

REGISTRATION CENTRE NUMBER

CENTRE NAME

CANDIDATE'S FULL NAMES

CANDIDATE IDENTIFICATION NUMBER

SUBJECT CODE

0570

PAPER NUMBER

2

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 (Candidate Random Code)



**GENERAL CERTIFICATE OF EDUCATION BOARD
ORDINARY LEVEL EXAMINATION**

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

Two and a Half hours

Enter the information required in the boxes above.
 This paper is arranged in two sections, A and B.

Answer ALL questions in Sections A and B.

Section A: Answer ALL the questions in the spaces provided.
 The mark allocation for each question is indicated.

Section B: All questions in Section B carry equal marks.
 The mark allocation for each question is indicated.

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

Calculators are allowed

Question	MARKS
TOTAL	

Turn Over

FOR EXAMINERS' USE ONLY

Marked by: _____

Signature: _____ Date _____

Checked by: _____

Signature: _____ Date _____

SCORE

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

Turn Over

SECTION A***ANSWER ALL 15 QUESTIONS IN THIS SECTION***

1. (a) Express 6.093 to one decimal place.
-

(b) Evaluate $\frac{2}{3} + \frac{1}{5} \div \frac{3}{4} - \frac{1}{3}$

.....

(6 marks)

2. Given the sets A, B and ξ defined as

$$A = \{1, 2, 5, 7\}$$

$$B = \{2, 3, 6, 7\}$$

$$\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$$

Find

(a) A^c

.....

.....

(b) $A \cap B$

.....

.....

(c) $n(B)$

.....

.....

(6 marks)

3. Complete the truth table below

p	q	$\sim p$	$\sim p \vee q$
T	T	F	
T	F	F	
F	T	T	
F	F	T	

(5 marks)

4. The functions f and g are defined as

$$f : x \mapsto x + 1$$

$$g : x \mapsto x^2$$

Find

(a) $g(-2)$

(b) $f^{-1}(1)$

(c) $gf(x)$

16 marks

(6 marks)

5. The floor of a rectangular room measures 600 cm long by 450 cm wide. It is to be covered with squared tiles of dimension 15 cm by 15 cm

- (a) Find the number of tiles used to cover the floor.

Given that each packet has 20 tiles,

- (b) Calculate the number of packets needed

(6 marks)

6.

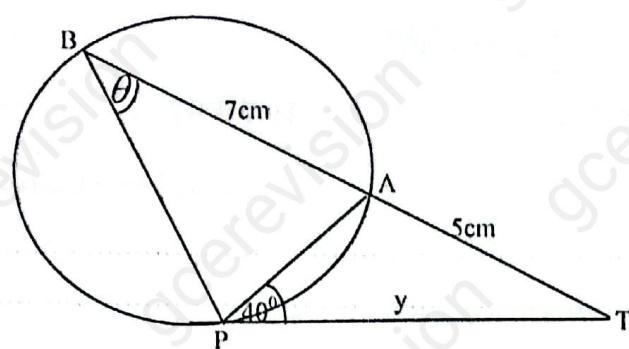


Figure 1

Figure 1 is a circle passing through ABP and a tangent PT. Given that angle $\angle APT = 40^\circ$, $AB = 7\text{cm}$ and $AT = 5\text{cm}$.

- (a) Find the angle marked θ

(4 marks)

- (b) Calculate the value of y

To solve this question, draw a diagram showing triangle AOP and triangle AOT.

mark 1 for each correct sub

(5 marks)

7. Given that the points A and B have coordinates $A(1, 2)$ and $B(3, 6)$.

Find :

- (a) the coordinates of the mid-point M of A and B

before attacking to problem with student (d)

- (b) the gradient of the line segment AB

before attacking to problem with student (d)

- (c) the gradient of the line perpendicular to AB

before attacking to problem with student (d)

(6 marks)

8. Given that y varies directly as x^2 , and $x = 1$ when $y = 3$

- (a) Form an equation in x and y

(4 marks)

(b) Find the value of y when $x = 4$

Turn Over

(6 marks)

9. Given the equation $a = \frac{\sqrt{cr}}{3}$

(a) Express r in terms of a and c

(b) Find the value of r , when $a=2$ and $c=3$

(5 marks)

10. Given that $(x-1)$ is a factor of $f(x) = x^2 + qx - 3$,

(a) Find the value of q

(b) With the value of q in (a), factorise $f(x)$

(c) Hence, solve $f(x) = 0$

(6 marks)

11. Given that the bearing of a ship, P, from a port, Q, is 080°

(a) Sketch a diagram to illustrate the movement

Turn Over

- (b) Find the bearing of Q from P

(5 marks)

12. Two matrices M and N are such that $M = \begin{pmatrix} 3 & 1 \\ 2 & 5 \end{pmatrix}$ and $N = \begin{pmatrix} a-1 & 1 \\ 2 & b+3 \end{pmatrix}$

Find

- (a) the values of a and b given that $M = N$

- (b) the transpose of M

(6 marks)

13. Given that the first term in an arithmetic progression (AP), is 3 and the fifth term is 19.

- (a) Determine the common difference

- (b) Find the first two terms of the AP

- (c) Find the sum of the first ten terms

(6 marks)

14.

