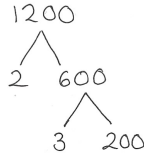
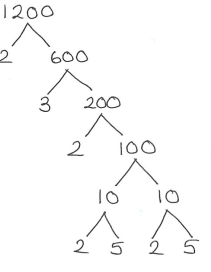


Practice Tests Set 22 – 2H-3H mark scheme

| Qn | Working | Answer | Mark | Notes |
|----|---|--------|------|--|
| 1 | $5 \times 12 (= 60)$ or $\frac{15+7-2+23+x}{5} = 12$ oe or $\frac{x+"43"}{5} = 12$ | | 3 | M1 for a method to find the total of the 5 numbers or setting up an equation in x "43" comes from $15 + 7 - 2 + 23$ |
| | $x + 15 + 7 - 2 + 23 = "60"$ or $x + "43" = "60"$ or $"60" - (15 + 7 - 2 + 23)$ | | | M1 for forming an equation with their 60 or for a complete calculation to find the value of x "43" comes from $15 + 7 - 2 + 23$ |
| | | 17 | | A1 |
| | | | | Total 3 marks |

| Qn | Working | Answer | Mark | Notes |
|-------|---|-------------------|------|--|
| 2 (a) | | 8 800 000 | 1 | B1 |
| (b) | | Barcelona | 1 | B1 accept 5.5×10^6 |
| (c) | $3.7 \times 10^7 - 7.7 \times 10^6$ or 29 300 000 oe or 37 000 000 – 7 700 000 or 29 000 000 oe or $0.29(3) \times 10^8$ or $29(.3) \times 10^6$ | | 2 | M1 allow $2.9(3) \times 10^n$ ($n \neq 7$) |
| | | 2.9×10^7 | | A1 accept -2.9×10^7 accept 2.93×10^7 or -2.93×10^7 |
| | | | | Total 4 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|----------------|------|---|
| 3 | eg $10p = 3p - 5$ or $p = \frac{3p}{10} - \frac{5}{10}$ oe eg $p = 0.3p - 0.5$ | | 3 | M1 for a correct first step – multiplying both sides by 10 correctly or writing the RHS as 2 terms each over 10 or each term as a decimal [must be in a correct equation] |
| | eg $10p - 3p = -5$ or $7p = -5$ or $p - \frac{3p}{10} = -\frac{5}{10}$ or $0.7p = -0.5$ | | | M1ft (ft a 3 term equation) for collecting terms in p on one side and number the other |
| | | $-\frac{5}{7}$ | | A1 (dep on at least M1) for $-\frac{5}{7}$ oe, accept $-0.71(4\dots)$ allow -0.7 if you have seen $-\frac{5}{7}$ or $-5 \div 7$ |
| | | | | Total 3 marks |

| Qn | Working | Answer | Mark | Notes | | | | | | | | | | | | | | | | |
|----|--|---------------------------|------|---|-----|---|-----|---|-----|--|----|---|----|---|---|--|-----|--|--|--|
| 4 | eg $2 \times 2 \times 300$ $2 \times 5 \times 120$ $2 \times 3 \times 200$ $3 \times 5 \times 80$ or eg  or <table border="1" data-bbox="743 402 936 545"> <tr><td>2</td><td>1200</td></tr> <tr><td>3</td><td>600</td></tr> <tr><td></td><td>200</td></tr> </table> | 2 | 1200 | 3 | 600 | | 200 | | 3 | M1 for at least 2 correct stages in prime factorisation which give 2 prime factors – may be in a factor tree or a table or listed eg 2, 2, 300 (allow no more than one mistake ft (eg <i>one mistake</i> with 2 prime factors ft $1200 = 20 \times 600 = 2 \times 10 \times 3 \times 200$)) | | | | | | | | | | |
| 2 | 1200 | | | | | | | | | | | | | | | | | | | |
| 3 | 600 | | | | | | | | | | | | | | | | | | | |
| | 200 | | | | | | | | | | | | | | | | | | | |
| | 2, 2, 2, 2, 3, 5, 5 or  or <table border="1" data-bbox="743 577 936 951"> <tr><td>2</td><td>1200</td></tr> <tr><td>3</td><td>600</td></tr> <tr><td>2</td><td>200</td></tr> <tr><td>5</td><td>100</td></tr> <tr><td>2</td><td>20</td></tr> <tr><td>5</td><td>10</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td></td><td>(1)</td></tr> </table> | 2 | 1200 | 3 | 600 | 2 | 200 | 5 | 100 | 2 | 20 | 5 | 10 | 2 | 2 | | (1) | | | M1 for finding the correct prime factors condone inclusion of 1 (may be seen in a fully correct factor tree or ladder) |
| 2 | 1200 | | | | | | | | | | | | | | | | | | | |
| 3 | 600 | | | | | | | | | | | | | | | | | | | |
| 2 | 200 | | | | | | | | | | | | | | | | | | | |
| 5 | 100 | | | | | | | | | | | | | | | | | | | |
| 2 | 20 | | | | | | | | | | | | | | | | | | | |
| 5 | 10 | | | | | | | | | | | | | | | | | | | |
| 2 | 2 | | | | | | | | | | | | | | | | | | | |
| | (1) | | | | | | | | | | | | | | | | | | | |
| | | $2^4 \times 3 \times 5^2$ | | A1 (dep on M2 as working requested) Can be in any order (allow $2^4 \cdot 3 \cdot 5^2$) but must be in index form as asked for. | | | | | | | | | | | | | | | | |
| | Total 3 marks | | | | | | | | | | | | | | | | | | | |

