| 1 |  |  | 0.2 | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |

| 2 |  |  | 7 | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |

| 3 |  |  | 5*cd* | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |

| 4 |  |  | 60 | 1 | B1 | allow 60% |
| --- | --- | --- | --- | --- | --- | --- |

| 5 |  |  | 3000 | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |

| 6 |  | e.g. , , , , , |  | 2 | M1 | for any fraction equivalent to  with denominator less than 40 |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | A1 |  |

| 7 |  | 3 × 4 + 2 × 7 **or** 12 + 14 |  | 2 | M1 |  |
| --- | --- | --- | --- | --- | --- | --- |

| 8 | a |  | New York | 1 | B1 | accept −15 |
| --- | --- | --- | --- | --- | --- | --- |
|  | b |  | 25 | 1 | B1 | accept −25 |
|  | c |  | −28 | 1 | B1 |  |
|  |  |  |  |  |  | **Total 3 marks** |

| 9 | (a) |  | 100 | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | (b) |  | 1 ¾ pictures | 1 | B1 |  |
|  | (c) | oe oror 50 + 65 + 100 + 85 + 35 (= 335) |  | 3 | M1 | ft from (b) for adding up the number of squares or finding the total number of books – allow one error or omission |
|  |  | 500 – ‘’ × 20 oe or 500 – ‘335’ |  |  | M1 | ft |
|  |  |  | 165 |  | A1 |  |
|  |  |  |  |  |  | Total 5 marks |

| 10 | a |  | 26 or 64 | 1 | B1 | or both 26 and 64 with no others |
| --- | --- | --- | --- | --- | --- | --- |
|  | b |  | 21 or 39 | 1 | B1 | or both 21 and 39 with no others |
|  | c |  | 17 or 31 | 1 | B1 | or both 17 and 31 with no others |
|  | d |  | 1 or 64 | 1 | B1 | or both 1 and 64 with no others |
|  |  |  |  |  |  | Total 4 marks |

| 11 |  |  | 6*k* + 11*m* | 2 | B2 | If not B2 then award  B1 for 6*k* **or** 11*m* |
| --- | --- | --- | --- | --- | --- | --- |

| 12 | a |  | (3, −1) | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | b |  | (×) at (−2, −4) | 1 | B1 | condone missing label as long on unambiguous |
|  | c |  | (−1, 2) | 2 | B2 | B1 for (−1, *a*) where *a* ≠ 2  **or** (*b*, 2) where *b* ≠ −1 |
|  | d |  | *x* = 4 drawn | 1 | B1 |  |
|  |  |  |  |  |  | **Total 5 marks** |

| 13 | (a) |  | cylinder | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | (b)(i) |  | 6 | 1 | B1 |  |
|  | (b)(ii) |  | 8 | 1 | B1 |  |
|  | (c) | 20 × 8 × 11 |  | 2 | M1 |  |
|  |  |  | 1760 |  | A1 |  |
|  |  |  |  |  |  | **Total 5 marks** |

| 14 | (a) |  | 2, 4, 6, 12 | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | (b) |  |  | 2 | M1 | for  with *a* < 14 **or**  with *b* > 3 **or**  for 3 and 14 used with incorrect notation e.g. 3 : 14 |
|  |  |  |  |  | A1 | for  oe **or**  0.214(…) |
|  |  |  |  |  |  | **Total 3 marks** |

| 15 |  |  | oe | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |

| 16 | a |  |  | 2 | M1 | for at least 2 correct tallies or frequencies |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 2, 5, 4, 3, 2 |  | A1 | mark frequencies only – in either column |
|  | b |  | 1 | 1 | B1 | allow ft from (a) |
|  | c |  | 4 | 1 | B1 |  |
|  |  |  |  |  |  | **Total 4 marks** |

