| Qn |  | **Working** | **Answer** | **Marks** | **Notes** | |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | (a) | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **orange** | **blue** | **yellow** | **total** | | **small** | ***6*** | 7 | 14 | ***27*** | | **large** | 13 | ***16*** | ***4*** | 33 | | **total** | ***19*** | 23 | ***18*** | 60 | |  | 3 | B3 | All 6 entries correct  B2 for 4 or 5 correct entries  B1 for 2 or 3 correct entries |
|  | (b) |  |  | 1 | B1 | Allow 0.38(333...) or 38(.33...)% |
|  | (c) |  |  | 2 | B2 | B1 for where n < 33  or where m > 13 |
|  |  |  |  |  |  | **Total 6 marks** |

| 2 | a |  | 24.9 | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | b |  | 7.1 | 1 | B1 | oe |
|  | c | 7 ÷ 8 × 100 oe |  |  | M1 |  |
|  |  |  | 87.5 | 2 | A1 |  |
|  |  |  |  |  |  | **Total 4 marks** |

| 3 |  | eg 1 × 6 + 2 × 3.50 + 4 × 4.20 (= 29.8(0)) 40 – 1 × 6 – 2 × 3.50 (= 27.(00)) |  |  | M1 | for working with at least three of hammer, nails, wood, money, gloves |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | 40 – (1 × 6 + 2 × 3.50 + 4 × 4.20) (= 10.2(0)) |  |  | M1 | complete method to find the remaining money |
|  |  | “10.20” ÷ 1.80 (= 5.66...)**or** [their remaining money]÷ 1.80**or** 1.80 × 5 (= 9) **or** 1.80 × 6 (= 10.8(0)) |  |  | M1 | (dep on M1) method to find the number of pairs of gloves |
|  |  |  | 5 | 4 | A1 | SC B2 for an answer of 14 |
|  |  |  |  |  |  | **Total 4 marks** |

| 4 |  | 10 × 5 + 30 × 11 + 50 × 8 + 70 × 19 + 90 × 9 (50 + 330 + 400 + 1330 + 810) |  | 3 | M2 | Correct products using midpoints (allowing one error) with intention to add.  M1 for products using frequency and a consistent value within the range (allowing one error) with intention to add.  or correct products using midpoint without intention to add. |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 2920 |  | A1 | N.B. 2920 ÷ 52(=56.15...) gains M2 only |
|  |  |  |  |  |  | **Total 3 marks** |

| 5 | (a) |  | 156 000 000 | 1 | B1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | (b) |  | Arctic | 1 | B1 |  |
|  | (c) |  | 3.74 × 107 | 2 | B2 | B1 for 37 400 000 (oe but not in standard form) |
|  |  |  |  |  |  | **Total 4 marks** |

| 6 |  |  | 9 hours 45 mins | 2 | B2 | B1 for 9 hours or 45 minutes |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | **Total 2 marks** |

| 7 |  | 8.5² + 5.6² (=103.61) |  | 3 | M1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | M1 |  |
|  |  |  | 10.2 |  | A1 | awrt 10.2 |
|  |  |  |  |  |  | **Total 3 marks** |

| 8 | (a) |  |  | 1 | B1 | Correct diagram |
| --- | --- | --- | --- | --- | --- | --- |
|  | (b) |  | 13, 16 | 1 | B1 | Both values correct |
|  | (c) |  | 22 | 1 | B1 |  |
|  | (d) |  | *C* = 3*P* – 2 oe | 2 | B2 | B1 for 3*P*  or 3*P* + constant (constant ≠ – 2) |
|  | (e) |  | (Yes) pattern 28 has 136 triangles | 1 | B1 | or 5 × 28 − 4 = 136 oe  Sight of 28 is sufficient |
|  |  |  |  |  |  | **Total 6 marks** |

| 9 |  | *n* – 3 = 13 oe or *n* = 16or (6 + *m*) ÷ 2 = 8.5 oe or *m* = 11 |  | 2 | M1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | *n* = 16 & *m* = 11 |  | A1 | Both values correct |
|  |  |  |  |  |  | **Total 2 marks** |

| 10 |  | (*BC* =) 96 – 30 (=66) |  | 3 | M1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | 96 + (66 ÷ 3) oe |  |  | M1 |  |
|  |  |  | 118 |  | A1 |  |
|  |  |  |  |  |  | **Total 3 marks** |