| Qn | Working | Answer | Mark | Notes | |
|----------------------|---|--------|------|---|--|
| 5 | 18000×0.15 (= 2700) oe or 18000×0.85(= 15 300) oe | | 3 | M1 for finding 15% or 85% of 18 000 | M2 for 18000×0.85 ⁴ oe or 18000×0.85 ⁵ (= 7986.(69...)) oe |
| | eg 18000×0.85 ⁴ oe or "15300"×0.85×0.85×0.85 oe or "15300"×0.85(=13005) oe and "13005"×0.85(=11054.25) oe and "11054.25"×0.85 oe | | | M1 (dep) for a complete method | |
| | | 9396 | | A1 awrt 9396 | |
| | | | | If no marks awarded, award SCB1 for or 18000 × 0.85 ² (= 13 005) oe or 18000×0.85 ³ (= 11 054.(25)) oe or 18 000 × 0.4 (= 7200) oe or 18 000 × 1.15 (= 20700) oe or 18 000 × 1.15 ⁴ (= 31482.(1125)) oe | |
| Total 3 marks | | | | | |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------|------|--------------------------|
| 6 | $1 + 0.12 (= 1.12)$ oe or $100(\%) + 12(\%) (=112(\%))$ or $\frac{18.20}{112} (= \frac{13}{80} = 0.1625)$ or $x + 0.12x = 18.2(0)$ or $x \times 1.12 = 18.2(0)$ | | 3 | M1 |
| | eg $18.2(0) \div "(1 + 0.12)"$ oe or $\frac{18.2(0)}{"112"} \times 100$ oe | | | M1 for a complete method |
| | | 16.25 | | A1 |
| | | | | Total 3 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------|------|--|
| 7 | $(AB^2 =) 7.5^2 - 6^2 (= 20.25)$ or eg $(BAC =) \sin^{-1}\left(\frac{6}{7.5}\right) (= 53.1\dots)$ or $\cos(BCA) = \frac{6}{7.5} (= 0.8)$ | | 6 | M1 for a correct first step to find AB or a complete method to find angle BAC or a correct first step to find angle BCA |
| | $(AB =) \sqrt{7.5^2 - 6^2} (= 4.5)$ or $(AB =) \frac{6}{\tan "53.1"} (= 4.5\dots)$ or $(AB =) 7.5 \cos "53.1" (= 4.5\dots)$ or $(BCA =) \cos^{-1}\left(\frac{6}{7.5}\right) (= 36.8\dots)$ | | | M1 for a complete method to find AB or angle BCA |
| | $(\text{Area } ABC =) \frac{1}{2} \times 6 \times "4.5" (= 13.5)$ or $(\text{Area } ABC =) \frac{1}{2} \times 6 \times 7.5 \times \sin("36.8") (= 13.47\dots \text{ or } 13.5)$ | | | M1 ft [their labelled AB] or [their labelled BCA] eg for $\frac{1}{2} \times 6 \times$ [their labelled AB] or $\frac{1}{2} \times 6 \times 7.5 \times \sin$ [their labelled BCA] |
| | $(\text{Area } DAC =) 31.5 - "13.5" (= 18)$ or $"13.5" + 0.5 \times 7.5 \times AD = 31.5$ oe | | | M1 ft (dep on previous M1) allow $31.5 -$ [their area] |
| | $(AD =) ("18" \div 7.5) \div 0.5$ oe | | | M1 for a complete method to find AD , dependent on correct working |
| | | | | 4.8 |
| | | | | Total 6 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------|------|--|
| 8 | eg $(V=) \pi \times \left(\frac{18}{2}\right)^2 \times 3.5$ (= 890.(64...) or $\frac{567}{2}\pi$) | | 3 | M1 correct method to calculate volume |