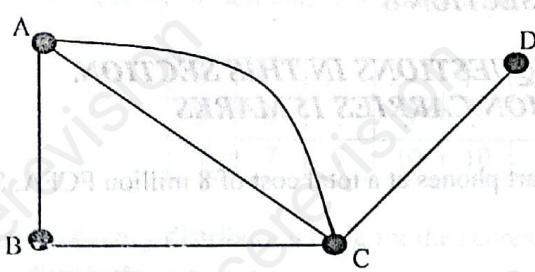


Figure 2

Figure 2 is a network A, B, C and D

State

(a) the number of nodes

.....

(b) the number of edges

.....

(c) the number odd vertices

.....

(4 marks)

15. A bag contains 3 ripe mangoes and 2 unripe mangoes. Two mangoes are drawn out of the bag at random one after another without replacement.

Find the probability that

(a) the first mango is ripe

.....

(b) both mangoes are unripe

.....

(5 marks)

The diagram shows a Cartesian coordinate system with the x-axis and y-axis. A triangle KLM is plotted with vertices K(1, 2), L(3, 2), and M(3, 4). A line segment AB is drawn through the points A(2, 1) and B(4, 3).

The transformation T is a translation from triangle KLM to triangle K'L'M' with a coordinate rule $\begin{pmatrix} x \\ y \end{pmatrix} \rightarrow \begin{pmatrix} x+1 \\ y+2 \end{pmatrix}$.

(a) Find the coordinates of K'L'M'.

(b) Draw triangle K'L'M'.

(c) The triangle ABC has vertices A(2, 1), B(4, 3) and C(3, 2). The triangle ABC is reflected in the line $y = 2x - 3$. Find the coordinates of the image triangle A'B'C'.

SECTION B

**ANSWER ALL FOUR QUESTIONS IN THIS SECTION.
EACH QUESTION CARRIES 15 MARKS**

1. (i) A telephone dealer decides to import 200 smart phones at a total cost of 8 million FCFA. She pays 40% of the amount as taxes.

Find:

- the total amount spent on taxes.
- her total expenditure on the phones
- the cost of a phone

If she makes a profit of 15% on each phone,

Find

- the profit made on each phone
- the total selling price of the phones

(10 marks)

- (ii) Solve the simultaneous equations

$$2p - 3q = 12$$

$$3p + q = 7$$

(5 marks)

2. Using a scale of 2 cm for 1 unit on the x – axis and 1 cm for 1 unit on the y – axis, draw the graph of $y = x^2 - 3x - 4$ for $-2 \leq x \leq 5$.

- On the same graph paper, draw the line $y = 2x - 4$.
Using your graph,
- State the values of x for which $y = x^2 - 3x - 4$ cuts the x – axis.
- State the minimum value of the curve $y = x^2 - 3x - 4$.
- Solve the equation $x^2 - 5x = 0$.

(15 marks)

3. (i) The marks obtained by 30 students in a Mathematics examination are showed in the table below.

3	3	1	2	4	4	4	5	5	5
3	3	3	5	5	7	7	7	8	8
7	7	7	10	10	9	9	10	9	10

- (a) Draw up a frequency distribution table for the scores.

From the distribution table,

Find:

- (b) The mode
 (c) The median
 (d) The mean
 (e) The probability that a student selected at random will score a mark less than 8.

(11 marks)

(ii)

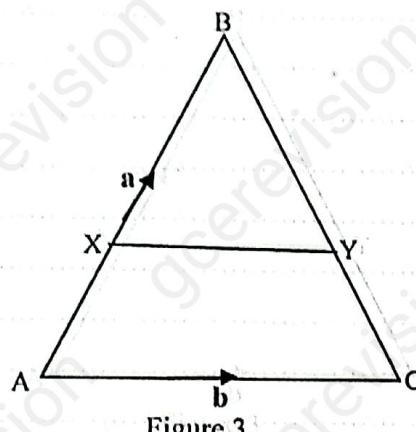


Figure 3

In figure 3, X is the midpoint of AB and Y is the midpoint of BC. Given that $\mathbf{AB} = \mathbf{a}$ and $\mathbf{AC} = \mathbf{b}$

Find in terms of \mathbf{a} and \mathbf{b} the vectors

(a) \mathbf{AX}

(b) \mathbf{CY}

(4 marks)

4. Using a scale of 1 cm to represent 1 unit on each axis, for $0 \leq x \leq 9$ and $0 \leq y \leq 10$

- (a) Draw and label triangle XYZ with coordinates $X(3,2)$, $Y(6,2)$ and $Z(6,5)$.

The transformation T is a translation that maps triangle XYZ to $X'Y'Z'$, where $T = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$

- (b) Find the coordinates of $X'Y'Z'$

- (c) Draw triangle $X'Y'Z'$

- (d) Reflect triangle XYZ on the y-axis to give $X''Y''Z''$

- (e) Write down the coordinates of $X''Y''Z''$

(15 marks)