STUDENT'S NAME:

MATHEMATICS	SENIOR ONE
Paper 1	2022
You must answer on the question paper	$1\frac{1}{2}$ HOURS
You will need: Geometrical instruments	

INSTRUCTIONS

- Answer **all** questions
- Use black or dark blue pen. You may use HB pencil for any diagram or graphs.
- Write your name in the box in the box at the top page
- Write your answer to each question in the space provided
- Do not use an erasable pen
- You should use a calculator where appropriate
- You must show all necessary working clearly
- Given non exact numerical answers correct to 3 significant figures.
- For π, use either your calculator or 3.142

INFORMATION

● The total mark for this paper is 65.

● The number of marks for each question or part question is shown in brackets

Turn over

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1. Write seventeen thousand and seventeen in figures. (01mark)

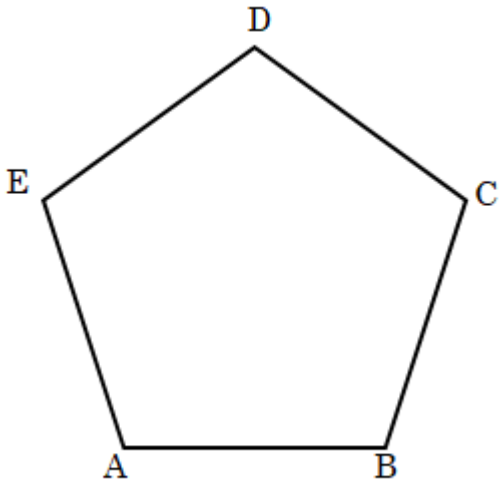
.....

2. Find the number of minutes from 1758 to 7.13pm (01mark)

.....

3. Here is a list of numbers.
   Put a ring around the number with the largest value. (01mark)
   0.3030 $\frac{1}{3}$ 0.0330 $\frac{3}{10}$ 33%

4.



ABCD is a pentagon. Explain why the diagram shows that the sum of the interior angles of a pentagon is 540^0. (01mark)

Do not measure any angles.

.....

.....

.....

.....

5. Without using your calculator, work out $1\frac{7}{12} + \frac{13}{20}$.
   You must show all your working and give your answer as a mixed number in its simplest form. (04marks)

6. The nth term of a sequence is $n^3 - 5$
   Write down the first three terms of this sequence. (04marks)

   ……., ……., …….

7. Write down the common factors of 16 and 72 that are greater than 2 (04marks)

…….

8. Write the following in order, starting with the smallest. (04marks)

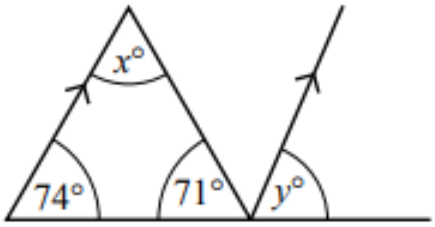
$\frac{3}{4}$ 0.749 76% $\frac{11}{15}$

   ……..<…….<……<……..
   Smallest

9. Write 60 as a product of its prime factors. (04marks)

.....

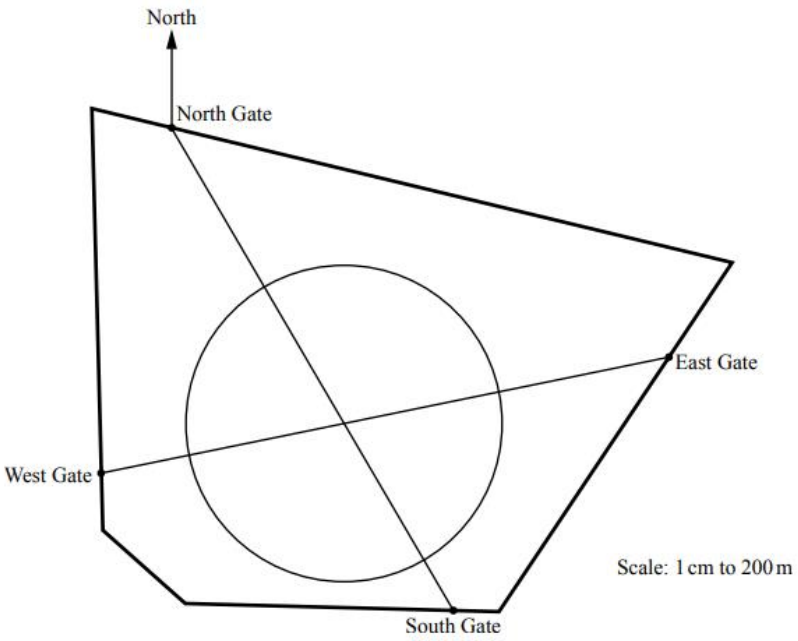
10.



NOT TO SCALE

Work out the value of x and y (04marks)

11. The scale drawing shows a map of Arua wood Park. There are two straight paths and one circular path. The scale is 1cm represents 200m.



(i) Measure the bearing of South Gate from North Gate (01mark)

.....