| | eg $(7.04 \times 1000) \div \text{“890.64”}$ | | | M1 correct method to calculate density (if volume is incorrect, their value can be used if clearly labelled) accept use of 7.04 or an incorrect conversion from kg to g for mass |
| | | 7.9 | | A1 accept 7.9 – 7.92 |
| | | | | Total 3 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------|------|---|
| 9 | $\sqrt{36} (= 6) \text{ or } 6 \text{ or } 6 \times 6$ | | 4 | M1 for method to find the length of the square – may be seen in later working |
| | eg $\pi \times \left(\frac{[\text{their } 6]}{2}\right)^2 \div 2 (= 14.1\dots \text{ or } 4.5\pi \text{ or } \frac{9}{2}\pi)$ or $\pi \times \left(\frac{[\text{their } 6]}{2}\right)^2 (= 28.2\dots \text{ or } 9\pi)$ | | | M1 for method to find the area of one semicircle or circle or the incorrect number of semicircles or circles provided correct area of circle formula is seen for [their 6] allow any value if there is a clear implication this is their side length of square. |
| | eg $4 \times \text{“14.1”} (= 56.5\dots \text{ or } 18\pi)$ or $2 \times \text{“28.2”} (= 56.5\dots \text{ or } 18\pi)$ | | | M1 ft dep on previous M1 for a complete method to find the total area of the semicircles [if the pupil multiplies again and uses the incorrect number of circles or semicircles this mark is not awarded] |
| | | 92.5 | | A1 accept 92.4 – 92.6 (not in terms of π) |
| | | | | Total 4 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------|------|---|
| 10 | $\text{eg } \tan BAP = \frac{2}{5} \text{ or}$ $\sin BAP = \frac{2}{\sqrt{5^2 + 2^2}} \text{ or } \frac{\sin BAP}{2} = \frac{\sin 90}{\sqrt{5^2 + 2^2}}$ $\cos BAP = \frac{5}{\sqrt{5^2 + 2^2}} \text{ or } \cos BAP = \frac{5^2 + (\sqrt{5^2 + 2^2})^2 - 2^2}{2 \times 5 \times \sqrt{29}}$ | | 5 | M1 for setting up a trig equation for angle BAP |
| | $\text{eg } (BAP =) \tan^{-1}\left(\frac{2}{5}\right) (= 21.8\dots) \text{ or}$ $(BAP =) \sin^{-1}\left(\frac{2}{\sqrt{5^2 + 2^2}}\right) \text{ or } (BAP =) \sin^{-1}\left(\frac{2 \sin 90}{\sqrt{5^2 + 2^2}}\right)$ $(BAP =) \cos^{-1}\left(\frac{5}{\sqrt{5^2 + 2^2}}\right) \text{ or } BAP = \cos^{-1}\left(\frac{5^2 + (\sqrt{5^2 + 2^2})^2 - 2^2}{2 \times 5 \times \sqrt{5^2 + 2^2}}\right)$ | | | M1 for a complete method to find angle BAP (= 21.8...) [M2 for $90 - \tan^{-1} \frac{5}{2}$ ie $90 - 68.2$] |
| | $\text{eg (int angle =) } (6 - 2) \times 180 \div 6 (= 120)$ $\text{or (ext angle =) } 360 \div 6 (= 60)$ | | | M1 Indep for a method to find the size of one interior or one exterior angle in a regular hexagon – could be seen on diagram |
| | eg “120” – “21.8” or 180 – “60” – “21.8” | | | M1 for a complete method to find angle PAF where all values have come from a correct method |
| | | 98.2 | | A1 accept 98.1 – 98.3 |
| | | | | Total 5 marks |

