

| Qn | Working | Answer | Mark | Notes |
|-----|---------|-------------------|------|--------------------------|
| 1 | | 6 | 1 | B1 |
| | | | | Total 1 mark |
| 2 | | 19 | 1 | B1 |
| | | | | Total 1 mark |
| 3 | | 14 squares shaded | 1 | B1 any 14 squares shaded |
| | | | | Total 1 mark |
| 4 | | a^{11} | 1 | B1 |
| | | | | Total 1 mark |
| 5 | | $5h$ | 1 | B1 oe |
| | | | | Total 1 mark |
| 6 | | $\frac{3}{4}$ | 1 | B1 oe |
| (a) | | | | |
| (b) | | $\frac{9}{10}$ | 1 | B1 oe |
| | | | | Total 3 marks |

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|----|---------|-----------------------------|------|--|
| 7 | (a) | 20 | 1 | B1 |
| | (b) | 32, “20”, 18, 22 | 2 | M1ft for at least 3 correct values or clear use of multiples of 8 |
| | | 92 | | A1ft 72 + “answer to (a)” |
| | (c) | 3 and $\frac{1}{4}$ symbols | 1 | B1 |
| | | | | Total 4 marks |
| 8 | (a) | Qatar | 1 | B1 |
| | (b) | 9 | 1 | B1 allow -9 |
| | (c) | -4 | 1 | B1 |
| | | | | Total 3 marks |
| 9 | | $3a + 11f$ | 2 | B2 oe eg $11f + 3a$ (B1 for $3a$ or $11f$) |
| | | | | Total 2 marks |

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|----|---|---------------|------|---|
| 10 | eg $\frac{30-12}{30} \left(= \frac{18}{30} \text{ oe} \right)$ | | 2 | M1 for $\frac{18}{30}$ or other correct but unsimplified fraction or an answer of $\frac{2}{5}$ |
| | | | | A1 |
| | | $\frac{3}{5}$ | | Total 2 marks |

| | | | | |
|----|--------|------------------|---|----------------------|
| 11 | (a)(i) | unlikely | 1 | B1 |
| | (ii) | evens | 1 | B1 |
| | (b) | cross shown at 0 | 1 | B1 |
| | | | | Total 3 marks |

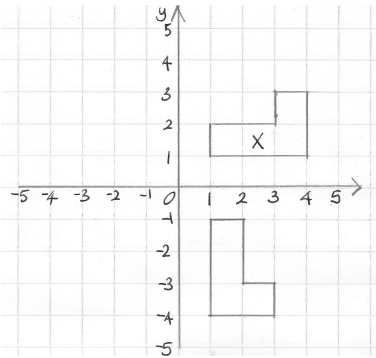
| | | | | |
|----|-------|---------|---|----------------------|
| 12 | (i) | 8 | 1 | B1 |
| | (ii) | 14 | 1 | B1 |
| | (iii) | 30 | 1 | B1 |
| | (iv) | 3 or 23 | 1 | B1 or both 3 and 23 |
| | | | | Total 4 marks |

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|--------|---------|--|------|--|
| 13 | | BB, BH, BA RB, RH, RA SB, SH, SA | 2 | B2 for all 9 combinations with no extras or repeats. (B1 for at least 5 correct combinations (ignoring extras and repeats)) |
| | | | | Total 2 marks |
| 14 | | 2.008, 2.081, 2.8, 2.803, 2.83 | 2 | B2 for all numbers in correct order (B1 for one number when covered leaves the others in order or for all numbers in correct reverse order) |
| | | | | Total 2 marks |
| 15 (a) | | 4.5 cm or 45 mm | 2 | B2 for 4.5 cm or 45 mm (allow 4.3 – 4.7 cm or 43 – 47 mm) (B1 for 4.5 (allow 4.3 – 4.7) or 45 (allow 43 – 47) or cm with a value from 4 – 5 or mm with a value from 40 – 50) |
| (b) | | 29 | 1 | B1 (± 2) |
| (c) | | the pair of parallel sides marked | 1 | B1 only 2 sides marked correctly |
| (d) | | pentagon | 1 | B1 |
| | | | | Total 5 marks |