| 17 | (a) |  | pentagon | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | (b) |  | 85 | 1 | B1 | for 83 – 87 |
|  | (c) |  | parallel sides marked | 1 | B1 | No additional sides marked |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18 |  | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | ***x*** | −2 | −1 | 0 | 1 | 2 | 3 | | ***y*** | 15 | 11 | 7 | 3 | −1 | −5 |   (−2, 15) (−1, 11) (0, 7) (1, 3) (2, −1) (3, −5) | Correct line between  *x* = −2  and *x* = 3 | 3 | B3 | for a correct line between  *x* = −2 and *x* = 3  (B2 for a correct straight line segment through at least 3 of (−2, 15) (−1, 11) (0, 7) (1, 3) (2, −1) (3, −5)  **or**  for all of (−2, 15) (−1, 11) (0, 7) (1, 3) (2, −1) (3, −5) plotted but not joined)  (B1 for at least 2 correct points stated (may be in a table) **or** plotted **or** for a line drawn with a negative gradient through (0, 7) **or** for a line with a gradient of −4) |
|  |  |  |  |  |  | **Total 3 marks** |

| 19 | (c) |  | *T* = 6*g* + 12*h* | 3 | B3 | for *T* = 6*g* + 12*h* oe  (B2 for 6*g* + 12*h* oe **or** *T* = 6*g* + *ah* **or** *T* = *bg* + 12*h* **or**  *T* = 12*g* + 6*h* oe)  (B1 for 6*g* + *ah* **or** *bg* + 12*h* o**r** 12*g* + 6*h* **or** for an incorrect expression in *g* and *h* eg *T* = *g* + *h* ) |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | **Total 3 marks** |

| 20 | a |  | 1, 3, 9 | 1 | B1 | need all three but ignore any repeats |
| --- | --- | --- | --- | --- | --- | --- |
|  | b | 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, 180, 195, 210 **and** 70, 140, 210**OR** 3 × 5 **and** 2 × 5 × 7**OR** 2 × 3 × 5 × 7 (2, 3, 5, 7) oe eg 3 × 5 × 14 (3, 5, 14)  |  |  |  | | --- | --- | --- | | 3 | 15 | 70 | | 5 | 5 | 70 | | 7 | 1 | 14 | | 2 | 1 | 2 | |  | 1 | 1 |  |  |  |  | | --- | --- | --- | | 5 | 15 | 70 | | 3 | 3 | 14 | | 14 | 1 | 14 | |  | 1 | 1 | |  | 2 | M1 | for listing at least three multiples of 15 and 70 **or** finding the prime factors of 15 and 70 (could be factors at the ends of branches of factor trees or lists 3, 5 and 2, 5, 7) or a correct calculation or the correct values for the LCM eg 2,3,5,7 or 3,5,14 oe (could be in a table) |
|  |  |  | 210 |  | A1 |  |
|  |  |  |  |  |  | **Total 3 marks** |

| 21 |  |  | (3,5) (5,5) (5,8) | 2 | B2 | If not B2 then award  B1 for a reflection in *x* = 2  [(1,−1) (−1,−1) (−1,−4)]  **or** for correct shape in the correct orientation |
| --- | --- | --- | --- | --- | --- | --- |

| 22 | (a) | or |  | 2 | M1 | For inverting  and a clear intention to multiply or for writing both fractions correctly over the same common denominator |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | or or | Clearly shown |  | A1 | dep on M1  continued to clearly show given result |
|  |  |  |  |  |  | **Total 2 marks** |
|  | (b) | or |  | 2 | M1 | for correct fractions with a common denominator (multiple of 24) |
|  |  | eg | Shown |  | A1 | for a multiple of |

| 23 |  | 20 – 5*x* (= 7 – 3*x*) |  | 3 | M1 | for expansion of bracket |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | E.g. 20 – 7 = −3*x* + 5*x* or  −5*x* + 3*x* = 7 – 20 |  |  | M1 | ft from a 4-term equation  for a correct process of isolating terms in *x* on one side of the equation and numbers on the other side |
|  |  |  | 6.5 oe |  | A1 | dep on M2 awarded |

| 24 |  |  |  | 3 | B1 | Rotation (with none of reflection, translation, enlargement, mirrored, flipped or moved  (up, right, left, down etc) stated) |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | B1 | (centre) (0,0) or origin (O) (award if no vector or equation of line or SF mentioned) |
|  |  |  | Rotation of 90o anticlockwise about (0,0) |  | B1 | 90o anticlockwise  or 270o clockwise |
|  |  |  |  |  |  | **Total 3 marks** |