| Qn | Working | Answer | Mark | Notes |
|--------|---------|--------------------------------|------|--|
| 11 (a) | | $3^2 \times 5 \times 7$ | 1 | B1 accept $3 \times 3 \times 5 \times 7$ oe or 315 |
| 11 (b) | | $3^{11} \times 5^7 \times 7^5$ | 2 | B2 fully correct answer (allow $x = 11, y = 7, z = 5$) (B1 for an answer in the form $3^p \times 5^q \times 7^r$ where one or two of p, q or r are correct) |
| | | | | Total 3 marks |

| Qn | Working | Answer | Mark | Notes |
|----|---|--------|------|---|
| 12 | eg $0.45 \times 180 (= 81)$ oe OR $\frac{15}{180} \left(= \frac{1}{12} \text{ or } 0.0833\dots \right)$ OR $\frac{15}{180} \times 100 (= 8.3(33\dots)\%)$ | | 4 | M1 for a method to find the number of students studying German OR the number of students studying French as a fraction or decimal of the total students OR a method to find the percentage of students studying French 81 may be seen as part of an equation |
| | eg $180 - 15 - "81" (= 84)$ or $"81" + 15 (= 96)$ OR $1 - \left(\frac{1}{12} + \frac{45}{100} \right) = \left(\frac{7}{15} \text{ or } 0.466\dots \right)$ or $\frac{1}{12} + \frac{45}{100} = \left(\frac{8}{15} \text{ or } 0.533\dots \right)$ OR $100 - ("8.3" + 45) (= 46.6(66\dots) \text{ or } 46.7\%)$ or $"8.3" + 45 (= 53.3(33\dots) \text{ or } 53.3\%)$ | | | M1 for a method to find the number of students studying Italian/Spanish or French/German OR a method to find the fraction or decimal of students studying Italian/Spanish or French/German OR a method to find the percentage of students studying Italian/Spanish or French/German 84 or 96 may be seen as part of an equation |
| | eg $\frac{"84"}{180 - "84"} (\times 100) \left(= \frac{7}{8} \text{ or } 0.875 \right)$ or $\frac{"84"}{"96"} (\times 100) \left(= \frac{7}{8} \text{ or } 0.875 \right)$ or $\frac{7}{15} \div \frac{8}{15} \left(= \frac{7}{8} \text{ or } 0.875 \right)$ or $\frac{"46.6"}{"53.3"} (\times 100) (= 0.872\dots)$ | | | M1 for a complete method to find the fraction or decimal or percentage of Italian/Spanish to French/German |
| | | 87.5 | | A1 accept 87.2 – 87.7 |

| Qn | Working | Answer | Mark | Notes |
|----|---|--------|------|---|
| 13 | $PRS = 90$ or $PQS = 90$ or $PSR = 180 - 136 (= 44)$ | | 3 | M1 may be seen on diagram. Must be labelled on diagram or identified using 3 letter notation. |
| | $RPS = 180 - 90 - "44"$ oe or $RQS = 136 - 90 (= 46)$ | | | M1 for a complete method |
| | | 46 | | A1 |
| | | | | Total 3 marks |

| Qn | Working | Answer | Mark | Notes |
|----|---|--------|------|--|
| 14 | eg $2 \times \pi \times 5.2 (= 32.6... \text{or } \frac{52}{5} \pi)$ oe | | 3 | M1 for finding the whole circumference or the arc length |
| | $\frac{67}{360} \times 2 \times \pi \times 5.2 (= 6.08... \text{or } \frac{871}{450} \pi)$ oe | | | |
| | $\frac{67}{360} \times 2 \times \pi \times 5.2 + 2 \times 5.2$ oe | | | M1 for a complete method |
| | | 16.5 | | A1 accept 16.4 - 16.5 (not in terms of π) |
| | | | | Total 3 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------------------------|------|--|
| 15 | eg $\frac{158+C}{2} = 160$ or $(C =) 160 + (160 - 158) (= 162)$ oe or $C = 162$ | | 3 | M1 for method to find Candela's height or Candela's height or Candela's height in the wrong place on the answer line |
| | eg $(D =) 175 - 21 (= 154)$ oe | | | M1 indep for method to find Diana's height or Diana's height or Diana's height in the wrong place on the answer line |
| | | Candela 162 Diana 154 | | A1 Correctly attributed If no marks awarded, SCB1 for Candela's height 179 |
| | | | | Total 3 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------|------|-------------------------------------|
| 16 | $\frac{1}{2} \times 6 \times 11 \times \sin 118 (= 29.1\dots)$ | | 3 | M1 for the area of half of the kite |
| | eg $2 \times \frac{1}{2} \times 6 \times 11 \times \sin 118$ | | | M1 for a complete method |
| | | 58.3 | | A1 accept 58.2 – 58.3 |
| | | | | Total 3 marks |

