|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **1** |  | × 1000 (= 1000) | ÷ 1000 (= 0.03) |  | 3 | M1 |
|  |  | ÷ 30 (= 33.3…) | ÷ ‘0.03’ (= 33.3…) |  |  | M1 |
|  |  |  | | 33 |  | A1  SC B2 for 33.3……. or 34 |
|  | |  | |  |  | **Total 3 marks** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **2** | (a) | 16 : 40 or 8 : 20 or 4 : 10 |  | 2 | M1 for any correct cancelling or 5 : 2 |
|  |  |  | 2 : 5 |  | A1 cao |
|  | (b) |  |  | 1 | B1 |
|  | |  |  |  | **Total 3 marks** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **3** |  | 240 ÷ 3 (= 80) **or** 240 ÷ 3 × 2 (= 160) |  | 4 | M1 for finding the number of large ice creams or small ice creams |
|  |  | ‘80’ × 3.8 (= 304) |  |  | M1 for finding the cost of large ice creams |
|  |  | (640 – ‘304’) ÷ ‘160’ |  |  | M1 for a complete method to find the cost of a small ice cream |
|  |  |  | 2.1(0) |  | A1 |
|  | |  |  |  | **Total 4 marks** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **4** |  | A: 0.6 × (2 × 80) (= 96)  B: 0.6 × 80 (= 48)  C: 0.55 × 80 (= 44)  D: (0.6 – 0.55) × 80 (= 4) |  | 4 | M2 for **two** compatible values:  AC or BC or BD  **or**  2 × 60 – 55 (= 65%)  If not M2 then award M1 for any **one** of A or B or C or D |
|  |  |
|  |  | E.g. ‘96’ – ‘44’ **or** 48 + (48 – 44) **or** 48 + ‘4’ **or** ‘0.65’ × 80 |  |  | M1 for a complete method |
|  |  |  | 52 |  | A1 |
|  | |  |  |  | **Total 4 marks** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **5** | (a)(i) |  | | 38 | 1 | B1 |
|  | (ii) |  | | Angles in a triangle sum to 180o | 1 | B1 Allow  Angles in a triangle sum to 180o |
|  | (b) | Quad *ABDE*360 – 78 – 90 – 17 – (a)(i) (360 – 223) | Line and quad *ACDE*  360 – 90 – 78 – (180 – 125)  360 – 90 – 78 – ‘55’ |  | 3 | M1 ft from (ai) |
|  |  |  | | 137 |  | A1 |
|  |  |  | | Reason(s) |  | B1 for full reasons  E.g. Angles in a quadrilateral sum to 360o  (accept Angles in a quadrilateral sum to 360o)  **OR**  Angles on a straight line sum to 180o  (accept Angles on a straight line sum to 180o )  **and**  Angles in a quadrilateral sum to 360o  (accept Angles in a quadrilateral sum to 360o)  Accept 4 sided shape for quadrilateral |
|  | |  | |  |  | **Total 5 marks** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **6** |  | E.g.12 × 9 (=108) **or** (9 – 6) × *x* (= 3*x*) |  | 4 | M1 for one correct relevant area |
|  |  | E.g. 129 – ‘108’ (= 21) **or**  ‘108’ + ‘3*x*’ = 129 **or** |  |  | M1 dep on M1for 129 used correctly with another area  **or**  for a correct equation (ft) with bracket(s) expanded |
|  |  | E.g. ‘21’ ÷ (9 – 6) **or**  *x* = |  |  | M1 for a complete method |
|  |  |  | 7 |  | A1 |
|  |  | |  |  | **Total 4 marks** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **7** | (a) | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | |  | |  | |  | |  | |  | | pattern 4 drawn | 1 | B1 |
|  | (b) |  | 10, 12 | 1 | B1 |
