

0570/2/2022
MATHS O/L

**SOUTH WEST REGIONAL MOCK EXAMINATION
GENERAL EDUCATION**

**THE TEACHERS' RESOURCE UNIT (TRU)
IN COLLABORATION WITH**

**THE REGIONAL INSPECTORATE OF PEDAGOGY FOR SCIENCE EDUCATION
AND**

THE SOUTH WEST ASSOCIATION OF MATHEMATICS TEACHERS (SWAMT)

TUESDAY Afternoon: 05/04/2022

ORDINARY LEVEL

Candidate's Name	
Subject Title	Mathematics
Paper Number	Paper 2
Subject Code Number	0570

Two hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

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

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

SECTION A: (STRUCTURAL)

Answer ALL the questions in this section in the spaces provided. For your guidance, the approximate mark for each part of a question is indicated in brackets.

1. a) Simplify the expression $8x - 2(x + 1)$

.....
.....

- b) Solve the equation $8x - 2(x + 1) = 5x$

.....
.....
.....

(5 marks)

2.

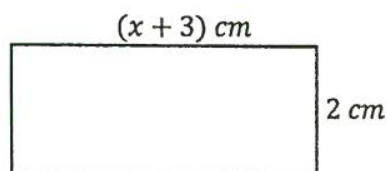


fig 1

Given that the area of the rectangle, *fig 1* above, is 12 cm^2 .

- a) Find the value of x

.....
.....
.....

- b) Using the value of x above, find the perimeter of the rectangle

.....
.....

(6 mark)

3. Given the function $f: x \rightarrow \frac{4x-1}{x+4}$

- a) Find $f(2)$

b) Write down the domain of the function

c) Solve the equation $f(2x) = 1$

(7 marks)

4. a) Draw the truth table for the statement $p \Rightarrow q$

b) What name is given to the type of statement?

(4 marks)

5. a) Evaluate $\frac{3x+2y}{2u-3x}$ when $x = -3, y = 1$ and $u = -4$

b) given that $z = \frac{xt^2}{u-t^2}$, make t the subject of the formula

(7 marks)

6. The masses of two similar objects are 24 kg and 81 kg respectively.

a) Find the scale factor of the bigger to the smaller

Given that the area of the bigger object is 540 cm^2

b) Calculate the area of the smaller object.

7. a) Solve the inequality $x^2 - 10x + 24 > 0$.

.....
.....
.....
.....

b) represent your answer in (a) above as an interval

.....
.....

(6 marks)

8.

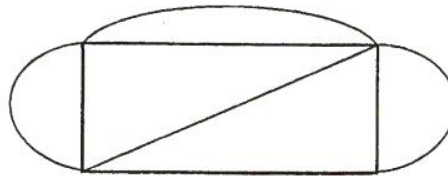


fig 2

fig 2 above is a network

a) Write down the number of nodes

.....

b) State the number of arcs

.....

c) State the number of regions

.....

d) Is the network traversable or not?

.....

e) Give a reason for your answer in (d) above.

.....
.....

(6 marks)

9.

x	2	3	
y		8	$\frac{24}{9}$

Given that y is inversely proportional to x

Complete the table above.

.....

(4 marks)

10.

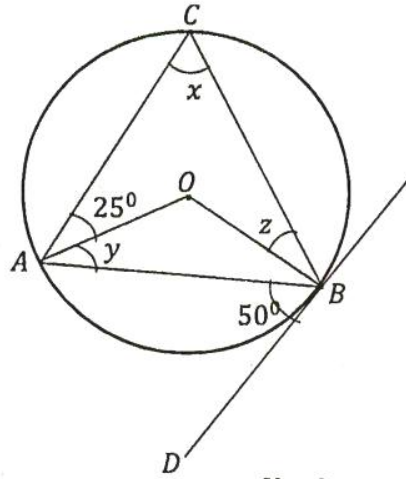


fig 3

fig 3 above is a circle with center O and BD is a tangent to the circle.

a) Find the angle x

.....

b) Find the angle y

.....

c) Find the angle z

.....

(6 marks)

11. Given that $A = \begin{pmatrix} 2 & 0 \\ 3 & 5 \end{pmatrix}$ and $B = \begin{pmatrix} -1 & -3 \\ 2 & -1 \end{pmatrix}$

Find

a) $3A$

.....

b) $A + B$

.....

c) Given that $|B| = 2x + 1$, find the value of x .

.....

(6 marks)

12. Given that $A(3, 2)$ and $B(-2, 4)$ are positions of points referred to the origin O .

Find the coordinates of C , given that $\vec{OC} = \vec{OA} - \vec{AB}$

.....

(4 marks)

13. a) A hexagonal-based pyramid is 15 cm tall. The area of its base is 18 cm^2 .

Calculate its volume

.....

b)

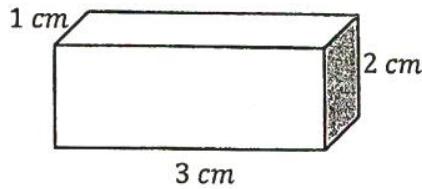


fig 4

Calculate the surface area of fig 4 above

.....

