NON-CALC D · MARK SCHEME

GCSE Mathematics · Foundation Tier

40 marks · 45 minutes · Non-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

Rounding · N15 · Number · AO1 · 1 mark

QN	ANSWER	MARK	GUIDANCE
1	4800	B1	cao

Question 2

Percentages to fractions · N10 · Number · AO1 · 1 mark

QN	ANSWER	MARK	GUIDANCE
2	$\frac{2}{5}$	B1	cao

Question 3

Using formulae · A2 · A17 · Algebra · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
3	3	M1	For $90 = 30 + 20k$ or $(90 - 30) \div 20$
		A1	cao

Question 4

Bar charts · S2 · Statistics · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
4(a)	Banana	B1	cao
4(b)	33	B1	cao (7 + 12 + 5 + 9)
4(c)	$\frac{7}{33}$	B1	ft their total in (b)

Question 5

Written division · N2 · Number · AO1 · 2 marks

QN	ANSWER	MARK	GUIDANCE
5	38	M1	For a complete method, e.g. short or long division with at most one error, or repeated subtraction of multiples of 24
		A1	cao

Question 6

Volume of cuboids · G16 · Geometry & measures · AO1/3 · 4 marks

QN	ANSWER	MARK	GUIDANCE
6(a)	30	M1	For 5 × 3 × 2
		A1	cao
6(b)	8	P1	For 10 × 6 × 4 (= 240) ÷ 30, or 2 cuboids fit along each edge (10 ÷ 5, 6 ÷ 3, 4 ÷ 2)
		A1	cao

Question 7

Speed · R11 · R1 · Ratio & proportion · AO1 · 3 marks

QN	ANSWER	MARK	GUIDANCE
7	60	M1	For 2 hours 30 minutes = 2.5 hours, or 150 miles in 150 minutes
		M1	For 150 ÷ 2.5, or 1 mile per minute
		A1	cao

Question 8

Simplifying and expanding · A1 · A4 · A6 · Algebra · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
8(a)	a^3	B1	cao
8(b)	$6x + 15 - 2x - 6$	M1	For $6x + 15$ or $-2x - 6$ seen (correct signs)
	$= 4x + 9$	C1	For a complete, correct expansion and simplification to $4x + 9$

Question 9

Venn diagrams · P6 · P3 · Probability · AO1/2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
9(a)	13, 5, 7 and 5	B2	Football only 13, both 5, tennis only 7, outside 5. B1 for 5 in the overlap with one other correct value
9(b)	$\frac{7}{30}$	B1	ft their Venn diagram

Question 10

Angles on a straight line · G3 · A17 · Geometry & measures · AO2 · 3 marks

QN	ANSWER	MARK	GUIDANCE
10	$x + 2x + 3x = 180$	M1	For forming the equation, or $6x = 180$
	$x = 30$	A1	cao
	$3x = 90°$	C1	For $3 \times 30 = 90$ with a conclusion that 90° is a right angle

Question 11

Powers and roots · N6 · Number · AO1/2 · 2 marks

QN	ANSWER	MARK	GUIDANCE
11(a)	15	B1	cao (7 + 8)
11(b)	Explanation	C1	e.g. 9 × 9 × 9 = 729, not 27; the cube root of 27 is 3 because 3 × 3 × 3 = 27; he has divided by 3

Question 12

Ratio problem · R5 · Ratio & proportion · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
12	16.8	P1	For showing the blue paint would need 15 litres of yellow (so yellow runs out first)
		P1	For 12 ÷ 5 × 2 (= 4.8 litres of blue)
		A1	cao (4.8 + 12). An answer of 21 (6 + 15) scores P1 P0 A0

Question 13

Straight-line graphs · A9 · A12 · Algebra · AO1/2 · 4 marks

QN	ANSWER	MARK	GUIDANCE
13(a)	–3, 1, 3	B2	All three correct. B1 for one or two correct
13(b)	Correct straight line	B1	From (–1, –3) to (3, 5); ft their table if their points lie on a straight line
13(c)	No, with reason	C1	e.g. when $x = 10$, $y = 2 \times 10 - 1 = 19$, not 21

Question 14

Percentage increase · R9 · Ratio & proportion · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
14	72	P1	For 40 × 0.15 (= 6) or 10% = 4 and 5% = 2
		P1	For 6 × 12, or 46 × 12 – 40 × 12 (= 552 – 480)
		A1	cao

Question 15

Lowest common multiple · N4 · Number · AO3 · 3 marks

QN	ANSWER	MARK	GUIDANCE
15	9:36 am	P1	For listing multiples of 12 and 18 (at least 3 of each), or prime factors $2^2 \times 3$ and 2×3^2
		P1	For identifying 36 (minutes) as the LCM
		A1	Accept 9.36 am or 09:36

Paper overview

Q	TOPIC	SPEC REF	STRAND	AO	MARKS
1	Rounding	N15	Number	AO1	1
2	Percentages to fractions	N10	Number	AO1	1
3	Using formulae	A2 · A17	Algebra	AO1	2
4	Bar charts	S2	Statistics	AO1/2	3
5	Written division	N2	Number	AO1	2
6	Volume of cuboids	G16	Geometry & measures	AO1/3	4
7	Speed	R11 · R1	Ratio & proportion	AO1	3
8	Simplifying and expanding	A1 · A4 · A6	Algebra	AO1/2	3
9	Venn diagrams	P6 · P3	Probability	AO1/2	3
10	Angles on a straight line	G3 · A17	Geometry & measures	AO2	3
11	Powers and roots	N6	Number	AO1/2	2
12	Ratio problem	R5	Ratio & proportion	AO3	3
13	Straight-line graphs	A9 · A12	Algebra	AO1/2	4
14	Percentage increase	R9	Ratio & proportion	AO3	3
15	Lowest common multiple	N4	Number	AO3	3
Total					**40**

Marks by strand

Number	**9 marks (22%)**
Algebra	**9 marks (22%)**
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	**9 marks (22%)**
AO3	Problem solving	**11 marks (28%)**