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|--------|---------|--------------|------|---|
| 16 (a) | | Correct line | 1 | B1 line drawn at $y = -2$ |
| (b) | | $(-1, 2)$ | 2 | B2 for both coordinates correct If not B2, then B1 for one correct coordinate or $(2, -1)$ |
| (c) | | $(d =) 1$ | 1 | B1 accept $(5, 1)$ |
| | | | | Total 4 marks |

| | | | | |
|----|--|----------------------------|---|---|
| 17 | $(-2, -7), (-1, -5), (0, -3), (1, -1), (2, 1), (3, 3), (4, 5)$ | line $y = 2x - 3$ drawn | 3 | B3 For a correct line between $x = -2$ and $x = 4$ (B2 for a straight line segment through at least 3 of the given points OR for all of the points plotted and not joined OR for a line drawn through $(0, -3)$ with a clear attempt at a gradient of 2 (eg a line through $(0, -3)$ and $(1, -1)$) (B1 for at least 2 correct points stated or plotted (may be in table); ignore any incorrect points either plotted or evaluated OR for a line drawn with positive gradient through $(0, -3)$ OR for a straight line with gradient 2) |
| | | | | Total 3 marks |

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|----|---|----------|------|--|
| 18 | | w^{12} | 1 | B1 |
| | | | | Total 1 mark |
| 19 | eg $\frac{8}{18} + \frac{3}{18}$ or $\frac{24}{54} + \frac{9}{54}$ oe | | 2 | M1 for two fractions with a correct common denominator with at least one numerator correct |
| | eg $\frac{8}{18} + \frac{3}{18} = \frac{11}{18}$ or $\frac{24}{54} + \frac{9}{54} = \frac{33}{54} = \frac{11}{18}$ oe | | | A1 dep on M1, for a complete correct method leading to $\frac{11}{18}$ |
| | | | | Total 25 marks |

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| 20 (a) | |  | 2 | B2 for a correct rotation (B1 for a shape of the correct orientation in the incorrect position or for the correct shape in the correct position for a 90° anticlockwise rotation) |
| (b) | | Translation with vector $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$ | 2 | B1 Translation (with none of reflection, rotation, enlargement, mirrored, turned or flipped stated) B1 $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$ (award if no equation of line or angle of rotation or centre of rotation or scale factor or centre of enlargement mentioned) |
| | | | | Total 4 marks |

| Qn | Working | Answer | Mark | Notes |
|--------|----------------------------|------------------|------|---|
| 21 (a) | $2x^2 - 3x + 14x + 7$ (-5) | | 3 | M1 for at least 3 correct terms for the multiplying of the 2 brackets |
| | | | | M1 2 of the 3 correct terms in an expression in the form $ax^2 + bx + c$ where a , b and c are integers |
| | | $2x^2 + 11x + 2$ | | A1 can be any order |
| | | | | Total 3 marks |

| | | | | |
|--------|------------------------|-----------------------------------|---|---|
| 22 (a) | $700 \div 200 (= 3.5)$ | | 3 | M1 or 3.5 shown on diagram – within bounds of overlay |
| | | | | M1 for line drawn at correct angle $\pm 2^\circ$ within bounds of overlay |
| | | C indicated in correct position | | A1 for C drawn within bounds of overlay, inclusive of lines |
| (b) | | (1 :) 20 000 | 1 | B1 |
| | | | | Total 4 marks |

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|----|---------|--------|------|---|
| 23 | | | 3 | B3 all 4 parts of diagram correct (B2 for 2 or 3 parts correct) (B1 for 1 part correct) SCB1 if no marks scored, award B1 if 4,6 in the section $A \cap B'$ and 9, 11, 12, 13 in the section $A' \cap B$ |
| | | | | Total 3 marks |

| | | | | |
|----|---|--------------|---|---|
| 24 | $C - 5$ oe or $2C$ oe or $T =$ a linear expression in C | | 3 | M1 for one of $C - 5$ oe or $2C$ oe or $T =$ linear expression in C |
| | $C + C - 5 + 2C (= 4C - 5)$ oe or for $T =$ an expression in C with the expression in C coming from adding at least 2 of $C, 2C, C - 5$ eg $T = 2C + C - 5$ or $T = C + C^2 + C - 5$ | | | M1 |
| | | $T = 4C - 5$ | | A1 oe but must be simplified eg allow $T = 4 \times C - 5$ |
| | | | | Total 3 marks |

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|----|---|--------|------|--|
| 25 | eg $\frac{27}{4}$ and $\frac{18}{7}$ | | 3 | M1 Both fractions expressed as improper fractions. |
| | $\frac{27}{4} \times \frac{7}{18}$ oe or eg $\frac{189}{28} \div \frac{72}{28}$ | | | M1 for both fractions expressed as equivalent fractions with denominators that are a common multiple of 4 and 7 (seeing this stage gains M2) |
| | eg $\frac{27}{4} \times \frac{7}{18} = \frac{189}{72} = \frac{21}{8} = 2\frac{5}{8}$ or $\frac{27}{4} \times \frac{7}{18} = \frac{189}{72} = 2\frac{45}{72} = 2\frac{5}{8}$ or $\frac{27^3}{4} \times \frac{7}{18^2} = \frac{21}{8} = 2\frac{5}{8}$ or $\frac{189}{28} \div \frac{72}{28} = \frac{189}{72} = 2\frac{45}{72} = 2\frac{5}{8}$ oe if the student clearly shows $2\frac{5}{8} = \frac{21}{8}$ then they only need to complete the LHS to $\frac{21}{8}$ (often done in 1 st line of working) | shown | | A1 dep M2 conclusion to $2\frac{5}{8}$ from correct working – either sight of the result of the multiplication e.g. $\frac{189}{72}$ must be seen then cancelled or correct cancelling prior to the multiplication with $\frac{21}{8}$ seen. NB entire solution using decimals scores no marks. |
| | | | | Total 3 marks |