(5 marks)

14.

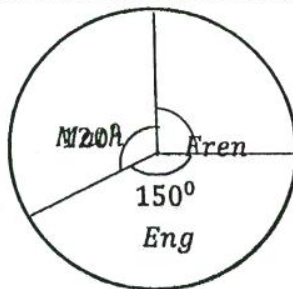


fig 5

fig 5 above is a pie chart showing pass in three compulsory subjects: English (Eng), French(Fren) and Mathematics(Math) in a class test.

a) In which subject did the students perform best?

.....

b) What fraction of students passed in French?

.....

.....

c) Given that there were 60 students in the class. How many students passed in mathematics?

.....

.....

(4 marks)

15. A fair coin is tossed twice. Find the probability of getting

a) 2 heads

.....

.....

b) 2 tails

.....

.....

c) Both outcomes that are the same

.....

.....

(5 marks)

SECTION B: (PROBLEM-SOLVING)

Answer all the questions in this section showing your working clearly. All the questions carry equal marks, 15

1. i) A stadium has 50,000 seats of which Tribune A has 1,000 seats and Tribune B has 3,000 seats. The prices for tickets are 10,000 XAF for Tribune A and 5,000 XAF for Tribune B.
On a certain match day 80% of seats in Tribune A and 60% of seats in Tribune B were occupied.
- a) Calculate the money collected from sales of tickets
On another match day x number of seats were occupied in Tribune A and $x + 2$ occupied in Tribune B. the total money collected was 9,010,000 XAF.
- b) Calculate the value of x

ii) Solve the simultaneous equations

$$3x + y = 10$$

$$x - y = 2$$

using matrix method.

2. i) A group of 100 people were asked whether they preferred traveling by road, by sea or by air.
- 72 preferred by all three means
 - 74 preferred by road and by sea
 - 80 preferred by road and by air
 - 78 preferred by sea and by air
 - 3 preferred by road only
 - 5 preferred by sea only
 - 3 preferred by air only
- a) draw a Venn diagram to illustrate the survey
how many preferred
- b) none of the means?
- c) Exactly two means only?

ii) a) Given that $(x - 1)$ is a factor of the expression $x^3 + x^2 + kx + 1$, find the value of k and one other factor

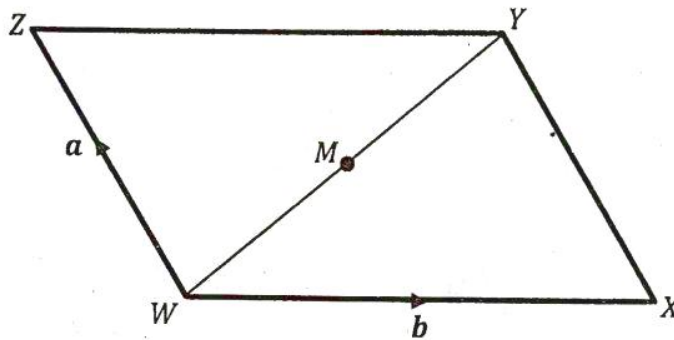
b) Given that the remainder when $x^3 + px^2 - x - 1$ is divided by $(x + 1)$ is 1, find the value of p

3. i) An aircraft flies 400 km from a point O on a bearing of 060° to a point A and then 700 km due east of A to arrive at B . Calculate, leaving your answer to the nearest whole number,
- how far north of O is B
 - how far east of O is B
 - the shortest distance of B from O

ii) Using a ruler, pencil and a pair of compasses only

- Construct a line $OA = 9 \text{ cm}$ and construct an angle $AOB = 60^\circ$
- Bisect \widehat{AOB} and mark a point X on the bisector such that $OX = 7 \text{ cm}$
- Construct a circle with center X to touch OA and OB and measure the radius of the circle.

4. i) The diagram below $WXYZ$ is a parallelogram. $\overrightarrow{WZ} = \mathbf{a}$, $\overrightarrow{WX} = \mathbf{b}$ and M is the midpoint of WY



Write down in terms of \mathbf{a} and \mathbf{b}

- \overrightarrow{WY}
- \overrightarrow{WM}
- \overrightarrow{XW}
- \overrightarrow{XZ}

- ii) Some students were asked to pour out a sample of sand that they estimated would have a mass of 25 kg . The table below shows a summary of the masses of their samples

Masses, m in g	Frequency
$m \leq 5$	2
$5 < m \leq 10$	3
$10 < m \leq 15$	4
$15 < m \leq 20$	7
$20 < m \leq 25$	25
$25 < m \leq 30$	51
$30 < m \leq 35$	31
$35 < m \leq 40$	9
$40 < m \leq 45$	5
$45 < m \leq 50$	3

- a) Draw a cumulative frequency curve for the data
Use your diagram to
- b) Estimate the median and interquartile range
- c) Estimate the 70th percentile
- d) Estimate how many students' samples were within the 10g of the median
- e) Find the probability that the sample of sand will have a mass of more than 40g.

THE END