REGISTRATION CENTRE NUMBER	CENTRE NAME	
CANDIDATE'S FULL NAMES		
CANDIDATE IDENTIFICATION NUMBER	SUBJECT CODE **0570**	PAPER NUMBER **2**

FOLD HERE

FOR OFFICIAL USE ONLY	

GENERAL CERTIFICATE OF EDUCATION BOARD
Technical and Vocational Education Examination
INTERMEDIATE LEVEL

SUBJECT TITLE	SUBJECT CODE	PAPER NUMBER
Mathematics	**0570**	2
	EXAMINATION DATE: **JUNE 2022**	

Duration: 2 Hours 30 Minutes

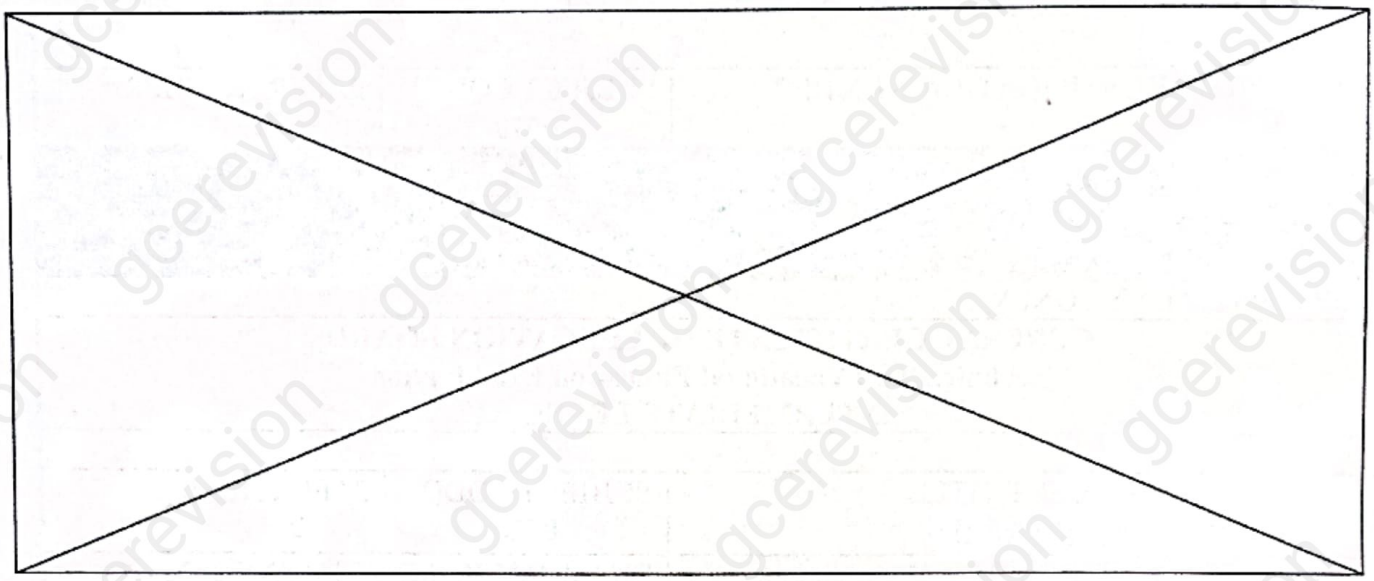
INSTRUCTIONS:

- This paper is arranged in three sections: A, B, and C.
- **SECTION A** is for all candidates. Answer all questions in the spaces provided. The mark allocation for each question is indicated.
- **SECTION B** is for all Industrial Candidates except Clothing Industry (CLIN). All questions in this section carry equal marks.
- **SECTION C** is for all Tertiary Science and Technology (TST) and Clothing Industry (CLIN) candidates. All questions in this section carry equal marks.

Calculators are allowed

In calculations, you are advised to show all the steps in your working, giving your answer at each stage.
You are reminded of the necessity for good English and orderly presentation in your answers.