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|----|--|----------------|------|--|
| 26 | $2y - 4y + 8 - y^2$ | | 2 | M1 for 3 correct terms or for 4 correct terms ignoring signs or $\dots - 2y - y^2$ or $8 - 2y - \dots$ |
| | | $8 - 2y - y^2$ | | A1 Any order but simplified. |
| | | | | Total 2 marks |
| 27 | $5x \leq 2 + 7$ or $5x \leq 9$ or $\frac{5x}{5} - \frac{7}{5} \leq \frac{2}{5}$ oe | | 2 | M1 allow any sign instead of \leq or for an answer of 1.8 oe or x and 1.8 oe with the incorrect sign |
| | | $x \leq 1.8$ | | A1 oe |
| | | | | Total 2 marks |
| 28 | for at least two of: 8, 200, 0.5 | | 3 | M1 |
| | $\frac{1600}{0.5}$ or 8×400 or 16×200 | | | M1 |
| | | 3200 | | A1 dep M1 (allow 3000) |
| | | | | Total 3 marks |

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| 29 | | $5b^3c(3b^2 - 7c^8)$ | 2 | B2 fully correct or B1 for a correct partial factorisation with at least two terms outside the bracket eg $5b^3(3b^2c - 7c^9)$ or $5c(3b^5 - 7b^3c^8)$ etc or the fully correct factor outside the bracket with a two term expression in terms of b and c inside the bracket eg $5b^3c(15b^2 - c^8)$ |
| | | | | Total 2 marks |

| | | | | |
|--------|----------------------|------------------|---|--|
| 30 (a) | $(y \pm 7)(y \pm 5)$ | | 2 | M1 for $(y \pm 7)(y \pm 5)$ or $(y + a)(y + b)$ where $ab = -35$ or $a + b = -2$ |
| | | $(y - 7)(y + 5)$ | | A1 isw if student goes on to solve the equation in this part |
| (b) | | 7, -5 | 1 | B1ft answer must fit from their $(y + a)(y + b)$ in (b)(i). Award B0 for 7, -5 if no marks scored in (i) |
| | | | | Total 3 marks |

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| 31 | | $64x^{10}y^6$ | 2 | B2 if not B2 then award B1 for 2 correct parts as part of a product eg $kx^{10}y^6$ where $k \neq 64$ or $64x^ky^6$ where $k \neq 10$ or $64x^{10}y^k$ where $k \neq 6$ |
| | | | | Total 2 marks |
| 32 | $c + 8v = t^3$ | | 2 | M1 |
| | | $t = \sqrt[3]{c+8v}$ | | A1 oe |
| | | | | SCB1 for an answer of $t = \frac{c+8v}{3}$ oe |
| | | | | Total 2 marks |

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|----|---------|--------|------|-------|