| 25 |  | 4*x* > 2 – 7 oe or  oe |  | 2 | M1 | accept as an equation or with wrong inequality sign. |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | *x* > −1.25 |  | A1 | oe allow (−1.25, (+))  Note: award M1A0 for an answer of −1.25 with no sign or the incorrect sign  eg *x* = −1.25, *x* < −1.25 |
|  |  |  |  |  |  | **Total 5 marks** |

| 26 |  | eg 4*x* + 3*y* = 17 − 4*x* + 8*y* = 20  **or**  eg 4(5 – 2*y*) + 3*y* = 17 | eg 8*x* + 6*y* = 34− 3*x* + 6*y* = 15 **or**  eg 4*x* + 3 × ½(5 – *x*) = 17 |  | 3 | M1 | Correct method to eliminate *x* or *y*: coefficients of *x* or *y* the same **and** correct operation to eliminate selected variable (condone any one arithmetic error in multiplication) **or** writing *x* or *y* in terms of the other variable and correctly substituting |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | eg 4*x* + 3 × 0.6 = 17**or** *x* + 2 × 0.6 = 5 | eg 4 × 3.8 + 3*y* = 17**or** 3.8 + 2*y* = 5 |  |  | M1 | (dep) correct method to find second variable – could start process again or use substitution |
|  |  |  | | *x* = 3.8 *y* = 0.6 |  | A1 | oe for both solutions dep on first M1 |
|  |  |  | |  |  |  | **Total 3 marks** |

| 27 |  | *c* + *h* = 5*y* or  or |  | 2 | M1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | A1 | oe if the student puts on the answer line then if we have previously see  *y* = we can award full marks |
|  |  |  |  |  |  |  |

| 28 |  |  |  | 2 | M1 | for any **correct** partial factorisation with at least 2 factors, one of which must be a letter **or** the correct common factor with no more than 1 error inside the bracket |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 8*m*2 *g*3(2*m* + 3*g*2) |  | A1 |  |

| 29 | a |  | *g*10 | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | b |  | 9*c*2*d*8 | 2 | B2 | B1 for 2 out of 3 terms correct as part of a product |