FOR EXAMINERS' USE ONLY	
Marked by..... Signature of Examiner: .....Date:.....	***SCORE***
Checked by..... Signature:..... Date:.....	



SECTION A

THIS SECTION IS FOR ALL CANDIDATES
ANSWER ALL QUESTIONS IN THIS SECTION

1. Simplify the expression: $\frac{1}{2} + \frac{3}{5} \div \frac{9}{15} - \frac{1}{3}$

.....

.....

.....

.....

.....**(6 marks)**

---

2. a) Given that $\sqrt{75} + \sqrt{12} - \sqrt{108} + \sqrt{49} = a + b\sqrt{c}$ find the values of a, b and c

.....

.....

.....

b) Simplify $\dfrac{1+\sqrt{3}}{\sqrt{8}}$

.....

.....

.....**(6 marks)**

3. (a) Express 64 in index form

.....

.....

(b) Hence, find the value of x in the equation $2^x = \frac{1}{64}$

.....

.....

.....(5 marks)

4.

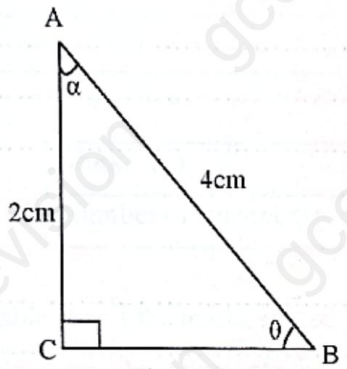


Figure 1

Find,

a. The value of the angles θ and α in figure 1.

.....

.....

.....

b. The length of the side BC , leaving the answer in surd form

.....

.....

.....(6 marks)

5.

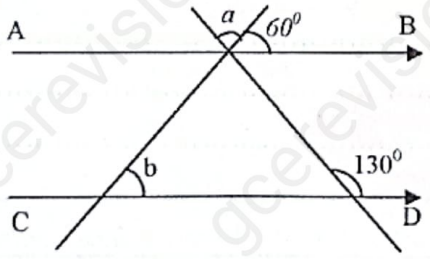


Figure 2

Calculate the values of angles a and b in figure 2.

.....

.....

.....(6 marks)

---

6. a) Given that $h(x) = bx - 5$ and $h(4) = -1$, find the value of b

.....

.....

.....

b) Given that $g(x) = \frac{x-1}{x^2-1}$, simplify g(x)

.....

.....

.....

c) Hence state the domain of definition of g(x)

.....

..... **(6 marks)**

7.

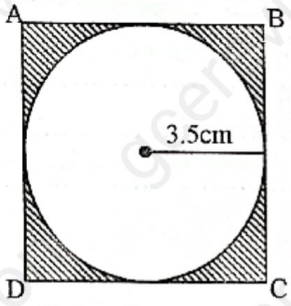


Figure 3

Figure 3 shows a circle of radius 4cm inscribed in a square ABCD

Calculate the area of the shaded region (Take $\pi = \frac{22}{7}$)

.....

.....

.....

.....

.....

..... **(6 marks)**

---

8. The difference between the width and the length of a house is $4m$ while the average of the two is 8m.Determine the dimensions of the house.

.....

.....

.....

.....

..... **(6 marks)**

---

9. Solve in $\mathbb{R}$, the equation

$\frac{4}{x+1} - \frac{3}{x-1} = 0$

.....

.....

.....

.....

.....(5 marks)

10.

Marks (x)	3	10	8	2	5
Number of students(f)	2	4	6	8	10

The table shows the marks scored by Form 5 students in a Mathematics test

a) How many students wrote the test?

.....

.....

b) Represent the above information on a bar chart

.....

.....

.....

.....

.....

.....

.....

c) Calculate the median mark

.....

.....

.....

.....(6 marks)

---

11. A woman took a loan of two million francs CFA from a Credit Union. If this loan is to be paid in monthly instalments of 40,000FCFA. Calculate:

a) The number of instalments.

.....

.....

.....

b) The number of years required for the loan to be paid back.

.....

.....

