



Annual Examinations for Middle Schools 2023

YEAR 8

MATHEMATICS

MARKING SCHEME

Notes for Marking of Scripts

Types of Marks

Method marks are awarded for knowing a correct method of solution and attempting to apply it. Method marks cannot be lost for arithmetic mistakes. They can only be awarded if the method used would have led to the correct answer had not an arithmetic mistake been made. Unless otherwise stated, any valid method not specified in the marking scheme is to be accepted and marked accordingly.

There are two types of Method marks: **M** marks and **(M)** marks.

- **M marks** are only awarded if method is seen.
- **(M) marks** are awarded even when a correct answer is given and no work is shown.

There are two types of Accuracy marks: **A** marks and **B** marks.

- **A** marks are accuracy marks given for correct answer only (c.a.o.).
 - * Incorrect answers, even though nearly correct, score no marks.
 - * Accuracy marks are also awarded for incorrect answers which are correctly followed through (f.t.) from an incorrect previous answer, **provided that f.t. is indicated in the marking scheme**.
 - * No Method marks **M/(M)** or Accuracy marks **A** are awarded when a wrong method leads to a correct answer.
 - * When a question is assigned **M** and **A** marks and students present a correct answer without any working, only **A** marks are awarded.
- **B** marks are accuracy marks awarded for specific results or statements independent of the method used.

Misreading

Method marks can still be earned (unless that part of the question is trivialised) but the final Accuracy marks are lost.

Crossed out working

An answer or working that is crossed out and not replaced is marked as if it were not crossed out. If the answer or working is replaced, then the crossed out answer or working is ignored and should not be considered for marking.

Units

In general, missing or inaccurate units are not penalised unless otherwise indicated in the marking scheme.

Other

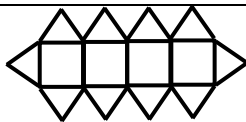
- Incorrect working or statement following a correct answer is ignored.
- Marks are not sub-divisible; no half marks may be awarded.
- Other abbreviations used:
 - o.e. (or equivalent)
 - e.e.o.o. (each error or omission)
- Markers are advised to indicate the M, (M), A or B marks awarded in the body of the script and then write their total in the margin. The total mark for each question should be written in the table included at the top of page 1 of the main paper. This measure facilitates the moderation of papers.

Non-Calculator Paper (25 marks)

Que.		Requirements	Mark		Additional Guidance	
1		Factors of $25 = 5 \times 5$	M1	3	Correct factors of one number	
		Factors of $30 = 2 \times 3 \times 5$	M1			
		LCM $= 2 \times 3 \times 5 \times 5$	A1			
		150 days				
2	a)	$\frac{8}{3} + \frac{16}{5}$	$\frac{10}{15} + \frac{3}{15}$	M1	6	Both correct
		$\frac{40}{15} + \frac{48}{15}$	OR $\frac{13}{15}$	M1		
		$\frac{88}{15} = 5\frac{13}{15}$	$= 5\frac{13}{15}$	A1		
	b)	$C = \pi d$	(M)1			
		$C = \frac{22}{7} \times \frac{14}{1}$	M1			
		$C = 22 \times 2 = 44 \text{ cm}$	A1			
3	a)	$9 \times (-10)$ -90	(M)1 A1	4		
	b)	$c = 5(-6) + 3(4) + (-6)(4)$ $c = -30 + 12 - 24$ $c = -42$	M1 A1			
4	a)	$40 : 48$ $5 : 6$	M1 A1	5	ft from b)	
	b)	i) $8.4 \times 3 = 25.2 \text{ km}$ ii) $25.2 \approx 25$ $25 \div 50 = 0.5 \text{ hours}$ $= 30 \text{ minutes}$	M1 M1 A1 ft			
5	a)	$y = 3x - 2$	B1	4	For correct substitution Clearly underlined	
	b)	$-7 = 3(-2) + 2$ $-7 = -6 + 2$ $-7 \neq -4$ No	M1 M1 A1			
6	a)	exterior	B1	3		
	b)	$117^\circ - 72^\circ$ 45°	M1 A1			

Main Paper (75 marks)

Que.		Requirements	Mark		Additional Guidance
1	a)	Correct entries	B2	5	B1 if at least 8 entries are correct
	b)	i) $\frac{1}{3}$	B1		o.e.
		ii) $\frac{1}{3}$	B1		o.e.
		iii) $\frac{1}{9}$	B1		o.e.