| Qn | Working | Answer | Mark | Notes |
|--------|---|--------------|------|--|
| 17 (a) | eg $6 \times 2.4 + 5 \times 3.5$ | | 2 | M1 |
| | | 31.9 | | A1 oe |
| (b) | $(W =) 5.9n$ or $(W =) 5.9(n - 1) + 2.4$ or $(W =) 2.4n + 3.5(n - 1)$ | | 2 | M1 for $2.4n + 3.5n$ or $5.9n$ seen |
| | | $5.9n - 3.5$ | | A1 oe but must be in simplest form eg $-3.5 + 5.9n$ |
| | | | | Total 4 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------|------|---|
| 18 | 77.5 or 82.5 or 2.65 or 2.75 or 32.5 or 33.5 or 0.95 or 1.05 or 77500 or 82500 or 159 or 165 or 32500 or 33500 or 57 or 63 | | 4 | B1 For a <i>UB</i> or <i>LB</i> for one of the distances or times in hours or in minutes |
| | eg $82.5 \div 2.65 (= 31.13\dots)$ or $82500 \div 159 (= 518.867\dots)$ or km/min or m/h | | | M1 for a method to find the upper bound of Kaidan's average speed eg $UB_K \div LB_K$ where $80 < UB_K \leq 82.5$ and $2.65 \leq LB_K < 2.7$ or use of m/min to find upper bound for Kaidan's average speed eg $UB_K \div LB_K$ where $80000 < UB_K \leq 82500$ and $159 \leq LB_K < 162$ can use km/min or m/h |
| | eg $32.5 \div 1.05 (= 30.95\dots)$ or $32500 \div 63 (= 515.873\dots\dots)$ or km/min or m/h | | | M1 indep for a method to find the lower bound of Sonja's average speed eg $LB_S \div UB_S$ where $32.5 \leq LB_S < 33$ and $1 < UB_S \leq 1.05$ or use of m/min to find lower bound for Sonja's average speed $LB_S \div UB_S$ where $32500 \leq LB_S < 33000$ and $60 < UB_S \leq 63$ can use km/min or m/h |
| | $UB K = 31132\dots\dots\text{m/h}$ $LB S = 30952\dots\dots\text{m/h}$ $UB K = 0.51886\dots\text{km/min}$ $LB S = 0.51587\dots\text{km/min}$ | Shown | | A1 shown with accurate figures in the same units – sufficient figures for comparison (can be truncated) but must be from correct working and <i>UB</i> for Kaidan and <i>LB</i> for Sonja selected eg UB Kaidan = 31.13... (km/h) and LB Sonja = 30.95...(km/h) or UB Kaidan = 518.867...(m/min) and LB Sonja = 515.873...(m/min) (dep on correct method) |
| | | | | Total 4 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|--|-----------------------|---|
| 19 | (area $PQS = \frac{1}{2} \times 6.1 \times 3.8 \times \sin P = 9$ or (area $PQRS = 6.1 \times 3.8 \times \sin P = 18$ | $\frac{1}{2} \times 6.1 \times SX = 9$ or $(SX =) \frac{9}{\frac{1}{2} \times 6.1} (= 2.95...)$ or $6.1 \times SX = 18$ or $(SX =) 18 \div 6.1 (= 2.95...)$ | | 5 M1 correct equation for the area of the triangle or parallelogram or a calculation to find the height of the parallelogram (where X is the point vertically below S on PQ) |
| | eg $(\sin P =) \frac{9}{\frac{1}{2} \times 6.1 \times 3.8} (= 0.776... \text{ or } \frac{900}{1159})$ or $(\sin P =) \frac{18}{6.1 \times 3.8} (= 0.776... \text{ or } \frac{900}{1159})$ | $(PX^2 =) 3.8^2 - "2.95..."^2 (= 5.73...)$ or $(PX =) \sqrt{3.8^2 - "2.95..."^2} (= 2.39...)$ | | M1 correct expression for $\sin P$ OR for start of Pythagoras method to find length of PX (where X is the point vertically below S on PQ) |
| | $(P =) \sin^{-1} "0.776..." (= 50.9...)$ | $(QX =) 6.1 - \sqrt{"5.73..." (= 3.70...)$ or $(QX =) 6.1 - "2.39" (= 3.70...)$ | | M1 for complete method to find angle P OR for method to find length of QX |
| | $(QS^2 =) 3.8^2 + 6.1^2 - 2 \times 3.8 \times 6.1 \times \cos("50.9") (= 22.4...)$ or $(QS =) \sqrt{3.8^2 + 6.1^2 - 2 \times 3.8 \times 6.1 \times \cos("50.9")}$ | $(QS^2 =) "2.95..."^2 + "3.70..."^2 (= 22.4...)$ or $(QS =) \sqrt{"2.95..."^2 + "3.70..."^2}$ | | M1 correct expression for QS^2 (or QS) |
| | | 4.74 | A1 accept 4.73 – 4.74 | |
| | | | | Total 5 marks |