.....(6 marks)

---

12. One of the exterior angles of a regular polygon is 40°, how many sides has the polygon?

.....

.....

.....

.....(4 marks)

---

13. Find the arithmetic mean of 2, 4, 9, 8, 2, 5, and 9

.....

.....

.....(4 marks)

---

14. Find the probability that a number chosen at random from the set of integers 1 to 10 inclusive is,

a) an odd number

.....

.....

b) a factor of 6.

.....

.....

.....(6 marks)

---

15. Given that $\underline{v} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$ and $\underline{u} - \underline{v} = \begin{pmatrix} 2 \\ 2 \end{pmatrix}$. Find:

(a) $\underline{u} + \underline{v}$

.....

.....

.....

.....

b) the numbers a and b such that $a\underline{u} + b\underline{v} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$

.....

.....

.....(6 marks)

SECTION B

For all Industrial Candidates except Clothing Industry (CLIN)

Answer all questions in this section

All questions carry equal marks

1. Given the Polynomial function

$$P(x) = (3-x)^2 - (x-3)(x-1) + (3-x)(x+5)$$

a) State the domain of definition D_P of $P(x)$ **(1 mark)**

b) Factorize $P(x)$ and write it as a product of its linear factors. **(3 marks)**

c) Expand , simplify and arrange $P(x)$ in ascending powers of x **(3 marks)**

d) State the degree of $P(x)$ **(1 mark)**

e) Calculate $P(3)$ and $P(-7)$ **(3 marks)**

Solve in $\mathbb{R}$, the:

f) Equation: $(3-x)(7+x)=0$ **(2 marks)**

g) Inequation: $(3-x)(7+x) \geq 0$ **(2 marks)**

Total (15 marks)

2.

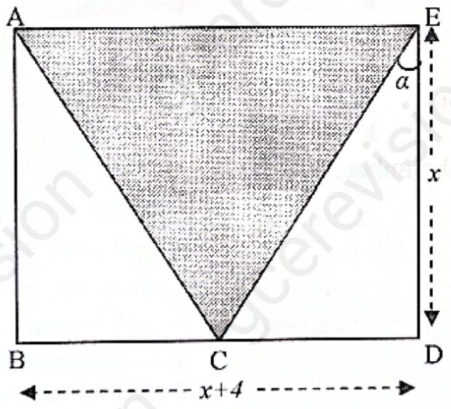


Figure 1

Figure 1shows a lawn in front of a restaurant. The shaded area is tiled while the unshadedarea is decorated with flowers. Given that $BC = \frac{1}{2}BD$ and $AC = CE$

a) Write down the area of ABDE in terms of x **(3 marks)**

Given that the area of ABDE is $77cm^2$, calculate:

b) the value of x **(3 marks)**

c) the length AC to one decimal place **(3 marks)**

d) the value of the angle α in degrees **(2 marks)**

e) the area of ACE **(2 marks)**

f) If the cost of tiling $1m^2$ is equal to 6,500FCFA,calculate the cost to tile the area of ACE to the nearest hundred FCFA. **(2 marks)**

Total (15 marks)

---

3. i) The marks obtained by 30 students in a Mathematics test are found below;

15, 10, 11, 8, 6, 13, 12, 15, 14, 8
9, 16, 8, 14, 9, 10, 11, 14, 13, 10
12, 10, 7, 6, 13, 8, 13, 13, 11, 12

a) Draw up a frequency table for this distribution. **(4 marks)**

b) Draw a cumulative frequency curve for this distribution. **(4 marks)**

c) Calculate the 20^{th} percentile **(3 marks)**

d) Determine the pass mark if 24 students must pass the exams. **(1 mark)**

ii) If n(A) = 10 , n(B) = 15 , n(A∩ *B*) = 7 find n(A∪B) **(3 marks)**

Total (15 marks)

---

4. i) Given the quadratic function $f(x) = -2x^2 - 3x + 2$ and *y=f(x)*.

a) Copy and complete the table below

x	-3	-2	-1	0	1	2
f(x)						