| 11 |  | 28 ÷ 4 (= 7) |  |  | M1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | M1 | for using at least six lengths correctly (may be seen on diagram or in calculation) |
|  |  | e.g. “7” + “3” + 4 + “3” + “7” + 4 + “7” + 4 + “7” + 4 |  |  | M1 | for a complete method to find perimeter |
|  |  |  | 50 | 4 | A1 |  |
|  |  |  |  |  | SC | Award B2 for an answer of 66 or 68 |
|  |  |  |  |  |  | **Total 4 marks** |

| 12 |  | 4*x* or *x* − 7 |  | 4 | M1 | Correct expression for *B* or *C* |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | *x* + 4*x* + *x* – 7 = 137 oe |  |  | M1 | Correct equation |
|  |  | *x* = 144 ÷ 6 (=24) or 6*x* = 144 |  |  | M1 | Gathering up the *x*’s and numbers  Dep on previous M1 |
|  |  |  | 17 |  | A1 |  |
|  |  |  |  |  |  | **Total 4 marks** |

| 13 | (a) | oe |  | 2 | M1 | Numerator and denominator must be integers. |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | A1 |  |
|  | (b) | × 6.8 oe |  | 2 | M1 |  |
|  |  |  | 2.72 |  | A1 |  |
|  | (c) | × 100 oe |  | 2 | M1 |  |
|  |  |  | 7.5 |  | A1 |  |
|  |  |  |  |  |  | **Total 6 marks** |

| 14 |  |  |  | 4 | M1 | Could be marked on diagram |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 21 |  | A1 |  |
|  |  | vertically opposite, (are equal)angles at (around) a point, (= 360°)angles in a triangle (= 180°) |  |  | B2 | B2 for 3 correct reasons which must include the underlined words  B1 for 1 or 2 correct reasons which must include the underlined words  Any B marks dep on M1 |
|  |  |  |  |  |  | **Total 4 marks** |

| 15 |  | 3 hours 36 mins = 216 mins or 3.6 hours |  | 3 | M1 |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | 2470 ÷ 3.6 or 2470 ÷ 216 × 60 oe |  |  | M1 | Allow 2470 ÷ 3.36 (=735 or better) |
|  |  |  | 686 |  | A1 |  |
|  |  |  |  |  |  | **Total 3 marks** |

| 16 |  | 20 000 × 0.813 |  |  | M2 | M1 for 20 000 × 0.81 (= 16 200)  or 20 000 × 1.19 (= 23 800)  or 20 000 × 1.193 (= 33 703.18)) |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 10 629 |  | A1 | Accept 10 628 → 10.629 |
|  |  |  |  |  |  | **Total 3 marks** |

| 17 | a |  | 050 | 1 | B1 | ±2°, condone 50 |
| --- | --- | --- | --- | --- | --- | --- |
|  | b | 7 × 2.5 |  |  | M1 | allow 6.8 – 7.2 for 7 |
|  |  |  | 17.5 | 2 | A1 | accept 17-18 |
|  | c |  |  |  | M1 | for a bearing of 115±2° from *A* |
|  |  |  |  |  | M1 | for 20 2.5 (= 8) **or** for an arc drawn 8 cm from *B* within tolerance |
|  |  |  | *C* marked within tolerance | 3 | A1 |  |
|  |  |  |  |  |  | **Total 6 marks** |

| 18 |  | 1.5 × 2 × 8 (= 24 (cm3)) |  |  | M1 | for finding the volume of the cuboid | |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | e.g. (*V* = )  (= 296.58...) **or** (*M* = ) 19.32 × “24” (= 463.68) |  |  | M2 | complete method to find the volume of statue **or** the mass of one block, could work in g or kg  (if not M2 then award M1 for correct use of density formula e.g.  **or** ) | |
|  |  | e.g. “296.58” ÷ “24” (= 12.3576...) **or** “5730” ÷ “463.68” (= 12.3576...) |  |  | M1 | could work in g or kg | |
|  |  |  | 13 | 5 | A1 | cao | |
|  |  |  |  |  |  | | **Total 5 marks** |

| 19 | a |  | 4.35 | 1 | B1 | accept |
| --- | --- | --- | --- | --- | --- | --- |
|  | b |  | 4.25 | 1 | B1 | cao |
|  |  |  |  |  |  | **Total 2 marks** |

| 20 |  | 28 × 5 (= 140) **OR** 26.5 × 2 (= 53) |  |  | M1 | or 87 |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | (28 × 5 − 26.5 × 2) ÷ (5 – 2) |  |  | M1 | for a complete method |
|  |  |  | 29 | 3 | A1 |  |
|  |  |  |  |  |  | **Total 3 marks** |

