CALC C · MARK SCHEME

# GCSE Mathematics · Foundation Tier

40 marks · 45 minutes · Calculator

**M** method **A** accuracy (depends on M) **B** independent **P** process **C** communication
oe or equivalent cao correct answer only ft follow through Accept any correct, fully justified method.

## Question 1

Multiples · N4 · Number · AO1 · 1 mark

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 1 | 42 or 49 | B1 | Accept either |

## Question 2

Fractions, decimals, percentages · N10 · Number · AO1 · 2 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 2(a) | 0.375 | B1 | cao |
| 2(b) | 4.5 | B1 | cao |

## Question 3

Metric units · N13 · Number · AO1 · 1 mark

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 3 | 3.75 | B1 | cao |

## Question 4

Mean and range · S4 · Statistics · AO1 · 3 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 4(a) | 15.02 | M1 | For 90.1 ÷ 6 |
| | | A1 | Accept 15.01 to 15.02 |
| 4(b) | 2.5 | B1 | cao |

## Question 5

Simplifying expressions · A4 · N7 · Algebra · AO1 · 2 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 5(a) | 12$ab$ | B1 | Accept 12$ba$ |
| 5(b) | $n^7$ | B1 | cao |

## Question 6

Transformations · G7 · Geometry & measures · AO1 · 4 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 6(a) | **Triangle at (0, 1), (–3, 1), (0, 3)** | **B2** | B1 for a reflection in any vertical line, or for 2 vertices correct |
| 6(b) | **Rotation 180° about (0, 0)** | **B1** | For rotation and 180° (direction not needed) |
| | | **B1** | For centre (0, 0) or the origin. Enlargement scale factor –1, centre (0, 0) also scores B2 |

## Question 7

Simple interest · R9 · Ratio & proportion · AO1 · 2 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 7 | **252** | **M1** | For 2400 × 0.035 (= 84) or 2400 × 0.035 × 3 |
| | | **A1** | cao |

## Question 8

Venn diagrams · P6 · Probability · AO1/2 · 3 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 8(a) | **21, 7, 12 and 10** | **B2** | 21 in F only, 7 in the overlap, 12 in T only, 10 outside. B1 for 7 in the overlap with one other correct value |
| 8(b) | $\frac{10}{50}$ **oe** | **B1** | ft their Venn diagram. Accept $\frac{1}{5}$, 0.2 or 20% |

## Question 9

Equations with brackets · A17 · Algebra · AO1 · 3 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 9 | 5 | M1 | For $8x - 12$ seen |
| | | M1 | For collecting terms correctly, e.g. $5x = 25$ |
| | | A1 | cao |

## Question 10

Money problem · N2 · N13 · Number · AO3 · 3 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 10 | 4 | P1 | For $159 - 45$ (= 114) |
| | | P1 | For $114 \div 28.50$ |
| | | A1 | cao |

## Question 11

Highest common factor · N4 · Number · AO3 · 3 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 11 | 5 | P1 | For a method to find common factors, e.g. prime factors $2 \times 2 \times 3 \times 7$ and $2 \times 3 \times 3 \times 7$ |
| | | P1 | For HCF = 42 (cm) |
| | | A1 | cao (2 red and 3 blue pieces) |

## Question 12

Patterns and sequences · A23 · A25 · Algebra · AO2 · 3 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 12(a) | 31 | B1 | cao |
| 12(b) | 33 | M1 | For $3n + 1$ seen, or continuing the sequence in 3s, or $(100 - 1) \div 3$ |
| | | A1 | cao |

## Question 13

Density · R11 · N13 · Ratio & proportion · AO2 · 3 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 13 | 7.9 | M1 | For $2.7 \times 1000$ (= 2700) |
| | | M1 | For $2700 \div 340$ (= 7.94...) |
| | | A1 | cao. $2.7 \div 340$ (= 0.0079...) scores M0 M1 A0 |

## Question 14

Pythagoras' theorem · G20 · Geometry & measures · AO3 · 3 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 14 | Yes, with 6.24... m | P1 | For $6.5^2 - 1.8^2$ (= 39.01) |
| | | P1 | For $\sqrt{39.01}$ (= 6.245...) |
| | | C1 | For 'Yes' with 6.24... or 6.25 (compared with 6.2) |

## Question 15

Percentages and ratio · R9 · R5 · Ratio & proportion · AO3 · 4 marks

| QN | ANSWER | MARK | GUIDANCE |
|---|---|---|---|
| 15 | 198 | P1 | For 1260 × 0.55 (= 693) or 1260 − 1260 × 0.45 |
| | | P1 | For their 693 ÷ 7 (= 99) |
| | | P1 | For their 99 × 2 |
| | | A1 | cao |

# Paper overview

| Q | TOPIC | SPEC REF | STRAND | AO | MARKS |
|---|---|---|---|---|---|
| 1 | Multiples | N4 | Number | AO1 | 1 |
| 2 | Fractions, decimals, percentages | N10 | Number | AO1 | 2 |
| 3 | Metric units | N13 | Number | AO1 | 1 |
| 4 | Mean and range | S4 | Statistics | AO1 | 3 |
| 5 | Simplifying expressions | A4 · N7 | Algebra | AO1 | 2 |
| 6 | Transformations | G7 | Geometry & measures | AO1 | 4 |
| 7 | Simple interest | R9 | Ratio & proportion | AO1 | 2 |
| 8 | Venn diagrams | P6 | Probability | AO1/2 | 3 |
| 9 | Equations with brackets | A17 | Algebra | AO1 | 3 |
| 10 | Money problem | N2 · N13 | Number | AO3 | 3 |
| 11 | Highest common factor | N4 | Number | AO3 | 3 |
| 12 | Patterns and sequences | A23 · A25 | Algebra | AO2 | 3 |
| 13 | Density | R11 · N13 | Ratio & proportion | AO2 | 3 |
| 14 | Pythagoras' theorem | G20 | Geometry & measures | AO3 | 3 |
| 15 | Percentages and ratio | R9 · R5 | Ratio & proportion | AO3 | 4 |
| **Total** | | | | | **40** |

## Marks by strand

| | |
|---|---|
| Number | **10 marks (25%)** |
| Algebra | **8 marks (20%)** |
| Ratio & proportion | **9 marks (22%)** |
| Geometry & measures | **7 marks (18%)** |
| Probability | **3 marks (8%)** |
| Statistics | **3 marks (8%)** |

## Marks by assessment objective

| | | |
|---|---|---|
| AO1 | Standard techniques | **20 marks (50%)** |
| AO2 | Reasoning | **7 marks (18%)** |
| AO3 | Problem solving | **13 marks (32%)** |