CALC H · 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

Reciprocals · N3 · Number · AO1 · 1 mark

QN	ANSWER	MARK	GUIDANCE
1	$\frac{1}{8}$ or 0.125	B1	cao

Question 2

Significant figures · N15 · Number · AO1 · 1 mark

QN	ANSWER	MARK	GUIDANCE
2	3000	B1	cao

Question 3

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

QN	ANSWER	MARK	GUIDANCE
3	10.976	M1	For 27.44 seen, or 23.04 and 4.4 seen
		A1	cao

Question 4

Percentages and ratio · R9 · R3 · R4 · Ratio & proportion · AO1 · 3 marks

QN	ANSWER	MARK	GUIDANCE
4(a)	45	M1	For $\frac{36}{80} \times 100$ or 0.45
		A1	cao
4(b)	9 : 20	B1	cao

Question 5

Solve linear equations · A17 · Algebra · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
5	5	M1	For $3x + 12 = 27$ or $x + 4 = 9$
		A1	cao

Question 6

Substitution · A2 · Algebra · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
6	72.5	M1	For 5 × 16 or 80 seen, or 3 × 2.5 = 7.5 seen
		A1	cao. –87.5 (from $-4^2 = -16$) scores M1 A0 only if 7.5 seen

Question 7

Compound area · G17 · G18 · Geometry & measures · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
7	10	P1	For $\pi \times 3^2 \div 2$ (= 14.1...) or 10 × 6 (= 60)
		P1	For 60 + 14.1... (= 74.1...) and ÷ 8 (= 9.26...)
		A1	cao. Using radius 6 (116.5..., 15 bags) scores P0 P1 A0

Question 8

Comparing distributions · S4 · S1 · Statistics · AO1/2 · 4 marks

QN	ANSWER	MARK	GUIDANCE
8(a)	24	M1	For 144 ÷ 6, or 18 + 31 + 22 + 27 + 26 + 20 (= 144)
		A1	cao
8(b)	Two comparisons	C1	Comparing averages in context, e.g. Team B scored more on average (24 > 21)
		C1	Comparing spread using range 13 for Team B, e.g. Team B's scores were more consistent (13 < 19)

Question 9

Frequency trees · P6 · P3 · Probability · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
9(a)	**45, 14, 27**	**B2**	30 and over 45; under 30 no bike 14; 30 and over no bike 27. B1 for 45 or 14 correct
9(b)	$\frac{21}{39}$ **oe**	**B1**	Accept $\frac{7}{13}$ or 0.538...; ft from their tree

Question 10

Depreciation · R16 · R9 · Ratio & proportion · AO2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
10	**Yes, with £9881.34**	**M1**	For 14 500 × 0.88 (= 12 760) or 0.88 used as a multiplier
		M1	For 14 500 × 0.88^3 or a year-by-year method to 9881.3(4)
		C1	For 'Yes' with 9881.34 (accept 9881 or 9880). 36% off (9280) scores M0 M0 C0

Question 11

Similar shapes · G6 · G19 · Geometry & measures · AO2 · 2 marks

QN	ANSWER	MARK	GUIDANCE
11	**22.5**	**M1**	For a scale factor of 2.5 ($\frac{15}{6}$) or $\frac{9}{6}$ = 1.5
		A1	cao

Question 12

Bearings · G15 · Geometry & measures · AO2 · 2 marks

QN	ANSWER	MARK	GUIDANCE
12	**244**	**M1**	For 64 + 180, or 180° angle on the diagram at *B* (alternate/co-interior angles)
		A1	cao

Question 13

Truncation and error intervals · N15 · N16 · Number · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
13	**$4.8 \leq y < 4.9$**	**B2**	B1 for $4.8 \leq y$ or $y < 4.9$, or for $4.75 \leq y < 4.85$ (rounding)

Question 14

Combining ratios · R4 · R5 · R8 · Ratio & proportion · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
14	**320**	**P1**	For a common blue share, e.g. 8 : 12 and 12 : 15, or red : blue : white = 8 : 12 : 15
		P1	For 600 ÷ 15 (= 40) or 600 ÷ 5 × 4 (= 480 ml blue)
		A1	cao

Question 15

Comparing costs · N2 · N13 · Number · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
15	**Plan A, by £11**	**P1**	For 18 × 24 (= 432) or 9.50 × 24 (= 228)
		P1	For both totals: 477 and 488
		A1	For Plan A and £11

Question 16

Forming and solving equations · A21 · A17 · Algebra · AO3 · 4 marks

QN	ANSWER	MARK	GUIDANCE
16	**130**	**P1**	For an expression for the perimeter, e.g. $2(2x + 3) + 2(x + 5)$ or $6x + 16$
		P1	For $6x + 16 = 46$
		P1	For $x = 5$ and sides 13 and 10
		A1	cao

Paper overview

Q	TOPIC	SPEC REF	STRAND	AO	MARKS
1	Reciprocals	N3	Number	AO1	1
2	Significant figures	N15	Number	AO1	1
3	Using a calculator	N2 · N6	Number	AO1	2
4	Percentages and ratio	R9 · R3 · R4	Ratio & proportion	AO1	3
5	Solve linear equations	A17	Algebra	AO1	2
6	Substitution	A2	Algebra	AO1	2
7	Compound area	G17 · G18	Geometry & measures	AO3	3
8	Comparing distributions	S4 · S1	Statistics	AO1/2	4
9	Frequency trees	P6 · P3	Probability	AO1/2	3
10	Depreciation	R16 · R9	Ratio & proportion	AO2	3
11	Similar shapes	G6 · G19	Geometry & measures	AO2	2
12	Bearings	G15	Geometry & measures	AO2	2
13	Truncation and error intervals	N15 · N16	Number	AO1	2
14	Combining ratios	R4 · R5 · R8	Ratio & proportion	AO3	3
15	Comparing costs	N2 · N13	Number	AO3	3
16	Forming and solving equations	A21 · A17	Algebra	AO3	4
Total					**40**

Marks by strand

Number	**9 marks (22%)**
Algebra	**8 marks (20%)**
Ratio & proportion	**9 marks (22%)**
Geometry & measures	**7 marks (18%)**
Probability	**3 marks (8%)**
Statistics	**4 marks (10%)**

Marks by assessment objective

AO1	Standard techniques	**17 marks (42%)**
AO2	Reasoning	**10 marks (25%)**
AO3	Problem solving	**13 marks (32%)**