CALC E · 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

Ordering negative numbers · N1 · Number · AO1 · 1 mark

QN	ANSWER	MARK	GUIDANCE
1	**–7, –3.5, –1, 0.5, 2**	**B1**	cao

Question 2

Lowest common multiple · N4 · Number · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
2	**72**	**M1**	For listing at least 3 multiples of each number, or 2 × 3 × 3 and 2 × 2 × 2 × 3
		A1	cao

Question 3

Fractions, decimals, percentages · N10 · N1 · Number · AO1/2 · 2 marks

QN	ANSWER	MARK	GUIDANCE
3(a)	**35**	**B1**	cao
3(b)	$\frac{5}{8}$	**C1**	With 0.625 (or 62.5% and 60%, or $\frac{25}{40}$ and $\frac{24}{40}$) shown

Question 4

VAT · R9 · Ratio & proportion · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
4	**462**	**M1**	For 385 × 0.2 (= 77) or 385 × 1.2
		A1	cao

Question 5

Substitution · A2 · Algebra · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
5	**22.6**	**M1**	For 2 × (7.4 + 3.9) or 7.4 + 3.9 (= 11.3)
		A1	cao

Question 6

Comparing distributions · S4 · S1 · Statistics · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
6(a)	**58**	**B1**	cao
6(b)	**Two comparisons**	**C1**	For comparing medians in context, e.g. class A did better on average as 61 > 58 (ft their median)
		C1	For comparing ranges using range for B = 33, e.g. class A's scores were more consistent as 20 < 33

Question 7

Exterior angles · G3 · Geometry & measures · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
7(a)	**15**	**B1**	cao (360 ÷ 24)
7(b)	**156**	**B1**	ft 180 – 24

Question 8

Relative frequency · P5 · P2 · Probability · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
8(a)	$\frac{26}{80}$ **oe**	**B1**	Accept $\frac{13}{40}$, 0.325 or 32.5%
8(b)	**65**	**B1**	ft 200 × their (a)
8(c)	**No, with reason**	**C1**	e.g. a fair spinner would land on 4 about 20 times in 80 (0.25), and 26 is quite a lot more. Accept 'Yes, 80 spins is not enough to tell' with a reason

Question 9

Solving equations · A17 · Algebra · AO1 · 3 marks

QN	ANSWER	MARK	GUIDANCE
9(a)	8.6	M1	For $x + 7 = 15.6$
		A1	oe
9(b)	7 or –7	B1	Accept ± 7, or 7 only

Question 10

Recipes · R10 · R3 · Ratio & proportion · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
10	No: not enough flour	P1	For a scale factor of 2.5 (15 ÷ 6) or amounts for 3 people (150 g, 1 egg, 225 ml)
		P1	For at least two of 750 g, 5 eggs, 1125 ml
		C1	For 'No' with 750 g flour needed (more than 700 g), and eggs and milk enough

Question 11

Map scales · R2 · G15 · Ratio & proportion · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
11	3.4	M1	For 6.8 × 50 000 (= 340 000 cm)
		A1	cao

Question 12

Circumference · G17 · Geometry & measures · AO2 · 2 marks

QN	ANSWER	MARK	GUIDANCE
12	6.4	M1	For 40 ÷ π (= 12.73...) ÷ 2, or 40 ÷ (2π)
		A1	Accept 6.36 to 6.4

Question 13

Straight-line graphs · A9 · A12 · Algebra · AO1 · 3 marks

QN	ANSWER	MARK	GUIDANCE
13(a)	–5, –3, –1, 1, 3	B1	cao
13(b)	Correct straight line from (–1, –5) to (3, 3)	B2	B1 for at least 3 points plotted correctly (ft their table)

Question 14

Standard form · N9 · Number · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
14(a)	4.7×10^{-4}	B1	cao
14(b)	81.2	M1	For $(5.97 \times 10^{24}) \div (7.35 \times 10^{22})$
		A1	Accept 81.2 or 81.22

Question 15

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

QN	ANSWER	MARK	GUIDANCE
15	6	P1	For 20 × 15 × 8 (= 2400 cm³)
		P1	For 2400 × 0.65 (= 1560 g)
		P1	For 10 000 ÷ 1560 (= 6.41...) or 10 ÷ 1.56
		A1	cao

Question 16

Trigonometry problem · G20 · Geometry & measures · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
16	Yes, with 7.6°	P1	For $\tan x = \frac{0.6}{4.5}$
		P1	For $\tan^{-1}(0.6 \div 4.5)$ (= 7.59...)
		C1	For 'Yes' with 7.59... or 7.6 (less than 8)

Paper overview

Q	TOPIC	SPEC REF	STRAND	AO	MARKS
1	Ordering negative numbers	N1	Number	AO1	1
2	Lowest common multiple	N4	Number	AO1	2
3	Fractions, decimals, percentages	N10 · N1	Number	AO1/2	2
4	VAT	R9	Ratio & proportion	AO1	2
5	Substitution	A2	Algebra	AO1	2
6	Comparing distributions	S4 · S1	Statistics	AO1/2	3
7	Exterior angles	G3	Geometry & measures	AO1	2
8	Relative frequency	P5 · P2	Probability	AO1/2	3
9	Solving equations	A17	Algebra	AO1	3
10	Recipes	R10 · R3	Ratio & proportion	AO3	3
11	Map scales	R2 · G15	Ratio & proportion	AO1	2
12	Circumference	G17	Geometry & measures	AO2	2
13	Straight-line graphs	A9 · A12	Algebra	AO1	3
14	Standard form	N9	Number	AO1/2	3
15	Density problem	R11 · G16	Ratio & proportion	AO3	4
16	Trigonometry problem	G20	Geometry & measures	AO3	3
Total					**40**

Marks by strand

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

Marks by assessment objective

AO1	Standard techniques	**21 marks (52%)**
AO2	Reasoning	**9 marks (22%)**
AO3	Problem solving	**10 marks (25%)**