



Annual Examinations for Middle Schools 2022

YEAR 8	MATHEMATICS	MARKING SCHEME
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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

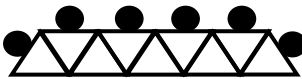
- Incorrect working or statement following a correct answer is ignored.
- Marks are not sub-divisible; no half marks may be awarded.
- Other abbreviations used:
 - * o.e. (or equivalent)
 - * e.e.o.o. (each error or omission)
- Markers are advised to indicate the **M**, **(M)**, **A** or **B** marks 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.

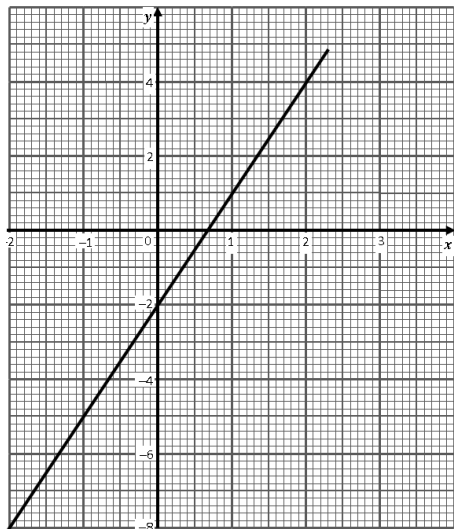
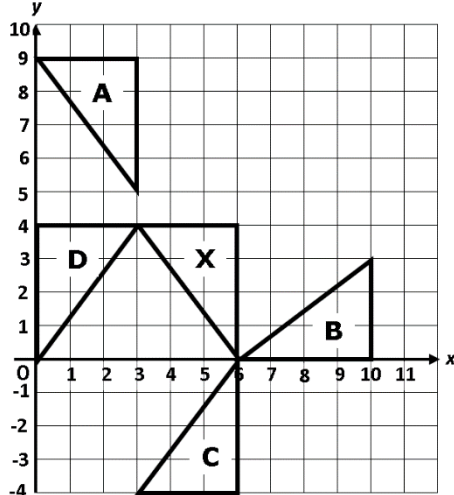
NON-CALCULATOR PAPER (Total: 25 Marks)

Ques.		Requirements	Mark		Additional Guidance
1	(a)	-2	B1	4	
	(b)	-28	B1		
	(c)	5 or +5	B1		
	(d)	2 or +2	B1		
2	(a)	(i) wrong (ii) An example of an odd factor of 70 is enough.	B1 B1	3	
	(b)	2 + any other prime number = odd.	B1		
3		$2.5 \times 2 = 5 \text{ cm}^2$ $5 \times 2 = 10 \text{ cm}^2$ $2.5 \times 6 \times 2 = 30 \text{ cm}^2$ $2 \times 6 \times 2 = 24 \text{ cm}^2$ Total SA = $10 + 30 + 24$ 64 cm^2	(M)1 (M)1 M1 A1	4	(M)1 for area of any one face (M)1 for area of remaining faces
4		$240 \div 4 = 60$ $60 \div 2 = 30 \text{ cm}^2$	M1 A1	2	
5	(a)	Joanne	B1	4	Accept also 1 min 50 sec.
	(b)	2 min 40 s – 1 min 55 s 45 s	M1 A1		
	(c)	2 mins 20 sec	B1		
6	(a)	$\frac{3}{5}$ and $\frac{9}{15}$ in any order.	B1	8	Both correct.
	(b)	$2\frac{1}{5}$	B1		
	(c)	$\frac{13}{10} - \frac{6}{10}$ $= \frac{7}{10}$	M1 A1		
	(d)	$\frac{11}{4} \times \frac{1}{22}$ $= \frac{1}{8}$	M1 A1		Changing to improper fraction
	(e)	$6 \times \frac{2}{3}$ $= 4$	M1 A1		

MAIN PAPER (Total: 75 Marks)

Ques.		Requirements	Mark		Additional Guidance
1	(a)	139.2	B1	5	
	(b)	120 m	B1		
	(c)	$472.385 - 212.897...$ 259.488	(M)1 A1		
	(d)	18.20	B1		Do not accept 18.2
2		$\frac{500}{8} = €62.50$ Martina $€62.50 \times 3 = €187.50$ Kelsey $€62.50 \times 5 = €312.50$	M1 A1	2	Both correct