|  | (c) | 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 **or**  2 × 30 + 2 **or** 12 + (25 × 2) **or** 4 + (29 × 2) **or**  31 × 2 **or** uses or states 2*n* + 2 |  | 2 | M1 for adding 2 and continuing to at least pattern 15 (allow one error) **or** for a correct diagram **or** any correct method which would lead to 62 |
|  |  |  | 62 |  | A1 |
|  | (d) | E.g. *n*th term is 2*n* + 2 oe **or**  gives a counter example e.g. when *n* = 1, 2*n* gives 2 (not 4) | No with reason | 1 | B1 oe |
|  | |  |  |  | **Total 5 marks** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **8** | (a) |  | 3 < *w* ≤ 4 | 1 | B1 |
|  | (b) | (12 × 2.5) + (16 × 3.5) + (9 × 4.5) +(2 × 5.5) + (1 × 6.5)**or**30 + 56 + 40.5 + 11 + 6.5 (= 144) |  | 4 | M2 for at least **4** correct products added (need not be evaluated) **or**  If not M2 then award  M1 for consistent use of value within interval (including end points) for at least **4** products which must be added  **or**  correct midpoints used for at least **4** products and not added |
|  |  | [(12 × 2.5) + (16 × 3.5) + (9 × 4.5) +(2 × 5.5) + (1 × 6.5)] ÷ 40 **or**  ‘144’ ÷ 40 |  |  | M1 dep on at least M1  Allow division by their Σ*f* provided addition or total under column seen |
|  |  |  | 3.6 |  | A1 oe |
|  | (c) |  |  | 2 | M1 for  where 0 < *a* < 40 or  where *b* > 3 where *a* and *b* are integers |
|  |  |  |  |  | A1 0.075 oe |
|  |  | |  |  | **Total 7 marks** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **9** | (a) |  | | 310 | 1 | B1 for 308 – 312 |
|  | (b) | [8.3, 8.7] | |  | 4 | B1 for 8.3 – 8.7 |
|  |  | ‘[8.3, 8.7]’ × 20  (= ‘[166,174]’) | 24 ÷ 20 (=1.2) |  |  | M1 |
|  |  | ‘[166, 174]’ ÷ 24  ([6.9….., 7.3]) | ‘[8.3, 8.7]’ ÷ ‘1.2’  ([6.9….., 7.3]) |  |  | M1 |
|  |  |  | | 7 |  | A1 |
|  |  |  | |  |  | **Total 5 marks** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **10** | (a) | oe **or** oe **or**  360 ÷ (40 ÷ 16) |  | 2 | M1 Allow two stages e.g.  oe |
|  |  |  | 144 |  | A1 cao |
|  | (b) | E.g.  48 ÷ 192 × 56 oe **or**  oe **or**  (192 ÷ 48 (= 4) **and)** 56 ÷ ‘4’ **or**  192 ÷ 56 (= 3.4…) **and** 48 ÷ ‘3.4…’ |  | 2 | M1 |
|  |  |  | 14 |  | A1 cao |
|  | |  |  |  | **Total 4 marks** |

| 11 |  | e.g. 36 × 50 (= 1800) |  |  | M1 | for calculating outgoings  could work in £ or p throughout |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | e.g. 36 ×× 60 (= 1080) **or** 36 ×× 40 (= 480)  **or** 36 ×× 25 (= 150) |  |  | M1 | for working out one source of income |
|  |  | e.g. 36 ×× 60 **+** 36 ×× 40 **+** 36 ×× 25 (= 1710) |  |  | M1 | for complete method to find the total income |
|  |  | e.g.  **or** |  |  | M1 | (dep on first 2 method marks) complete method to find percentage loss |
|  |  |  | 5 | 5 | A1 | accept −5 |
