KULLEĠĠ SAN BENEDITTU
Secondary School, Kirkop

Track 2

HALF YEARLY EXAMINATION – 2017/2018

YEAR 10 **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 trivialized) 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 (20 marks)

Each question carries 1 mark.

Question 1	Question 2	Question 3	Question 4
8.46×10^{-3}	$\frac{4}{5}$	-7	A or $5\,\text{cm}$
Question 5	**Question 6**	**Question 7**	**Question 8**
B or 0.5	-2	37	$2, 4, 5, 10, 12, 20, 30$
Question 9	**Question 10**	**Question 11**	**Question 12**
€12.50	101	$4\,\text{cm}$	$n=2$
Question 13	**Question 14**	**Question 15**	**Question 16**
3	C or $600\,\text{cm}^2$	320	Any two numbers (excluding the negative) whose product is 28.
Question 17	**Question 18**	**Question 19**	**Question 20**
€2000 and €8000	6cm	C or 2 is the only even prime number	C or $b=\frac{10-a}{2}$

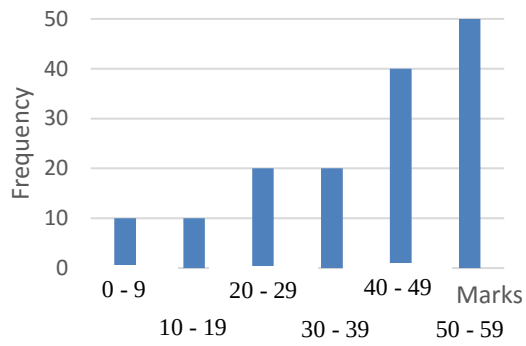
Main Paper (80 marks)

Quest.		Requirements	Mark	Additional Guidance	Total
1		0.9930857… 0.993	(M)1 A1	Correct use of calculator (seen or implied).	2
2		$2d(d-4)$	B2	Award one mark for correct common factor.	2
3	a	$4p^8$	B1		4
	b	$3c^2$	B1		
	c	$2d+4e$	B1		
	d	$6x^2+12x$	B1		
4	a	$a=1$	B1		2
	b	$a=-2$	B1		

5		$25\frac{2}{3} \div 4\frac{2}{3} = 5\frac{1}{2}$	(M)1 A1		2
6	a	$6.5 \times 5\,\text{km} = 32.5\ \text{km}$	B1		8
	b	600 ml boiling water = 2 cups sugar 1800 ml boiling water = 6 cups sugar	(M)2 A1	Accept other valid methods.	
	c	$66\,\text{km/h} \times 1\frac{1}{2}\ \text{h} = 99\ \text{km}$ $99\ \text{km} \div 60\,\text{km/h}$ $= 1.65\ \text{h}$ $= 1\ \text{h}\ 39\ \text{min}$	M1 M1 A1 B1	Accept other valid methods.	
7	a	$C = 10 + 3p$	B2	-1 e.e.o.o.	8
	b	$C = 10 + 3 \times 150$ $= €460$	(M)1 A1	Correct substitution.	
	c	$3p = C - 10$ $p = \frac{C - 10}{3}$	(M)1 A1		
	d	$70 = 10 + 3p$ $60 = 3p$ $20 = p$	 (M)1 A1		
8	a	Saturn	B1		8
	b	$= 2.28 \times 10^8 \times 6$ $= 1.368 \times 10^9$ Saturn	(M)1 A1		
	c	$= 1.43 \times 10^9 + 1.5 \times 10^8$ $= 1.58 \times 10^9$	(M)1 A1		
	d	$C = \pi d$ $C = \pi \times 1.28 \times 10^4$ $C = 40212.38597$ $C = 40212\,\text{km}$	B1 M1 A1	Correct formula. Correct use of calculator. Correct rounding.	

9	a	Using Pythagoras' Theorem $19^2 = AB^2 + 15^2$ $AB = \sqrt{19^2 - 15^2}$ $AB = 11.66...\text{m}$ $AB = 12\text{ m}$	M1 M1 A1	Correct substitution. AB subject of the formula.	7
	b	Tan $60° = \frac{DE}{10}$ DE = tan $(60°) \times 10\,\text{m}$ DE = $17.32...\text{m}$ DE = 17 m	M1 M1 A1	Correct substitution.	
	c	EF = $17.32... - 11.66...$ EF = 5.6... m = 6m (nearest m)	B1	f.t. for incorrect AB and DE. Award 1 mark for subtraction seen or implied. Ignore rounding.	
10	a	Area of Triangle = $48\,\text{cm}^2$	B1		5
	b	Area of a trapezium = $\frac{(a+b)h}{2}$ $48 = \frac{(10+x)6}{2}$ $48 = 3(10+x)$ $48 = 30 + 3x$ $18 = 3x$ $6 = x$	B1 (M)1 (M)1 A1	Formula of trapezium seen or implied. Correct substitution.	
11	a	Area of sector $= \frac{x}{360} \times \pi r^2$ Area large sec. $= \frac{140}{360} \times \pi \times 68^2$ $= 5649.2817...$ Area small sec. $= \frac{140}{360} \times \pi \times 16^2$ $= 312.7630...$ Windscreen area $= 5649.2817... - 312.7630...$ $= 5336.5186...$ $= 5337\,\text{cm}^2$	B1 M1 M2 M1 A1	Formula of area of sector seen or implied. Award one mark if 68 – 52 = 16 is seen or implied. f.t. for incorrect radius of smaller sector.	12
	b i)	radius $= 25\,\text{cm}$	B1		
	ii)	Area of circle $= \pi r^2$ $= \pi \times 25^2$	M1	Correct formula and correct substitution.	

		$=1963.4954...\text{cm}^2$ $=1963.50\,\text{cm}^2$	A1		
	iii)	Area of rectangle $=150\times100$ $=15000\,\text{cm}^2$ Area of 6 circles $=1963.4954...\times6$ $=11780.9724...\text{cm}^2$ Wasted area $=15000-11780.97...$ $=3219.027...\text{cm}^2$	M1 M1 M1	f.t. for incorrect b ii). Correct method and answer.	
12	a	$\angle BED=135°$ (alternate $\angle$s)	B1	Both correct.	3
	b	$\angle XCB=\angle CBE$ (alt. $\angle$s) $\angle CBE=\angle DEZ$ (corr. $\angle$s) $\therefore\ \angle XCB=\angle DEZ$	B1 B1	Accept other valid reasoning. No marks awarded if reasons are not stated.	
13	a		B1		7
	b	$5+9+13+17+21=65$	(M)1 A1	Award one mark if 4 entries are correct.	
	c	$4n+1$	B1		
	d	201	B1		
	e	No. Working: $4n+1=39$ $4n=38$ $n=9.5$ n should be a whole number.	B1 M1	Stating 'No'. Valid reason or working.	
14	a i)	26	B1		10
	ii)	$1\times10+2\times6+3\times7+4\times2+5\times1$ = 56	M1 A1		
	iii)	Mean $=\dfrac{TotalTickets}{No.ofPersons}=\dfrac{56}{26}$ = 2.1538… = 2.2 (1 d.p.)	(M)1 A1	Ignore rounding.	
	b i)	$150-(10+20+20+40)=60$ $60\div6=10$ $x=10$ $y=50$	M1 M1 A1	Both correct.	

	ii)		B2	Correct drawing of bars. -1 (e.e.o.o.) f.t. from part b i).	