| Qn | Working | Answer | Mark | Notes |
|----|---|-----------------------|------|---|
| 20 | eg $(x =) 4 - (6 - 4) (= 2)$ $(y =) 7 - (11 - 7) (= 3)$ or (2, 3) | | 4 | M1 for a method to find the coordinates of P (accept coordinates of P informally eg separately or as a vector) |
| | eg $\frac{11-7}{6-4} (= 2)$ or $\frac{11-[3]}{6-[2]} (= 2)$ oe or $\frac{[3]-7}{[2]-4} (= 2)$ oe | | | M1 (indep if using coordinates of A & O) for a method to find the gradient of AOP (can use their coordinates of P) |
| | eg $-1 \div [2] (= -0.5)$ oe | | | M1ft for a method to find the gradient of the tangent ft their stated gradient of AOP (or OA or OP) (could be embedded) |
| | | $y - 3 = -0.5(x - 2)$ | | A1 oe eg $y = -\frac{1}{2}x + 4$ |
| | | | | Total 4 marks |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------|------|---|
| 21 | eg $(7.5+2.5) - 6 = 4$ large squares represents 8 trees or $5 \times 37.5 + 5 \times 12.5 - 10 \times 15 = 100$ small squares represents 8 trees $200 - 250 = 10$ $250 - 300 = 8$ $300 - 400 = 12$ $400 - 450 = 15$ $450 - 600 = 15$ (or $450 - 500 = 5$ or $500 - 600 = 10$) $600 - 800 = 4$ | | 3 | M1 oe eg 1 large square represents 2 trees or 12.5 small squares represents 1 tree or a frequency density axis scale where one large square vertically is FD of 0.04 with no contradictions or a correct frequency for any bar (could be seen on the diagram) |
| | $5 \times 2 + 2 \times 2$ or $\frac{10 \times 12.5 + 20 \times 2.5}{100} \times 8$ oe or $100 \times 0.1 + 200 \times 0.02$ | | | M1 for a correct method to find the total number of trees greater than 500 cm. |
| | | 14 | | A1 |
| | Total 3 marks | | | |

| Qn | Working | Answer | Mark | Notes |
|----|--|--------|------|--|
| 22 | (Length sf =) $\sqrt[3]{0.8}$ (= 0.928...) or $\sqrt[3]{1.25}$ (=1.07...) or $\sqrt[3]{4} : \sqrt[3]{5}$ oe | | 4 | M1 for a correct linear scale factor |
| | (Area sf =) $(\sqrt[3]{0.8})^2$ (= 0.861...) or 86.1...(%) or $(\sqrt[3]{1.25})^2$ (=1.16...) or 116...(%) or $(\sqrt[3]{4})^2 : (\sqrt[3]{5})^2$ oe | | | M1 for a correct area scale factor |
| | eg (k =) (1 - "0.861...") \times 100 or (100 - "86.1...") or $100 - \frac{100}{"1.16"}$ or $100 - \frac{100}{"116"} \times 100$ or $100 - 100 \times \frac{(\sqrt[3]{4})^2}{(\sqrt[3]{5})^2}$ | | | M1 for a method to find the percentage reduction |
| | | 13.8 | | A1 accept 13.7 – 13.9 |
| | | | | Total 4 marks |