|  |  |  |  |  |  | **Total 5 marks** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **12** | (a) | 1, 2, 4, 7, 14, 28 **and** 1, 2, 5, 7, 10, 14, 35, 70 **or**2 × 2 × 7 **and** 2 × 5 × 7 **or**  2  2  7  5 |  | 2 | M1for starting to list at least **four** factors of each number  **or** 2, 2, 7 **and**  2, 5, 7 seen (may be in a factor tree and ignore 1)  **or** a fully correct Venn diagram |
|  |  |  | 14 |  | A1 cao |
|  | (b) | 28, 56, 84, 112… **and** 105, 210, 315, 420…**or**  2, 2, 7 **and**  3, 5, 7  **or**  **or** **or** 2, 2, 3, 5, 7 oe |  | 2 | M1for any correct valid method e.g.  for starting to list at least **four** multiples of each number  **or** 2, 2, 7 and3, 5, 7 seen (may be in a factor tree and ignore 1)  **or** a fully correct Venn diagram |
|  |  |  | 420 |  | A1 cao |
|  | |  |  |  | **Total 4 marks** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **13** |  | 120 ÷ (3 + 5) (= 15) |  | 6 | M1 | M2 for  (= 45) **or**  (= 75) oe |
|  |  | ‘15’ × 3 (= 45) **or** ‘15’ × 5 (= 75) |  |  | M1 |
|  |  | ‘45’ ÷ 3 (= 15) **or**  ‘45’ ÷ 3 × 2 (= 30) |  |  | M1 | |
|  |  | ‘75’ ×  (= 48) **or** ‘75’ ×  (= 27) |  |  | M1 | |
|  |  | E.g.(‘45’ ÷ 3 × 2) + (‘75’ × ) oe **or** ‘27’ + ‘30’ **or**  (‘75’ – ‘48’) + (‘45’ – ‘15’) |  |  | M1 for a complete method | |
|  |  |  | 57 |  | A1 | |
|  |  | |  |  | **Total 6 marks** | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **14** | (a) |  | 0.000 78 | 1 | B1 |
|  | (b) | 22 500 000 oe e.g. 22.5 × 106**or**  2.25 × 10*n**n* ≠ 7 |  | 2 | M1 |
|  |  |  | 2.25 × 107 |  | A1 |
|  |  | |  |  | **Total 3 marks** |

| 15 |  | e.g. 36 ÷ (2 + 6) (= 4.5) **or** oe  **or** Asha = £9 **OR** Julie = £27 |  |  | M1 |  | |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | e.g. 3 × “4.5” **or**  **or**  **or** |  |  | M1 | or an answer of | |
|  |  |  | 13.5(0) | 3 | A1 | SCB1 for 36/5 × 6 (=43.2) or 36/9 × 2 (=8) | |
|  |  |  |  |  |  | | **Total 3 marks** |

| 16 |  | 30 = |  | 3 | M2 | M1 for |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 0.75 |  | A1 | oe |
|  |  |  |  |  |  | **Total 3 marks** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **17** | (a) | or |  | 2 | M1 for a correct method to find one coordinate **or** for one coordinate correct **or** for (−1.5, 9) |
|  |  |  | (9, −1.5) |  | A1 Accept (9, −) |
|  | (b) |  | −3 | 1 | B1 |
|  | (c) |  | No with reason | 1 | B1 No (oe) and e.g. line goes through (100, −298) or (101.3..), −302) or  or (3 × 100) – 302 = −2 not (+)2 |
|  |  |  |  |  | **Total 4 marks** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **18** |  | cos 63 =  **or**sin 27 = **or****or** oe |  | 3 | M1 for a correct trigonometric ratio | M2 for  oe  **and**  oe |
|  |  | (*PQ* =) **or**(*PQ* =) **or** |  |  | M1 for a correct rearrangement for *PQ* |
|  |  |  | 53.5 |  | A1 Accept 53.5 - 53.53 | |
|  |  | |  |  | **Total 3 marks** | |

| 19 |  | e.g. 6(*x* – 1) (= 6*x* – 6) |  |  | M1 | method to find expression for perimeter of hexagon |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | e.g. 2(*x* + 5) + 2*x* – 3 (= 4*x* + 7) |  |  | M1 | method to find expression for perimeter of triangle |
