ST. PAUL'S COLLEGE
FORM 6 INTERNAL EXAMINATION 2023 - 2024
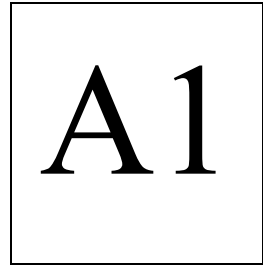
MATHEMATICS Compulsory Part

PAPER 1

Section A1

Question-Answer Book

2¼ hours
This paper must be answered in English.

Name	
Class	( )
Group	G1 LMW G2 PSK G3 TMF G4 WHP G5 TMF G6 LMW G7 PSK

INSTRUCTIONS

1. Write your Name, Class and Class number in the spaces provided on the right. Circle your Group Number.

2. This paper consists of THREE sections, A(1), A(2) and B.

3. Attempt **ALL** questions in this paper. Write your answers in the spaces provided in this Question-Answer Book. Do not write in the margins. Answers written in the margins will not be marked.

4. Graph paper and supplementary answer sheets will be supplied on request. Write your Name, Class and Class number in the spaces provided, mark the question number box, and fasten them with string INSIDE this book.

5. Unless otherwise specified, all working must be clearly shown.

6. Unless otherwise specified, numerical answers should be either exact or correct to 3 significant figures.

7. The diagrams in this paper are not necessarily drawn to scale.

Question No.	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total	

1. Simplify $\dfrac{(-2m^3n)^2}{(3m^4)^{-1}}$ and express your answer with positive indices. (3 marks)

2. Make k the subject of the formula $\dfrac{1}{h} + 2 = \dfrac{3}{4-k}$. (3 marks)

3. Factorize

    (a) $5x^2 - 3xy - 2y^2$,

    (b) $x^3 - xy^2 - 5x^2 + 3xy + 2y^2$.

    (3 marks)

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4. Let a, b and c be non-zero numbers such that $2a = 3c$ and $4b - 3a = 2c$. Find

    (a) $a : b : c$,

    (b) $\dfrac{3a - 4c}{2b}$.

    (4 marks)

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5. Consider the compound inequality

$$x - 3 \le \frac{2 - 3x}{4} \quad \text{and} \quad 1 - 3x > 10 \quad \cdots\cdots\cdots\cdots(*)$$

(a) Solve (*).

(b) Write down largest integer satisfying (*).

(4 marks)

6. The marked price of a chair is 30% above its cost. A loss of 25% is made by selling the chair at a discount of $297. Find the marked price of the chair. (4 marks)

7. Seven years ago, the ages of Jane and Paul were in the ratio of $2:3$. The ratio now becomes $3:4$. Find the present age of Paul. (4 marks)

8. In the figure, *ABCDE* is a circle with center *O*. *AD* and *EC* intersect at *F*. *AD* and *GC* intersect at *O*. *G* is a point on *AE*. It is given that $\angle ABC = 120°$ and $\angle CFD = 80°$.
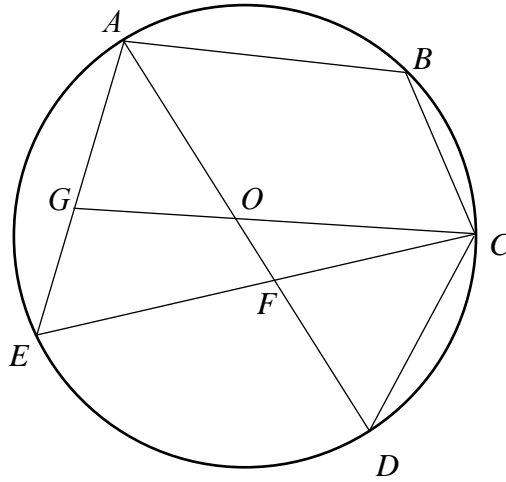
(a) Find $\angle FDC$ and $\angle COD$.
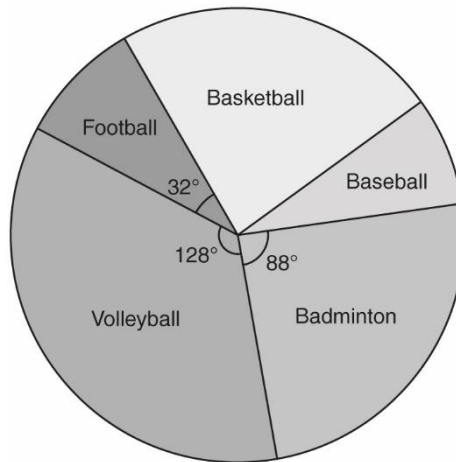
(b) Prove that $\Delta OCF \sim \Delta ECG$.

(5 marks)

Page total

9. A school conducted a survey on the favourite sports of all the F1 students. The result is shown in the figure below.

The favourite sports of F1 students

It is known that the number of students choosing badminton as their favourite sport is 21 more than that of football.

(a) Find the number of students who chose volleyball as their favourite sport.

(3 marks)

(b) A student is randomly chosen from all F1 students, find the probability that the student's favourite sport is neither volleyball nor badminton.

(2 marks)

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End of Section A1

Page total

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