(3 marks)

b) Using a scale of 2cm to 1unit on the x-axis and 1cm to 1unit on the y-axis, draw the graph of *y=f(x).* **(3 marks)**

From the graph, state:

c) thecoordinates of the maximum turning point. **(1 mark)**

d) the roots of the equation *f(x)=0.* **(2 marks)**

ii) The function *f* and*g* are defined over the set of real numbers as follow:

$$f : x \mapsto x^2 - 4 \text{ and } g : x \mapsto \frac{1}{x-3}, x \neq 3$$

Find:

a) *f(-2)* **(3 marks)**

b) $g^{-1}(1)$ **(2 marks)**

c) State the degree of *f(x)* **(1mark)**

Total (15 marks)

SECTION C

For all Tertiary Science and Technology (TST) and Clothing Industry (CLIN) candidates
Answer all questions in this section
All questions carry equal marks

1. A Company pays a total salary of 50 million francs CFA to two categories of its workers consisting of the senior and the junior Staff in the first year of its creation.

   If 5 Senior Staff receive 500,000FCFA monthly in the first year

   a) Calculate how much will be left as the salary for the Junior Staff for this first year. **(3 marks)**

   b) The salary for the Junior Staff for this first year is divided to men, women and youths in the ratio 5:3:2 respectively. Calculate how much that the women will receive. **(4 marks)**

   One Senior Staff uses his 7 months' salary to buy a car and later sold it for 2.8 million FCFA.Calculate:

   c) How much he loses in the sale of the car. **(2 marks)**

   d) The percentage loss. **(2 marks)**

   e) If the initial salary of 50 million is increased by 20% yearly, calculate the total salary that will be used to pay the workers after 2 years. **(4 marks)**

   Total (15 marks)

---

2. (i) Below are the marks on 10 in an Accounting test in a certain class of 50 students:

0	6	5	0	4	7	6	5	6	4
7	4	0	5	6	7	6	6	6	0
6	7	4	6	6	5	5	6	0	6
4	6	6	7	5	4	6	0	0	7
6	6	4	5	4	7	6	6	7	4

   a) Present this information on a frequency distribution table. **(3 marks)**

   b) State the modal mark. **(1 mark)**

   c) Determine the median. **(3 marks)**

   d) Calculate the mean mark. **(2 marks)**

   (ii) A bag contains 4 black balls and 6 red balls. Two balls are selected at random without replacement. Find the probability that:

   a) Both balls are red **(2 marks)**

   b) Both balls are black **(2 marks)**

   c) Both balls are of different colours. **(2 marks)**

   Total (15 marks)

---

3. i) Given the polynomial function f, defined in $\Re$ by $f(x) = (x+2)(3-2x) + (x+2)^2 - 2(x+2)(x-1)$

   a) Factorise $f(x)$ **(2 marks)**

   b) State the domain of definition of $f(x)$ **(1 mark)**

   c) State the degree of $f(x)$ **(1 mark)**

   d) Evaluate $f(2)$ and $f(-2)$ **(3 marks)**

   ii) In the orthonormal reference system with 1 unit = 1cm on both axes,

   a) Plot the points $A(1,0)$, $B(1,2)$ and $C(4,2)$ **(3 marks)**

   b) Calculate the distance AB, BC and AC **(4 marks)**

   c) State the nature of triangle ABC **(1 mark)**

   Total (15 marks)

---

4. i) Given that $2t+1, 3t+4$ and $8t-1$ are in an Arithmetic Progression, find;

a) The value of t. **(2 marks)**

b) If the value of t is 2, write down the first three terms of the Arithmetic Progression, **(3 marks)**

c) Find a formula for the sum of the first n terms of the Arithmetic Progression, $n \epsilon N^*$ **(2 marks)**

d) Calculate S_{16} **(3 marks)**

ii) A father is 35 years old and the son is 7 years old now;

a) After how many years will the father's age be double that of the son **(3 marks)**

b) Hence give the father and the son's ages at the said time. **(2 marks)**

Total (15 marks)