|  |  | “6*x* – 6” = “4*x* + 7” |  |  | M1 | (dep on at least M1) for equating both expressions |
|  |  | e.g. 6*x* – 4*x* = 7 + 6 |  |  | M1 | (dep on previous M1 and equation of the form  *ax* + *b* = *cx* + *d* )for rearranging the *x* terms on one side and the numerical terms on the other and all expansions correct. |
|  |  |  | 5.5 | 5 | A1 | oe (dep on M2) |
|  |  |  |  |  |  | **Total 5 marks** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | **Edexcel averages: scores of candidates who achieved grade:** | | | | | | |
| Qn | **Paper** | **Question** | **Skill tested** | **Max score** | **Mean %** | **ALL** | **5** | **4** | **3** | **2** | **1** | **U** |
| 1 | **1F** | Q03b | Measures | 3 | 73 | 2.18 | 2.80 | 2.58 | 2.29 | 1.77 | 1.08 | 0.49 |
| 2 | **1F** | Q10 | Fractions | 3 | 71 | 2.12 | 2.73 | 2.56 | 2.29 | 1.78 | 0.76 | 0.13 |
| 3 | **1F** | Q09 | Applying number | 4 | 64 | 2.57 | 3.72 | 3.41 | 2.75 | 1.56 | 0.55 | 0.10 |
| 4 | **1F** | Q12 | Percentages | 4 | 58 | 2.33 | 3.60 | 3.12 | 2.46 | 1.27 | 0.34 | 0.09 |
| 5 | **1F** | Q07 | Geometrical reasoning | 5 | 61 | 3.03 | 4.36 | 3.87 | 3.16 | 2.06 | 0.85 | 0.22 |
| 6 | **1F** | Q16 | Mensuration of 2D shapes | 4 | 51 | 2.02 | 3.80 | 2.97 | 1.75 | 0.65 | 0.24 | 0.09 |
| 7 | **1F** | Q04 | Sequences | 5 | 66 | 3.31 | 4.31 | 3.68 | 3.27 | 2.72 | 2.30 | 1.54 |
| 8 | **1F** | Q17 | Probability | 7 | 49 | 3.46 | 5.95 | 4.87 | 3.25 | 1.61 | 0.40 | 0.04 |
| 9 | **1F** | Q13 | Measures | 5 | 50 | 2.51 | 3.90 | 3.26 | 2.52 | 1.60 | 0.59 | 0.10 |
| 10 | **1F** | Q11 | Graphical representation of data | 4 | 46 | 1.82 | 3.42 | 2.51 | 1.68 | 0.67 | 0.15 | 0.00 |
| 11 | **1FR** | Q12 | Fractions | 5 | 56 | 2.79 | 4.09 | 3.00 | 2.26 | 2.08 | 0.62 | 0.33 |
| 12 | **1F** | Q15 | Applying number | 4 | 46 | 1.85 | 2.96 | 2.36 | 1.81 | 1.10 | 0.54 | 0.04 |
| 13 | **1F** | Q18 | Ratio and proportion | 6 | 38 | 2.28 | 4.77 | 3.37 | 1.86 | 0.50 | 0.05 | 0.07 |
| 14 | **1F** | Q20 | Standard form | 3 | 42 | 1.26 | 2.20 | 1.67 | 1.15 | 0.63 | 0.28 | 0.09 |
| 15 | **1FR** | Q14 | Ratio and proportion | 3 | 43 | 1.28 | 2.37 | 1.37 | 0.72 | 0.85 | 0.00 | 0.00 |
| 16 | **2FR** | Q23 | Measures | 3 | 38 | 1.15 | 2.54 | 1.17 | 0.49 | 0.22 | 0.00 | 0.00 |
| 17 | **1F** | Q14 | Graphs | 4 | 19 | 0.75 | 1.65 | 0.92 | 0.56 | 0.28 | 0.11 | 0.03 |
| 18 | **1F** | Q22 | Trigonometry and Pythagoras' Theorem | 3 | 19 | 0.56 | 1.63 | 0.68 | 0.27 | 0.05 | 0.02 | 0.03 |
| 19 | **1FR** | Q24 | Linear equations | 5 | 20 | 1.01 | 2.70 | 0.85 | 0.32 | 0.00 | 0.00 | 0.00 |
|  |  |  |  | **80** | **48** | **38.28** | **63.50** | **48.22** | **34.86** | **21.40** | **8.88** | **3.39** |

**Suggested grade boundaries**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Grade** | **5** | **4** | **3** | **2** | **1** |
| Mark | 50 | 41 | 28 | 15 | 6 |