CALC F · 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

Simplifying · A1 · A4 · Algebra · AO1 · 1 mark

QN	ANSWER	MARK	GUIDANCE
1	y^3	B1	cao

Question 2

Using a calculator · N6 · N2 · Number · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
2	**16.324**	M1	For 2.5 or 13.824 seen
		A1	cao

Question 3

Percentage increase · R9 · Ratio & proportion · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
3	**276**	M1	For 240 × 0.15 (= 36) or 240 × 1.15
		A1	cao

Question 4

Substitution · A2 · Algebra · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
4	**21.4**	M1	For 2 × 7.5 + 2 × 3.2 or 15 + 6.4
		A1	cao

Question 5

Prime factors · N4 · Number · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
5	**$2^3 \times 3^2 \times 5$**	M1	For a full factor tree or repeated division with at most one error, or 2, 2, 2, 3, 3, 5 listed
		A1	Accept 2 × 2 × 2 × 3 × 3 × 5 in any order

Question 6

Angles in polygons · G3 · Geometry & measures · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
6(a)	**45**	**B1**	cao
6(b)	**15**	**M1**	For 180 – 156 (= 24) as the exterior angle, or $(n - 2) \times 180 = 156n$
		A1	cao

Question 7

Error intervals · N15 · Number · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
7	**$7.35 \leq L < 7.45$**	**B1**	For 7.35 in the correct position
		B1	For 7.45 in the correct position

Question 8

Best buy · R10 · N2 · Ratio & proportion · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
8	**Large, with correct comparison**	**P1**	For a method to compare, e.g. 285 ÷ 250 (= 1.14p per ml) or 250 ÷ 2.85 (= 87.7 ml per £)
		P1	For a complete method for both sizes, e.g. 1.14 and 1.1(0), or the cost of 2000 ml for each (£22.80 and £22)
		C1	For 'Large' supported by correct figures

Question 9

Relative frequency · P5 · Probability · AO1/2 · 2 marks

QN	ANSWER	MARK	GUIDANCE
9(a)	$\frac{46}{200}$ oe	B1	Accept 0.23 or 23%
9(b)	115	B1	ft their (a) × 500

Question 10

Forming and solving equations · A21 · G3 · Algebra · AO2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
10	77	M1	For $x + 2x + 10 + 3x - 16 = 180$ or $6x - 6 = 180$
		M1	For solving to get $x = 31$
		A1	cao. The angles are 31°, 72° and 77°

Question 11

Changing the subject · A5 · Algebra · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
11	$t = \frac{v - u}{5}$	M1	For a correct first step, e.g. $5t = v - u$
		A1	oe, e.g. $\frac{v}{5} - \frac{u}{5}$

Question 12

Mean from grouped data · S4 · Statistics · AO1 · 3 marks

QN	ANSWER	MARK	GUIDANCE
12	21	M1	For using midpoints 5, 15, 25, 35 with the frequencies, e.g. 20 + 135 + 300 + 175 (= 630)
		M1	For their $\Sigma fx \div 30$ (dependent on first M1)
		A1	cao

Question 13

Compound interest · R16 · Ratio & proportion · AO2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
13	**No, with £3863.35**	M1	For 3500 × 1.025 (= 3587.50) or 1.025 as a multiplier
		M1	For 3500×1.025^4 written as 3500 × 1.025 × 1.025 × 1.025 × 1.025, or year-by-year to 3863.3(4...)
		C1	For 'No' with 3863.3(4) or 3863.35. Simple interest (3850) scores M0 M0 C0

Question 14

Fractions and percentages · N12 · R9 · Number · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
14	874	P1	For $1840 \times \frac{3}{8}$ (= 690) or 1840 × 0.15 (= 276)
		P1	For 1840 – 690 – 276, or $1840 \times (1 - \frac{3}{8} - 0.15)$
		A1	cao

Question 15

Pythagoras in context · G20 · Geometry & measures · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
15	**Yes, with 4.59 m**	**P1**	For $4.8^2 - 1.4^2$ (= 23.04 – 1.96 = 21.08)
		P1	For $\sqrt{21.08}$
		C1	For 'Yes' with 4.59 (4.591...). Adding squares (5 m) scores P0 P0 C0

Question 16

Density problem · R11 · G16 · Ratio & proportion · AO3 · 4 marks

QN	ANSWER	MARK	GUIDANCE
16	**9**	**P1**	For 6 × 4 × 2.5 (= 60 cm^3)
		P1	For 60 × 8.96 (= 537.6 g)
		P1	For 5000 ÷ 537.6 (= 9.3...) or 5 ÷ 0.5376, units consistent
		A1	cao. 10 (rounding up) scores P1 P1 P1 A0

Paper overview

Q	TOPIC	SPEC REF	STRAND	AO	MARKS
1	Simplifying	A1 · A4	Algebra	AO1	1
2	Using a calculator	N6 · N2	Number	AO1	2
3	Percentage increase	R9	Ratio & proportion	AO1	2
4	Substitution	A2	Algebra	AO1	2
5	Prime factors	N4	Number	AO1	2
6	Angles in polygons	G3	Geometry & measures	AO1/2	3
7	Error intervals	N15	Number	AO1	2
8	Best buy	R10 · N2	Ratio & proportion	AO3	3
9	Relative frequency	P5	Probability	AO1/2	2
10	Forming and solving equations	A21 · G3	Algebra	AO2	3
11	Changing the subject	A5	Algebra	AO1	2
12	Mean from grouped data	S4	Statistics	AO1	3
13	Compound interest	R16	Ratio & proportion	AO2	3
14	Fractions and percentages	N12 · R9	Number	AO3	3
15	Pythagoras in context	G20	Geometry & measures	AO3	3
16	Density problem	R11 · G16	Ratio & proportion	AO3	4
Total					**40**

Marks by strand

Number	**9 marks (22%)**
Algebra	**8 marks (20%)**
Ratio & proportion	**11 marks (28%)**
Geometry & measures	**7 marks (18%)**
Probability	**2 marks (5%)**
Statistics	**3 marks (8%)**

Marks by assessment objective

AO1	Standard techniques	**18 marks (45%)**
AO2	Reasoning	**9 marks (22%)**
AO3	Problem solving	**13 marks (32%)**