| Qn | Mean score | Max score | Mean % | Edexcel averages: scores of candidates who achieved grade: | | | | | | |
|----|------------|-----------|--------|--|------|------|------|------|------|------|
| | | | | ALL | 5 | 4 | 3 | 2 | 1 | U |
| 1 | 0.92 | 1 | 92 | 0.92 | 1.00 | 0.98 | 0.94 | 0.83 | 0.58 | 0.33 |
| 2 | 0.88 | 1 | 88 | 0.88 | 0.98 | 0.94 | 0.90 | 0.76 | 0.57 | 0.22 |
| 3 | 0.74 | 1 | 74 | 0.74 | 0.95 | 0.85 | 0.66 | 0.41 | 0.19 | 0.02 |
| 4 | 0.71 | 1 | 71 | 0.71 | 0.93 | 0.82 | 0.61 | 0.38 | 0.15 | 0.02 |
| 5 | 0.69 | 1 | 69 | 0.69 | 0.86 | 0.70 | 0.56 | 0.53 | 0.46 | 0.24 |
| 6 | 1.85 | 2 | 93 | 1.85 | 1.97 | 1.96 | 1.88 | 1.68 | 1.26 | 0.87 |
| 7 | 3.51 | 4 | 88 | 3.51 | 3.82 | 3.75 | 3.55 | 3.06 | 2.58 | 1.02 |
| 8 | 2.73 | 3 | 91 | 2.73 | 2.89 | 2.82 | 2.75 | 2.52 | 2.33 | 1.34 |
| 9 | 1.57 | 2 | 79 | 1.57 | 1.90 | 1.76 | 1.41 | 1.13 | 0.71 | 0.22 |
| 10 | 1.51 | 2 | 76 | 1.51 | 1.83 | 1.72 | 1.46 | 1.01 | 0.51 | 0.04 |
| 11 | 2.38 | 3 | 79 | 2.38 | 2.61 | 2.47 | 2.34 | 2.08 | 1.75 | 1.21 |
| 12 | 3.03 | 4 | 76 | 3.03 | 3.60 | 3.29 | 2.93 | 2.13 | 1.40 | 0.58 |
| 13 | 1.46 | 2 | 73 | 1.46 | 1.80 | 1.63 | 1.33 | 1.03 | 0.45 | 0.00 |
| 14 | 1.50 | 2 | 75 | 1.50 | 1.83 | 1.60 | 1.45 | 1.01 | 0.75 | 0.28 |
| 15 | 3.46 | 5 | 69 | 3.46 | 4.45 | 3.75 | 3.04 | 2.23 | 1.13 | 0.52 |
| 16 | 2.56 | 4 | 64 | 2.56 | 3.41 | 2.75 | 2.16 | 1.61 | 0.56 | 0.08 |
| 17 | 1.70 | 3 | 57 | 1.70 | 2.69 | 2.00 | 0.93 | 0.33 | 0.05 | 0.00 |
| 18 | 0.58 | 1 | 58 | 0.58 | 0.88 | 0.66 | 0.36 | 0.20 | 0.05 | 0.02 |
| 19 | 1.14 | 2 | 57 | 1.14 | 1.78 | 1.28 | 0.65 | 0.32 | 0.13 | 0.00 |
| 20 | 1.93 | 4 | 48 | 1.93 | 2.71 | 2.10 | 1.54 | 1.01 | 0.26 | 0.09 |
| 21 | 1.42 | 3 | 47 | 1.42 | 2.38 | 1.46 | 0.74 | 0.24 | 0.04 | 0.00 |
| 22 | 1.53 | 4 | 38 | 1.53 | 2.42 | 1.66 | 0.93 | 0.40 | 0.03 | 0.03 |
| 23 | 1.18 | 3 | 39 | 1.18 | 1.76 | 1.12 | 0.84 | 0.65 | 0.30 | 0.20 |
| 24 | 1.05 | 3 | 35 | 1.05 | 1.77 | 1.02 | 0.58 | 0.27 | 0.06 | 0.04 |
| 25 | 1.03 | 3 | 34 | 1.03 | 1.83 | 1.02 | 0.38 | 0.17 | 0.04 | 0.03 |
| 26 | 0.71 | 2 | 36 | 0.71 | 1.26 | 0.67 | 0.32 | 0.07 | 0.01 | 0.00 |
| 27 | 0.71 | 2 | 36 | 0.71 | 1.35 | 0.62 | 0.21 | 0.10 | 0.01 | 0.00 |

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|----|---------|--------|------|-------|

| Qn | Mean score | Max score | Mean % | Edexcel averages: scores of candidates who achieved grade: | | | | | | |
|----|--------------|-----------|-----------|--|--------------|--------------|--------------|--------------|--------------|-------------|
| | | | | ALL | 5 | 4 | 3 | 2 | 1 | U |
| 28 | 0.79 | 3 | 26 | 0.79 | 1.57 | 0.59 | 0.20 | 0.08 | 0.02 | 0.00 |
| 29 | 0.49 | 2 | 25 | 0.49 | 1.00 | 0.38 | 0.09 | 0.04 | 0.00 | 0.00 |
| 30 | 0.69 | 3 | 23 | 0.69 | 1.51 | 0.41 | 0.08 | 0.04 | 0.00 | 0.06 |
| 31 | 0.44 | 2 | 22 | 0.44 | 0.83 | 0.37 | 0.15 | 0.09 | 0.03 | 0.04 |
| 32 | 0.47 | 2 | 24 | 0.47 | 0.94 | 0.35 | 0.14 | 0.06 | 0.02 | 0.00 |
| | 45.36 | 80 | 57 | 45.36 | 61.51 | 47.50 | 36.11 | 26.47 | 16.43 | 7.50 |

Suggested grade boundaries

| Grade | 5 | 4 | 3 | 2 | 1 |
|-------|----|----|----|----|----|
| Mark | 55 | 42 | 31 | 21 | 12 |