkmark \text{answer}$ <p style="text-align: right;">(4)</p> |
| <p>3.2</p>   | $\sqrt{(x-1)^2 + (5-(-2))^2} = \sqrt{53}$ $(x-1)^2 + 49 = 53$ $x^2 - 2x + 1 + 49 - 53 = 0$ $x^2 - 2x - 3 = 0$ $(x+1)(x-3) = 0$ $x = -1 \text{ or } x = 3$ <p>but D is in the second quadrant<br/> <math>\therefore</math> only <math>x = -1</math> is valid</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | $\checkmark \text{equation using distance formula}$<br>$\checkmark \text{standard form}$ $\checkmark \text{factorisation}$ $\checkmark \text{answer must exclude 3}$ <p style="text-align: right;">(4)</p> <p style="text-align: right;"><b>[18]</b></p>                                                                                                                                                                         |

## QUESTION 4

|       |                                                                                                                                                                                                                                                                                                       |                                                                           |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 4.1.1 | $\sin C = \frac{AB}{AC}$                                                                                                                                                                                                                                                                              | ✓ AC<br>(1)                                                               |
| 4.1.2 | $\cot A = \frac{AB}{BC}$                                                                                                                                                                                                                                                                              | ✓ cot A<br>(1)                                                            |
| 4.2   | $\frac{\sin 60^\circ \cdot \tan 30^\circ}{\sec 45^\circ}$ $= \left(\frac{\sqrt{3}}{2}\right) \left(\frac{1}{\sqrt{3}}\right)$ $= \frac{1}{\sqrt{2}}$ $= \frac{2}{\sqrt{2}}$ $= \frac{1}{2} \times \frac{1}{\sqrt{2}}$ $= \frac{1}{2\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$ $= \frac{\sqrt{2}}{4}$ | ✓✓ substitution<br><br>✓ simplification<br><br>✓ answer<br>(4)            |
| 4.3.1 | $r^2 = (-5)^2 + (12)^2$<br>$r^2 = 169$<br>$r = 13$<br>$\cos \theta = -\frac{5}{13}$                                                                                                                                                                                                                   | ✓ $r^2 = (-5)^2 + (12)^2$<br>✓ $r = 13$<br>✓ answer<br>(3)                |
| 4.3.2 | $\operatorname{cosec}^2 \theta + 1$<br>$= \left(\frac{13}{12}\right)^2 + 1$<br>$= \frac{169}{144} + \frac{144}{144}$<br>$= \frac{313}{144}$                                                                                                                                                           | ✓ $= \frac{13}{12}$<br>✓ simplification<br>✓ answer<br>(3)<br><b>[12]</b> |

## QUESTION 5

|       |                                                                                                                                                                                 |                                                                                                                    |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| 5.1.1 | $5 \cos x = 3$<br>$\cos x = \frac{3}{5}$<br>$x = \cos^{-1}\left(\frac{3}{5}\right)$<br>$x = 53,1^\circ$                                                                         | $\checkmark \cos x = \frac{3}{5}$<br>$\checkmark$ answer<br>(2)                                                    |
| 5.1.2 | $\tan 2x = 1,19$<br>$2x = \tan^{-1}(1,19)$<br>$2x = 49,95845.....^\circ$<br>$x = 25^\circ$                                                                                      | $\checkmark \checkmark 2x = 49,958....^\circ$<br>$\checkmark$ answer<br>(3)                                        |
| 5.1.3 | $4 \sec x - 3 = 5$<br>$4 \sec x = 8$<br>$\sec x = 2$<br>$\frac{1}{\sec x} = \frac{1}{2}$<br>$\cos x = \frac{1}{2}$<br>$x = \cos^{-1}\left(\frac{1}{2}\right)$<br>$x = 60^\circ$ | $\checkmark \sec x = 2$<br>$\checkmark$ inverting both sides<br>$\checkmark \cos x$<br>$\checkmark$ answer<br>(4)  |
| 5.2.1 | $\hat{J}\hat{K}D = 8^\circ$ alternate angles                                                                                                                                    | $\checkmark$ answer<br>(1)                                                                                         |
| 5.2.2 | $\tan 8^\circ = \frac{5}{DK}$<br>$DK = \frac{5}{\tan 8^\circ}$<br>$DK = 35,57684..... \text{ km}$<br>$DK = 35\,577 \text{ m}$                                                   | $\checkmark \tan 8^\circ = \frac{5}{DK}$<br>$\checkmark DK = \frac{5}{\tan 8^\circ}$<br>$\checkmark$ answer<br>(3) |
| 5.2.3 | $DS = 35,58 - 8 = 27,58 \text{ km}$                                                                                                                                             | $\checkmark$ answer<br>(1)                                                                                         |
| 5.2.4 | $\tan \hat{D}\hat{S}J = \frac{5}{27,58}$<br>$\hat{D}\hat{S}J = \tan^{-1}\left(\frac{5}{27,58}\right)$<br>$\hat{D}\hat{S}J = 10,3^\circ$                                         | $\checkmark \tan \hat{D}\hat{S}J = \frac{5}{27,58}$<br>$\checkmark$ answer<br>(2)<br><b>[16]</b>                   |