(ii) Adeke walks along the straight path from the East Gate to West Gate. Workout the distance she walks in meters (03marks)

……..

(iii) The entrance, P, to a children's play area is 500 meters from North Gate on a bearing of 195^0. Mark the position P on the map (02marks)

12. The diagram shows five number cards.

Put two cards side by side to show

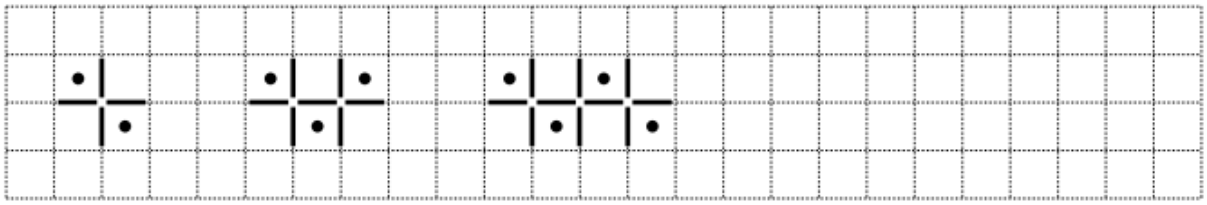
(i) a two-digit number that is a multiple of 7, (01mark)

(ii) a two-digit square number, (01mark)

(iii) a two-digit cube number, (01mark)

(iv) a two-digit prime number. (01mark)

13. (a) A sequence of patterns is made using lines and dots. The first three patterns in the sequence are shown below



(i) Draw Pattern 4 on the grid. (02marks)

(ii) Complete the table. (03marks)

Pattern	1	2	3	4		10
Number of dots	2	3				
Number of lines	4	7				

(b) Find an expression, in terms of n, for

(i) the number of dots in Pattern n, (02marks)

……

(ii) the number of lines in Pattern n. (02marks)

……

14. The scale drawing shows the positions of town S and town T. The scale is 1 centimeter represents 15 kilometers.

Scale: 1 cm to 15 km

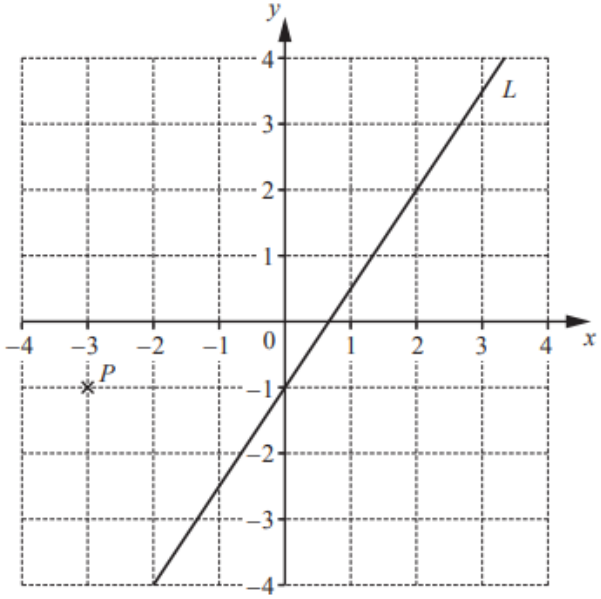
(i) Find the actual distance between these two towns in km(02marks)

……

(ii) Measure the bearing of town T from town S. (02marks)

……

15. The diagram shows a point P and a line L.



(a) Write down the co-ordinates of point P (01mark)

……

(b) Write down three coordinates through which line L passes. (Hint: integral points) (03markS)

……

16. The scale drawing shows a rectangle ABCD.
The scale is 1 centimeter represents 20 meters.

Scale: 1 cm to 20 m

(a) Using a pencil, ruler and compasses only, construct the bisector of angle ADC to meet line AB at E, Show all your construction arcs. (04marks)

(b) Join C to E and measure angle DEC and the length EC (02marks)

……

(c) Inscribe triangle DEC and measure the radius of the circle. (04marks)

……

END

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MATIGO EXAMINATIONS BOARD

MATHEMATICS 2022

Paper 1

MARK SCHEME

Maximum: 65marks

Generic marking principles

These generic principles must be applied by all examiners when marking student answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:
Marks must be awarded in line with

- The specific content of the mark scheme or the generic level descriptors for the question
- The specific skills defined in the mark scheme or in the generic level descriptors for the question
- The standard of response required by a student as exemplified by the standardization scripts.

GENERIC MARKING PRINCIPLE 2:
Marks awarded are always **whole marks (not half marks or other fractions)**

GENERIC MARKING PRINCIPLE 3:
Marks must be awarded **positively:**

- Marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which will go beyond the scope of the syllabus and mark scheme.
- Marks are awarded when candidates clearly demonstrate what they know and can do
- Marks are not deducted for errors
- Marks are not deducted for omissions
- Answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the scheme. The meaning, however, should be unambiguous

GENERIC MARKING PRINCIPLE 4: Rules must be applied consistently e.g in situations where students have not followed instructions or in the application of generic level descriptors.
GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question

MARK SCHEME NOTES

The following notes are intended to aid interpretation of mark schemes in general. But individual mark schemes may not include marks awarded foe specific reasons outside the scope of these notes.