| Qn | | Max score | Mean % | Average score of candidates achieving grade: | | | | | | | | |
|----|--------------------------------------|-----------|-----------|--|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|
| | | | | ALL | 9 | 8 | 7 | 6 | 5 | 4 | 3 | U |
| 1 | Statistical measures | 3 | 88 | 2.64 | 2.98 | 2.92 | 2.84 | 2.67 | 2.30 | 1.72 | 0.62 | 0.10 |
| 2 | Standard form | 4 | 91 | 3.63 | 3.91 | 3.80 | 3.69 | 3.57 | 3.47 | 3.11 | 2.30 | 0.00 |
| 3 | Linear equations | 3 | 81 | 2.43 | 2.98 | 2.94 | 2.73 | 2.29 | 1.59 | 0.82 | 0.20 | 0.02 |
| 4 | Powers and roots | 3 | 85 | 2.54 | 2.87 | 2.76 | 2.67 | 2.44 | 2.29 | 1.77 | 0.98 | 0.40 |
| 5 | Applying number | 3 | 81 | 2.44 | 2.92 | 2.74 | 2.59 | 2.30 | 2.00 | 1.36 | 0.76 | 0.25 |
| 6 | Percentages | 3 | 75 | 2.25 | 2.95 | 2.81 | 2.38 | 1.82 | 1.38 | 0.71 | 0.18 | 0.07 |
| 7 | Trigonometry and Pythagoras' Theorem | 6 | 71 | 4.28 | 5.82 | 5.56 | 4.71 | 3.44 | 1.97 | 0.72 | 0.22 | 0.10 |
| 8 | Measures | 3 | 73 | 2.19 | 2.89 | 2.67 | 2.35 | 1.90 | 1.35 | 0.68 | 0.18 | 0.03 |
| 9 | Mensuration of 2D shapes | 4 | 71 | 2.83 | 3.69 | 3.39 | 3.04 | 2.60 | 1.76 | 0.75 | 0.17 | 0.05 |
| 10 | Trigonometry and Pythagoras' Theorem | 5 | 69 | 3.44 | 4.88 | 4.51 | 3.78 | 2.47 | 1.30 | 0.41 | 0.10 | 0.03 |
| 11 | Powers and roots | 3 | 66 | 1.98 | 2.83 | 2.50 | 2.00 | 1.52 | 1.00 | 0.51 | 0.17 | 0.00 |
| 12 | Percentages | 4 | 63 | 2.53 | 3.51 | 2.91 | 2.43 | 2.02 | 1.71 | 1.24 | 0.65 | 0.23 |
| 13 | Circle properties | 3 | 60 | 1.80 | 2.86 | 2.38 | 1.74 | 1.04 | 0.56 | 0.25 | 0.15 | 0.03 |
| 14 | Mensuration of 2D shapes | 3 | 56 | 1.68 | 2.72 | 2.31 | 1.57 | 0.92 | 0.40 | 0.12 | 0.06 | 0.00 |
| 15 | Statistical measures | 3 | 54 | 1.61 | 2.54 | 1.88 | 1.44 | 1.05 | 0.88 | 0.55 | 0.25 | 0.10 |
| 16 | Trigonometry and Pythagoras' Theorem | 3 | 50 | 1.49 | 2.71 | 2.03 | 1.23 | 0.56 | 0.23 | 0.11 | 0.04 | 0.01 |
| 17 | Use of symbols | 4 | 49 | 1.95 | 3.19 | 2.21 | 1.63 | 1.32 | 1.07 | 0.68 | 0.38 | 0.00 |
| 18 | Degree of accuracy | 4 | 39 | 1.54 | 2.86 | 1.84 | 1.28 | 0.75 | 0.39 | 0.15 | 0.03 | 0.02 |
| 19 | Mensuration of 2D shapes | 5 | 42 | 2.11 | 4.37 | 2.82 | 1.36 | 0.53 | 0.15 | 0.05 | 0.01 | 0.06 |
| 20 | Graphs | 4 | 34 | 1.36 | 3.19 | 1.55 | 0.64 | 0.27 | 0.13 | 0.05 | 0.00 | 0.00 |
| 21 | Graphical representation of data | 3 | 23 | 0.69 | 1.66 | 0.64 | 0.34 | 0.22 | 0.08 | 0.07 | 0.01 | 0.00 |
| 22 | Similarity | 4 | 20 | 0.79 | 2.27 | 0.67 | 0.13 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | 80 | 60 | 48.20 | 70.60 | 57.84 | 46.57 | 35.75 | 26.01 | 15.83 | 7.46 | 1.50 |

Suggested grade boundaries

| Grade | 9 | 8 | 7 | 6 | 5 | 4 | 3 |
|-------|----|----|----|----|----|----|---|
| Mark | 64 | 52 | 41 | 31 | 21 | 12 | 5 |