2	a)	$a - b = 2c$ $c = \frac{a - b}{2}$	(M)1 A1	10																										
	b)	i) $2m + 6$ ii) $4m - 8$ iii) $4m - 8 = 2m + 6$ $2m = 14$ $m = 7$	B1 B1 M1 M1 A1																											
	c)	$4x + 2 = 6x - 14$ $16 = 2x$ $x = 8$	M1 M1 A1																											
3	a)	Total spent = €105 + €180 = €285 Option A: $0.05 \times 285 = \text{€}14.25$ Total = €285 - €14.25 = €270.75 Option B: €285 - €10 = €275 Option A by €4.25	(M)1 M1 M1 M1 A1	8	Both correct																									
	b)	€105 - €10 = €95 €180 - €10 = €170 Total = €95 + €170 = €265 Sue is right	M1 A1 B1																											
4	a)	$\sqrt[3]{343}$ = 7 cm	(M)1 A1	5	ft from a)																									
	b)	Area of one face = $7 \times 7 = 49 \text{ cm}^2$ Area of six faces = 49×6 = 294 cm^2	M1 M1 A1 ft																											
5		Reason: interior angles $a = 70^\circ$ Reason: $\angle$ s in Δ and alt. angles $b = 180^\circ - 64^\circ - 70^\circ = 46^\circ$	M1 A1 M1 A1 ft	4	ft from answer of angle a																									
6	a)	order 2	B1	6																										
	b)	Area of square = $6 \times 6 = 36 \text{ cm}^2$ Height of trapezium = $(32 - 6) \div 2$ = 13 cm Area of trapezium = $\frac{1}{2}(6 + 32) \times 13$ = 247 cm^2 Total area = $36 + 247 + 247$ = 530 cm^2	M1 (M)1 M1 M1 A1																											
7	a)		B1	4	Award A1 for each correct row																									
	b)	<table><tr><td>Pattern No</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>No of squares</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>No of triangles</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td><td>14</td></tr><tr><td>Total</td><td>5</td><td>8</td><td>11</td><td>14</td><td>17</td><td>20</td></tr></table>	Pattern No			1	2	3	4	5	6	No of squares	1	2	3	4	5	6	No of triangles	4	6	8	10	12	14	Total	5	8	11	14
Pattern No	1	2	3	4	5	6																								
No of squares	1	2	3	4	5	6																								
No of triangles	4	6	8	10	12	14																								
Total	5	8	11	14	17	20																								

8	a)	Accurate drawing of circle of radius 3 cm	M1	4																									
	b)	Accurate drawing of 6 arcs	M1 A1		For drawing arcs For hexagon																								
	c)	120°	B1		(±2°)																								
9	a)	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td></tr><tr><td>2x</td><td>-4</td><td>-2</td><td>0</td><td>2</td><td>4</td></tr><tr><td>+3</td><td>+3</td><td>+3</td><td>+3</td><td>+3</td><td>+3</td></tr><tr><td>y</td><td>-1</td><td>1</td><td>3</td><td>5</td><td>7</td></tr></table>	x	-2	-1	0	1	2	2x	-4	-2	0	2	4	+3	+3	+3	+3	+3	+3	y	-1	1	3	5	7	B3	5	Award B1 for every three correct entries
	x	-2	-1	0	1	2																							
2x	-4	-2	0	2	4																								
+3	+3	+3	+3	+3	+3																								
y	-1	1	3	5	7																								
b)	Labelling of axes and/or labelling of line Correct plotting of points	B1 B1																											
10	a)	$A = \pi r^2$ $A = \pi \times 8.3^2$ $A = 216.4243179... \text{ m}^2$ $A = 216.4 \text{ m}^2$	M1 A1	4																									
	b)	$\frac{104}{216.424} \times 100 = 48.05\%$ 48%	M1 A1 ft		ft from part a)																								
11	a)	$17 \times \text{£}8.25 = \text{£}140.25$ $\text{£}140.25 + \text{£}11.55 = \text{£}151.80$	M1 A1	8																									
	b)	$151.80 \times 1.1675 = \text{€}177.2265$ €177.23	M1 A1 ft																										
	c)	$\frac{25}{100} \times 177.23 = 44.307$ $\text{€}177.23 + \text{€}44.307 = \text{€}221.537$ $\text{€}221.537 \div 17 = \text{€}13.03$ €13.00	M1 (M)1 M1 A1 ft		ft from b)																								
12		placing 14 in the middle placing 15, 15, in last two spaces $15 - 6 = 9$ $13 \times 5 = 65$ $65 - 53 = 12$ Ages are: 9, 12, 14, 15, 15	B1 B1 (M)1 (M)1 A1	5																									
13	a)		M2	7	M1 for correct line $y = x$ M1 for correct reflection																								
	b)		M1 A1		M1 for correct orientation A1 for exact position																								
	c)		M1		For correct translation																								
	d)		reflection in the line $y = -2$		B1 B1																								