| 30 | (a) |  |  | 2 | M1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | (*y* – 8)(*y* + 6) |  | A1 |  |
|  | (b) |  | 8, −6 | 1 | B1 | **must** ft from their factors in (c)(i) |
|  |  |  |  |  |  | **Total 3 marks** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | **Edexcel averages: scores of candidates who achieved grade:** | | | | | |
| **Qn** | **Skill tested** | **Mean score** | **Max score** | **Mean %** | **ALL** | **5** | **4** | **3** | **2** | **1** |
| **1** | Fractions | 0.93 | 1 | 93 | 0.93 | 0.98 | 0.98 | 0.90 | 0.80 | 0.82 |
| **2** | Linear equations | 0.92 | 1 | 92 | 0.92 | 0.99 | 0.97 | 0.94 | 0.81 | 0.61 |
| **3** | Algebraic manipulation | 0.88 | 1 | 88 | 0.88 | 0.97 | 0.95 | 0.87 | 0.72 | 0.58 |
| **4** | Decimals | 0.85 | 1 | 85 | 0.85 | 0.98 | 0.92 | 0.81 | 0.69 | 0.42 |
| **5** | Measures | 0.75 | 1 | 75 | 0.75 | 0.89 | 0.82 | 0.63 | 0.66 | 0.36 |
| **6** | Fractions | 1.82 | 2 | 91 | 1.82 | 1.96 | 1.90 | 1.82 | 1.70 | 1.33 |
| **7** | Expressions and formulae | 1.71 | 2 | 86 | 1.71 | 1.96 | 1.83 | 1.70 | 1.42 | 0.70 |
| **8** | Integers | 2.52 | 3 | 84 | 2.52 | 2.87 | 2.75 | 2.53 | 2.02 | 1.02 |
| **9** | Graphical representation of data | 4.19 | 5 | 84 | 4.19 | 4.74 | 4.46 | 4.13 | 3.78 | 2.01 |
| **10** | Powers and roots | 3.20 | 4 | 80 | 3.20 | 3.65 | 3.37 | 3.17 | 2.62 | 1.91 |
| **11** | Expressions and formulae | 1.56 | 2 | 78 | 1.56 | 1.92 | 1.66 | 1.49 | 1.19 | 0.48 |
| **12** | Graphs | 3.41 | 5 | 68 | 3.41 | 4.46 | 3.79 | 2.94 | 2.00 | 1.08 |
| **13** | 3D shapes and volume | 3.63 | 5 | 73 | 3.63 | 4.52 | 3.76 | 3.38 | 2.45 | 1.82 |
| **14a** | Set language and notation | 0.70 | 1 | 70 | 0.70 | 0.82 | 0.75 | 0.69 | 0.58 | 0.30 |
| **14b** | Set language and notation | 0.97 | 2 | 49 | 0.97 | 1.43 | 1.04 | 0.84 | 0.39 | 0.12 |
| **15** | Fractions | 0.58 | 1 | 58 | 0.58 | 0.85 | 0.62 | 0.52 | 0.22 | 0.00 |
| **16** | Statistical measures | 2.51 | 4 | 63 | 2.51 | 2.92 | 2.63 | 2.53 | 1.76 | 1.39 |
| **17** | Angles, lines and triangles | 1.65 | 3 | 55 | 1.65 | 2.19 | 1.81 | 1.50 | 0.81 | 0.45 |
| **18** | Graphs | 1.46 | 3 | 49 | 1.46 | 2.37 | 1.65 | 0.97 | 0.36 | 0.18 |
| **19** | Expressions and formulae | 1.51 | 3 | 50 | 1.51 | 2.29 | 1.54 | 1.26 | 0.70 | 0.15 |
| **20** | Integers | 1.47 | 3 | 49 | 1.47 | 2.20 | 1.50 | 1.09 | 0.73 | 0.64 |
| **21** | Transformation geometry | 0.98 | 2 | 49 | 0.98 | 1.53 | 0.97 | 0.72 | 0.53 | 0.27 |
| **22a** | Fractions | 0.92 | 2 | 46 | 0.92 | 1.54 | 0.91 | 0.56 | 0.43 | 0.33 |
| **22b** | Fractions | 0.83 | 2 | 42 | 0.83 | 1.51 | 0.78 | 0.43 | 0.36 | 0.18 |
| **23** | Linear equations | 1.25 | 3 | 42 | 1.25 | 2.24 | 1.07 | 0.74 | 0.50 | 0.33 |
| **24** | Transformation geometry | 0.95 | 3 | 32 | 0.95 | 1.53 | 1.02 | 0.78 | 0.16 | 0.12 |
| **25** | Inequalities | 0.64 | 2 | 32 | 0.64 | 1.24 | 0.52 | 0.38 | 0.15 | 0.15 |
| **26** | Simultaneous linear equations | 0.81 | 3 | 27 | 0.81 | 1.88 | 0.64 | 0.20 | 0.12 | 0.06 |
| **27** | Expressions and formulae | 0.62 | 2 | 31 | 0.62 | 1.45 | 0.35 | 0.22 | 0.14 | 0.06 |
| **28** | Algebraic manipulation | 0.37 | 2 | 19 | 0.37 | 0.91 | 0.24 | 0.11 | 0.02 | 0.00 |
| **29a** | Use of symbols | 0.76 | 1 | 76 | 0.76 | 0.94 | 0.81 | 0.70 | 0.55 | 0.30 |
| **29b** | Use of symbols | 0.34 | 2 | 17 | 0.34 | 0.78 | 0.24 | 0.13 | 0.05 | 0.00 |
| **30** | Quadratic equations | 0.37 | 3 | 23 | 0.37 | 1.04 | 0.15 | 0.06 | 0.02 | 0.00 |
|  | **TOTAL** | **46.06** | **80** | **58** | **46.06** | **62.55** | **47.40** | **39.74** | **29.44** | **18.17** |

**Suggested grade boundaries**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Grade** | **5** | **4** | **3** | **2** | **1** |
| Mark | 50 | 43 | 35 | 24 | 15 |