CALC D · 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

Cube roots · N6 · Number · AO1 · 1 mark

QN	ANSWER	MARK	GUIDANCE
1	4.2	B1	cao

Question 2

Rounding · N15 · Number · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
2(a)	0.0049	B1	cao
2(b)	39 000	B1	cao

Question 3

Bar charts · S2 · Statistics · AO1/2 · 2 marks

QN	ANSWER	MARK	GUIDANCE
3(a)	Tuesday	B1	cao
3(b)	$\frac{20}{71}$	B1	oe. Total is 14 + 9 + 17 + 11 + 20 = 71

Question 4

Using ratio · R5 · Ratio & proportion · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
4	15.75	M1	For 4.5 ÷ 2 (= 2.25)
		A1	cao

Question 5

Expand and factorise · A4 · Algebra · AO1 · 3 marks

QN	ANSWER	MARK	GUIDANCE
5(a)	$3x^2 - 12x$	B1	cao
5(b)	$6(2p - 3)$	B2	B1 for a correct partial factorisation, e.g. $2(6p - 9)$ or $3(4p - 6)$

Question 6

Wages · N2 · N13 · Number · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
6	386.10	P1	For 7 hours 30 minutes (7.5) as the time from 9 15 to 4 45
		P1	For (7.5 – 0.75) × 5 (= 33.75) or 6.75 × 11.44 (= 77.22)
		A1	cao

Question 7

Angles in parallel lines · G3 · Geometry & measures · AO1/2 · 2 marks

QN	ANSWER	MARK	GUIDANCE
7(a)	116	B1	cao
7(b)	Reason	C1	Co-interior angles add up to 180° (or alternate/corresponding angles are equal and angles on a straight line add up to 180°)

Question 8

Probability and expected outcomes · P3 · P2 · Probability · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
8(a)	0.76	B1	oe
8(b)	36	M1	For 150 × 0.24
		A1	cao

Question 9

Standard form calculations · N9 · Number · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
9	**1.2×10^{10}**	**M1**	For 12 000 000 000 or 12×10^9
		A1	cao

Question 10

Perimeter and area problem · A17 · G16 · Algebra · AO3 · 4 marks

QN	ANSWER	MARK	GUIDANCE
10	**63**	**P1**	For $2(2x + 3) + 2(x - 1) = 37$ or $6x + 4 = 37$
		P1	For $x = 5.5$
		P1	For 14×4.5 (ft their x)
		A1	cao

Question 11

Volume of a cylinder · G16 · G17 · Geometry & measures · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
11	**553**	**M1**	For $\pi \times 4^2 \times 11$
		A1	Accept 552.9 to 553

Question 12

nth term · A25 · Algebra · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
12(a)	–3, 2, 7	B1	cao
12(b)	25th	M1	For $5n - 8 = 117$ or $(117 + 8) \div 5$
		A1	Accept 25

Question 13

Estimating the mean · S4 · Statistics · AO1 · 3 marks

QN	ANSWER	MARK	GUIDANCE
13	21	M1	For using midpoints 5, 15, 25, 35
		M1	For $20 + 135 + 300 + 175 (= 630) \div 30$
		A1	cao

Question 14

Trigonometry · G20 · Geometry & measures · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
14	33.7	M1	For $\tan y = \frac{5.4}{8.1}$ or $\tan^{-1}(5.4 \div 8.1)$
		A1	Accept 33.6 to 33.7

Question 15

Inverse proportion · R10 · Ratio & proportion · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
15	3	P1	For 6 × 15 (= 90) builder-days
		P1	For 90 ÷ 10 (= 9)
		A1	cao. An answer of 9 scores P1 P1 A0

Question 16

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

QN	ANSWER	MARK	GUIDANCE
16	**No, it is worth £11 054.25**	M1	For 18 000 × 0.85 (= 15 300)
		M1	For 18 000 × 0.85^3 (= 11 054.25)
		C1	For 'No' with 11 054.25 compared with 9000. Using 45% (simple decrease) scores M0 M0 C0

Paper overview

Q	TOPIC	SPEC REF	STRAND	AO	MARKS
1	Cube roots	N6	Number	AO1	1
2	Rounding	N15	Number	AO1	2
3	Bar charts	S2	Statistics	AO1/2	2
4	Using ratio	R5	Ratio & proportion	AO1	2
5	Expand and factorise	A4	Algebra	AO1	3
6	Wages	N2 · N13	Number	AO3	3
7	Angles in parallel lines	G3	Geometry & measures	AO1/2	2
8	Probability and expected outcomes	P3 · P2	Probability	AO1/2	3
9	Standard form calculations	N9	Number	AO1	2
10	Perimeter and area problem	A17 · G16	Algebra	AO3	4
11	Volume of a cylinder	G16 · G17	Geometry & measures	AO1	2
12	nth term	A25	Algebra	AO1/2	3
13	Estimating the mean	S4	Statistics	AO1	3
14	Trigonometry	G20	Geometry & measures	AO1	2
15	Inverse proportion	R10	Ratio & proportion	AO3	3
16	Depreciation	R16 · R9	Ratio & proportion	AO2	3
Total					**40**

Marks by strand

Number	**8 marks (20%)**
Algebra	**9 marks (22%)**
Ratio & proportion	**8 marks (20%)**
Geometry & measures	**7 marks (18%)**
Probability	**3 marks (8%)**
Statistics	**5 marks (12%)**

Marks by assessment objective

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