Types of mark

M Method mark awarded for valid method applied to the problem

A Accuracy mark, given for a correct answer or intermediate step correctly obtained. For accuracy marks to be given, the associated Method mark must be earned or implied

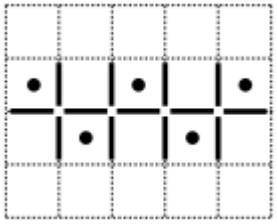
B Mark for correct result or statement independent of method marks

When a part of a question has two or more method steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation 'dep' is used to indicate that a particular M or B mark is independent on an earlier mark in the scheme.

Abbreviations

cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
nfww	not from wrong working
oe	or equivalent
SP	special case
soi	seen or implied

Question	Answer	Marks	Partial Marks
1	1717	1	
2	75 minutes	1	FT
3	$\frac{1}{3}$	1	
4	The product of the number of 3 triangles with $180 = 540^0$ Or $(n-1)180 = 540^0$ where n = number of sides	1	
5	$\frac{19}{12} + \frac{13}{20}$ $= \frac{95+39}{60}$ $= \frac{134}{60}$ $= 2\frac{14}{60}$ cao	4	$B1\ for\ changing\ to\ improper\ fraction$ $M1 for\ finding\ the\ LCM$ $M1\ for\ adition\ of\ numerators$ $A1\ for\ correct\ mixed\ fraction$
6	$-4,3,22$	4	$B1, B1, B2$
7	$F_{16} = \{1,2,4,8,16\}$ $F_{72} = \{1,2,4,6,8,9,12,18,24,36\}$ $F = \{1,2,4,8\}$ $\therefore 4\ and\ 8\ are\ the\ common\ factors\ greater\ than\ 2\ cao$	4	$B1$ $B1$ $M1$ $A1$
8	$\frac{11}{15} < 0.749 < \frac{3}{4} < 76\%$	4	$B1, B1, B1, B1$
9	2 | 60 2 | 30 3 | 15 5 | 5 | 1 $2^2\ x\ 3x5$	4	$B1$ $M1$ $M1$ $A1$
10	$x + 74 + 71 = 180$ $x = 35^0$ $y = 74^0$	4	$M1$ $A1$ $B2$
11(i)	150^0	1	$B1$
11(ii)	$1cm : 200m$ $7.2\ cm : 1440$ $\therefore distance = 1440\ meters$	3	$B1$ $M1$ $A1$
11(iii)	$P\ is\ 2.5cm\ from\ North\ Gate\ at\ 195^0$	2	$B2$
12(i) 12(ii) 12(iii)	28 16 27	4	$B1$ $B1$ $B1$

12(iv)	17		$B1$
13(i)		2	$B1\ for\ 5\ dots$ $B1\ for\ 13\ lines$
13(ii)	<table><tr><td>Pattern</td><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td>10</td></tr><tr><td>Number of dots</td><td>2</td><td>3</td><td>4</td><td>5</td><td></td><td>11</td></tr><tr><td>Number of lines</td><td>4</td><td>7</td><td>10</td><td>13</td><td></td><td>31</td></tr></table>	3	$B1\ for\ 11$ $B1\ for\ 31$ $B1\ for\ 4{,}5\ 10\ and\ 13$
13(b)(i)	$U_n = a + (n-1)d$ $= 2 + (n-1)1$ $= n + 1\ oe\ final\ answer$	2	$M1\ for\ working$ $A1\ for\ n\ +\ 1$
13(b)(ii)	$U_n = a + (n-1)d$ $= 4 + (n-1)3$ $= 3n + 1\ oe\ final\ answer$	2	$M1\ for\ working$ $A1\ for\ n\ +\ 1$
14(i)	$8cm$ $1cm: 15km$ $8cm : 120km\ oe$	2	$B1\ for\ 8cm\ oe$ $A1\ for\ 120km\ oe$
14(ii)	$135^0\ oe$	2	$B2\ for\ 135^0 oe$
15(i)	$(-3,-1) cao$	1	$B1$
15(ii)	$(-2,-4), (-1,0) and\ (2,2) cao$	3	$B1\ for\ each$
16(a)		4	$B1\ for\ first\ arcs$ $B1\ for\ intersecting\ arcs$ $B1\ for\ the\ line\ DE$ $B1\ for\ point\ E$
16(b)	$Angle\ DEC = 70^0 oe$ $EC = 9cm\ oe$ $EC = 180m\ oe$	2	$B1\ for\ angle$ $B1\ for\ EC$
16(c)	$r = 3cm\ oe$	4	$B2\ for\ bisectors$ $B1\ forcircle\ tourching\ inner\ walls\ of\ the\ triangle\ DEC$ $A1\ for\ radius\ 3 \pm 0.1$