3		$x = 90^\circ$ Angles on a straight line or alternate angles	B1	5	Both 90° and reason correct
		$y = 180^\circ - (90^\circ + 70^\circ) = 20^\circ$ Angles on a straight line	A1 M1		
		$z = 70^\circ + 90^\circ = 160^\circ$ Exterior angle of a triangle is equal to the sum of the two interior opposite angles.	A1 M1		Accept any other valid reason
4	(a)	$5x - 20 - 3x + 2$ $2x - 18$	M1 A1	9	
	(b)	$y = 11 - x$	B1		
	(c)	(i) $x = y + 2z$ (ii) $x = 5 + (2 \times -7)$ $x = -9$	B1 M1 A1		f.t. for incorrect c(i)
	(d)	(i) $3a = 5a - 44$ $a = 22$ (ii) 66	M1 A1 A1		f.t. for incorrect d(i)
5	(a)	(i) $25 \times 12 = \text{€}300$ $300 \times 50 = \text{€}15\,000$ $\text{€}15\,000 + \text{€}1\,500 = \text{€}16\,500$ (ii) $\frac{1500}{16\,500}$ $\frac{1}{11}$	M1 A1 B1	7	f.t. for incorrect a(i)
	(b)	(i) $35\% \text{ of } 20\,000 = \text{€}7\,000$ $\frac{1}{10} \text{ of } 20\,000 = \text{€}2\,000$ $7\,000 + 2\,500 + 2\,000$ $\text{€}11\,500$ (ii) $20\,000 - 11\,500 = \text{€}8\,500$	M1 M1 A1 A1		7000 or 2000 seen. f.t. for incorrect b(i)
6	(a)		B1	4	
	(b)	7 circles	B1		
	(c)	Attempt to draw pattern or attempt to identify pattern number 17 triangles	M1 A1		
7	(a)	Point B marked at 6 cm from A	B1	6	
	(b)	Perpendicular lines drawn using construction arcs Accurate perpendiculars ($\pm 1^\circ$)	M1 A1		
	(c)	Correct construction showing arcs Accurate square ABCD (± 0.1 cm)	M1 A1		
	(d)	$AC = 8.5$ (± 0.2 cm)	B1		± 0.2
8	(a)	$A = \pi r^2 = \pi \times 3^2$ 28.3 cm^2	M1 A1	6	Formula seen or implied.
	(b)	Area of one trapezium $= \frac{(12.8 + 15.3) \times 10}{2}$ $= 140.5 \text{ cm}^2$ Shaded Area $= (140.5 \times 2) - (28.274 \dots \times 2)$ $= 224.5 \text{ cm}^2$	M1 A1 M1 A1		f.t. from incorrect (a) Accept 224.5 or more accurate

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>$3x$</td><td>-6</td><td>-3</td><td>0</td><td>3</td><td>6</td></tr><tr><td>-2</td><td>-2</td><td>-2</td><td>-2</td><td>-2</td><td>-2</td></tr><tr><td>y</td><td>-8</td><td>-5</td><td>-2</td><td>1</td><td>4</td></tr></table>	x	-2	-1	0	1	2	$3x$	-6	-3	0	3	6	-2	-2	-2	-2	-2	-2	y	-8	-5	-2	1	4	B2	7	Award B1 only any four correct entries.
	x	-2	-1	0	1	2																							
	$3x$	-6	-3	0	3	6																							
	-2	-2	-2	-2	-2	-2																							
y	-8	-5	-2	1	4																								
(b)		B1 B1	Correct plotting of at least two points. Correct line drawn																										
(c)	For $x = 4$, $(3 \times 4) - 2 = 10 \neq 6$ No	M1 A1																											
(d)	$y = 3x + 5$	B1																											
10	(a)	104° , 52° , 40° , 140° , 24° Correct drawing of pie chart, angle $\pm 1^\circ$ Labelling of pie chart	(M)2 A2 A1	6	(M)1 for any two correct angles A1 for any two correct sectors drawn																								
	(b)	50%	B1																										
11				6																									
	(a)	Correct translation.	B1		Do not deduct marks for not labelling A, B, C, D.																								
	(b)	Translation by $\begin{pmatrix} 3 \\ -5 \end{pmatrix}$	B1																										
	(c)	Correct orientation. Accurate rotation.	M1 A1																										
	(d)	Correct reflection.	B1																										
	(e)	Correct reflection.	B1																										

12	(a)	<table><tr><td colspan="2" rowspan="2"></td><th colspan="3">Spinner B</th></tr><tr><th>1</th><th>2</th><th>7</th></tr><tr><th rowspan="4">Spinner A</th><th>1</th><td>(1, 1)</td><td>(1, 2)</td><td>(1, 7)</td></tr><tr><th>2</th><td>(2, 1)</td><td>(2, 2)</td><td>(2, 7)</td></tr><tr><th>4</th><td>(4, 1)</td><td>(4, 2)</td><td>(4, 7)</td></tr><tr><th>5</th><td>(5, 1)</td><td>(5, 2)</td><td>(5, 7)</td></tr></table>			Spinner B			1	2	7	Spinner A	1	(1, 1)	(1, 2)	(1, 7)	2	(2, 1)	(2, 2)	(2, 7)	4	(4, 1)	(4, 2)	(4, 7)	5	(5, 1)	(5, 2)	(5, 7)	B3	8	Award 1 mark for each 3 correct pairs.
					Spinner B																									
			1	2	7																									
	Spinner A	1	(1, 1)	(1, 2)	(1, 7)																									
		2	(2, 1)	(2, 2)	(2, 7)																									
		4	(4, 1)	(4, 2)	(4, 7)																									
5		(5, 1)	(5, 2)	(5, 7)																										
(b)	i) $\frac{2}{12}$ or $\frac{1}{6}$	B1	o.e																											
	ii) $\frac{4}{12}$ or $\frac{1}{3}$	B1																												
	iii) $\frac{4}{12}$ or $\frac{1}{3}$	B1																												
	iv) $\frac{2}{12}$ or $\frac{1}{6}$	B1																												
	v) 0	B1																												
13	(a)	Order 4, Order 5, Order 2	B3	4	– 1 e.e.o.o.																									
	(b)	Shape of rotational symmetry of order two formed.	B1																											

End of Marking Scheme