| 21 |  | 20.40 ÷ (1 – 0.15) |  |  | M2  (M1) | for a complete method eg 20.40 ÷ (1 – 0.15)  for 20.40 ÷ (100 – 15) (= 0.24)  **or** e.g. 0.85*x* = 20.40 | |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 24 | 3 | A1 |  | |
|  |  |  |  |  |  | | **Total 3 marks** |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Qn** | **Paper** | **Question** | **Skill tested** | **Max score** | **Mean %** | **ALL** | **5** | **4** | **3** | **2** | **1** |
| **1** | **2FR** | Q08 | Probability | 6 | 89 | 5.36 | 5.76 | 5.66 | 5.30 | 4.89 | 3.34 |
| **2** | **1FR** | Q09 | Fractions | 4 | 84 | 3.35 | 3.85 | 3.52 | 3.27 | 3.07 | 2.26 |
| **3** | **1FR** | Q04 | Applying number | 4 | 78 | 3.10 | 3.63 | 3.35 | 2.83 | 2.77 | 1.75 |
| **4** | **2FR** | Q16 | Statistical measures | 3 | 66 | 1.97 | 2.57 | 2.38 | 1.74 | 1.11 | 0.00 |
| **5** | **2FR** | Q24 | Standard form | 4 | 70 | 2.80 | 3.44 | 3.15 | 2.58 | 1.81 | 1.34 |
| **6** | **2FR** | Q06 | Measures | 2 | 63 | 1.26 | 1.54 | 1.43 | 1.08 | 0.96 | 0.67 |
| **7** | **2FR** | Q19 | Trigonometry and Pythagoras' Theorem | 3 | 54 | 1.63 | 2.80 | 2.13 | 1.04 | 0.26 | 0.00 |
| **8** | **2FR** | Q09 | Expressions and formulae | 6 | 64 | 3.84 | 4.79 | 3.84 | 3.48 | 3.21 | 3.00 |
| **9** | **2FR** | Q10 | Statistical measures | 2 | 54 | 1.08 | 1.72 | 1.28 | 0.79 | 0.52 | 0.00 |
| **10** | **2FR** | Q05 | Applying number | 3 | 49 | 1.48 | 2.39 | 1.79 | 1.06 | 0.52 | 0.50 |
| **11** | **1FR** | Q08 | Mensuration of 2D shapes | 4 | 48 | 1.93 | 3.22 | 2.20 | 1.49 | 0.69 | 1.00 |
| **12** | **2FR** | Q17 | Linear equations | 4 | 51 | 2.02 | 3.54 | 2.17 | 1.32 | 0.93 | 0.00 |
| **13** | **2FR** | Q14 | Percentages | 6 | 51 | 3.04 | 4.87 | 3.25 | 2.43 | 1.45 | 0.33 |
| **14** | **2FR** | Q15 | Angles, lines and triangles | 4 | 48 | 1.92 | 2.93 | 2.13 | 1.66 | 0.78 | 0.17 |
| **15** | **2FR** | Q20 | Measures | 3 | 51 | 1.54 | 2.57 | 1.57 | 1.17 | 0.74 | 0.17 |
| **16** | **2FR** | Q22 | Percentages | 3 | 40 | 1.21 | 2.39 | 1.40 | 0.53 | 0.37 | 0.00 |
| **17** | **1FR** | Q10 | Measures | 6 | 41 | 2.46 | 3.87 | 2.50 | 2.21 | 1.28 | 0.62 |
| **18** | **1FR** | Q23 | Measures | 5 | 30 | 1.49 | 3.02 | 1.87 | 0.70 | 0.23 | 0.00 |
| **19** | **1FR** | Q19 | Degree of accuracy | 2 | 32 | 0.63 | 1.09 | 0.58 | 0.56 | 0.08 | 0.50 |
| **20** | **1FR** | Q22 | Statistical measures | 3 | 31 | 0.93 | 2.00 | 0.85 | 0.64 | 0.23 | 0.00 |
| **21** | **1FR** | Q21 | Percentages | 3 | 25 | 0.75 | 1.57 | 0.78 | 0.34 | 0.23 | 0.00 |
|  |  |  |  | **80** | **55** | **43.79** | **63.56** | **47.83** | **36.22** | **26.13** | **15.65** |

**Suggested grade boundaries**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Grade** | **5** | **4** | **3** | **2** | **1** |
| Mark | 54 | 41 | 31 | 21 | 11 |