QUESTION 6

|       |                                                                     |                                                                                                                                                                                                                                     |
|-------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6.1.1 |                                                                     | <ul style="list-style-type: none"> <li>✓ correct <math>x</math>-intercepts</li> <li>✓ correct <math>y</math>-intercept</li> <li>✓ asymptotes</li> <li>✓ shape (must pass through <math>(45^\circ ; 2)</math>)</li> </ul> <p>(4)</p> |
| 6.1.2 | $y = -2 \tan x$                                                     | <ul style="list-style-type: none"> <li>✓ answer</li> </ul> <p>(1)</p>                                                                                                                                                               |
| 6.2.1 | $g(x) = a \sin x$<br>$4 = a \sin 90^\circ$<br>$4 = a(1)$<br>$a = 4$ | <ul style="list-style-type: none"> <li>✓ <math>a = 4</math></li> </ul> <p>(1)</p>                                                                                                                                                   |
| 6.2.2 | Range is $-2 \leq y \leq 6$ .                                       | <ul style="list-style-type: none"> <li>✓ <math>-2</math></li> <li>✓ <math>6</math></li> </ul> <p>(2)</p>                                                                                                                            |

[8]

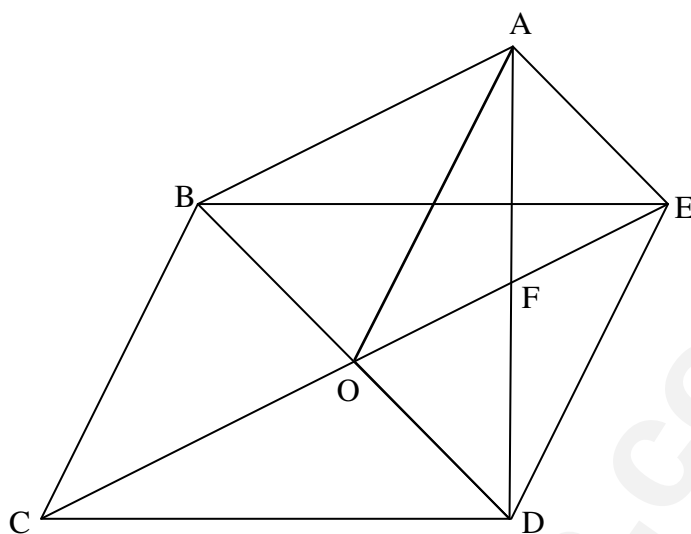
### QUESTION 7

|       |                                                                                                                                                          |                                                                                 |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 7.1.1 | $AH^2 = 0,8^2 + 1,5^2$<br>$AH^2 = 2,89$<br>$AH = 1,7$                                                                                                    | $\checkmark AH^2 = 0,8^2 + 1,5^2$<br>$\checkmark AH = 1,7$<br>(2)               |
| 7.1.2 | Surface area of roof $= 4 \times \frac{1}{2} (3 \times 1,7)$<br>$= 10,2 \text{ m}^2$                                                                     | $\checkmark 4 \times \frac{1}{2} (3 \times 1,7)$<br>$\checkmark$ answer<br>(2)  |
| 7.1.3 | Surface area of walls $= 4 \times 3 \times 2,1$<br>$= 25,2 \text{ m}^2$<br>Total surface area $= 10,2 \text{ m}^2 + 25,2 \text{ m}^2 = 35,4 \text{ m}^2$ | $\checkmark 25,2 \text{ m}^2$<br>$\checkmark$ answer<br>(2)                     |
| 7.2.1 | Volume $= \frac{4}{3} \pi (8)^3$<br>$= 2144,66 \text{ mm}^3$                                                                                             | $\checkmark \frac{4}{3} \pi (8)^3$<br>$\checkmark$ answer<br>(2)                |
| 7.2.2 | New volume : original volume $= 2^3 : 1$<br>$= 8 : 1$                                                                                                    | $\checkmark 2^3$<br>$\checkmark$ answer<br>(2)                                  |
| 7.2.3 | Volume including silver $= \frac{4}{3} \pi (9)^3 = 3\,053,63 \text{ mm}^3$ .<br>Volume of silver $= 3\,053,63 - 2144,66$<br>$= 908,97 \text{ mm}^3$      | $\checkmark \frac{4}{3} \pi (9)^3$<br>$\checkmark$ answer<br>(2)<br><b>[12]</b> |

### QUESTION 8

|     |                                                                                                                                           |                                                                                                                 |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 8.1 | $OQ = 2 \text{ cm}$ .... (the long diagonal of a kite bisects the shorter diagonal)                                                       | $\checkmark 2 \text{ cm}$<br>$\checkmark$ correct reason<br>(2)                                                 |
| 8.2 | $\hat{POQ} = 90^\circ$ .... (the diagonals of a kite intersect at right angles)                                                           | $\checkmark 90^\circ$<br>$\checkmark$ correct reason<br>(2)                                                     |
| 8.3 | $\hat{QPO} = 20^\circ$ .... (the longer diagonal bisects the angles of a kite)<br>$\therefore \hat{QPS} = 20^\circ + 20^\circ = 40^\circ$ | $\checkmark \hat{QPO} = 20^\circ$ with correct reason<br>$\checkmark \hat{QPS} = 40^\circ$<br>(2)<br><b>[6]</b> |

QUESTION 9



|     |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                            |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9.1 | <p>O is the midpoint of BD. .... (Diagonals of parm BCDE bisect each other)</p> <p>F is the midpoint of OE. .... (Diagonals of parm AODE bisect each other)</p> <p><math>\therefore OF \parallel AB</math> .... (The line joining the midpoints of two sides in a <math>\Delta</math> is <math>\parallel</math> to third side)</p>                            | <p>✓ O is the midpoint of BD</p> <p>✓ reason – diagonals of parm</p> <p>✓ F is the midpoint of OE</p> <p>✓ reason – midpoint theorem</p> <p>(4)</p>                                        |
| 9.2 | <p><math>AE \parallel OD</math> .... (Opp sides of parm AODE are parallel)</p> <p><math>\therefore AE \parallel OB</math></p> <p><math>OF \parallel AB</math> .... (proven above)</p> <p><math>\therefore OE \parallel AB</math></p> <p><math>\therefore ABOE</math> is a parallelogram .... (both pairs of opposite sides of quad are parallel)</p>          | <p>✓ <math>AE \parallel OB</math></p> <p>✓ reason</p> <p>✓ <math>OE \parallel AB</math></p> <p>✓ reason – opp sides parallel</p> <p>(4)</p>                                                |
| 9.3 | <p>In <math>\Delta ABO</math> and <math>\Delta EOD</math></p> <p>1. <math>AB = EO</math> ... (Opp sides of parm ABOE are equal)</p> <p>2. <math>AO = ED</math> ... (Opp sides of parm AODE are equal)</p> <p>3. <math>BO = DO</math> ... (Diagonals of parm BCDE bisect each other)</p> <p><math>\therefore \Delta ABO \equiv \Delta EOD</math> (S, S, S)</p> | <p>✓ <math>AB = EO</math></p> <p>✓ <math>AO = ED</math></p> <p>✓ reason – opp sides are equal</p> <p>✓ <math>BO = DO</math></p> <p>✓ reason – diagonals of parm</p> <p>(5)</p> <p>[13]</p> |

TOTAL: 100