

UNIVERSITY OF FORT HARE

ALICE CAMPUS

MAM 321

BACHELOR OF EDUCATION: YEAR 3

**FINAL OCTOBER/NOVEMBER
EXAMINATIONS**

2024

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Subject: MATHEMATICS METHOD

Time: 3 Hours

Marks: 100

This paper consists of 7 pages, including the cover page.

Examiner: Ms B Stemele/ Prof WW Hendricks

Internal Moderator: Ms N Bambiso

Instructions:

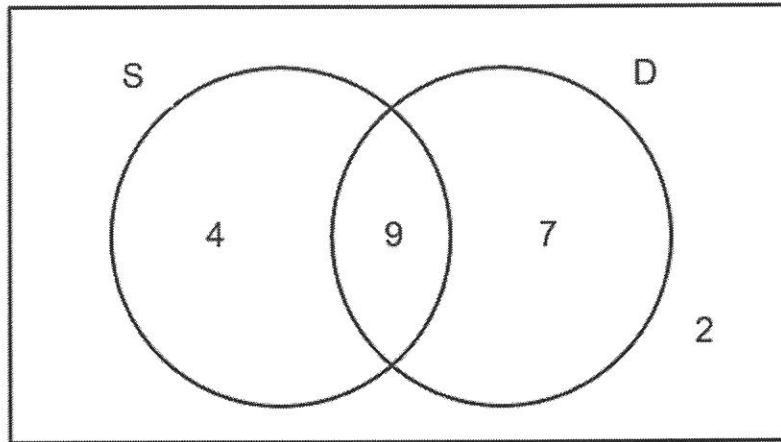
1. Answer all 4 questions
2. Use the mark allocation as a guide when responding to questions
3. Where possible, use tables, graphs, or diagrams to enhance your answers
4. Write your name and student number on your answer sheet.

DO NOT TURN THE PAGE BEFORE BEING TOLD TO DO SO

Question1:

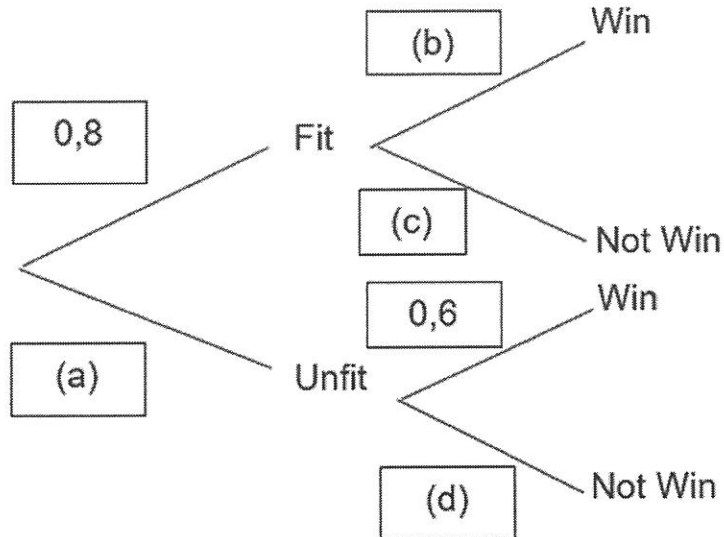
1.1 Probability is a new topic introduced in the CAPS curriculum for the Senior Phase.

The following Venn diagram shows some preferences for singing and dancing in a group of girls.



- 1.1.1 How many girls are in the group? (1)
- 1.1.2 How many girls like dancing only? (1)
- 1.1.3 What is the probability of randomly selecting a girl who likes singing and dancing?? (1)
- 1.1.4 What is the probability of selecting a girl who likes singing or dancing? (1)
- 1.1.5 What is the probability of selecting someone who does not like singing? (1)
- 1.1.6 What is the probability of selecting someone who likes dancing? (1)
- 1.1.7 Given that a girl likes dancing, what is the probability that she likes to sing? (1)

1.2 A netball team is fit 80% of the season. When they are fit, they win 95% of their matches. When they are unfit, they only win 60% of their matches.



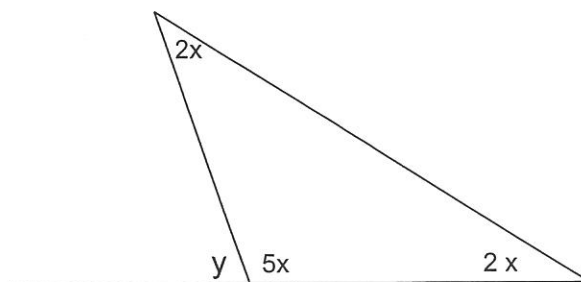
1.2.1 Copy and complete the tree diagram in your answer book to represent the information. (4)

1.2.2 Determine the probability that the netball team will Not Win. (3)

1.3 The study of triangles is fundamental for learners to understand Space and Shape according to CAPS in the Senior Phase.

1.3.1 Explain how you will demonstrate to your learners that the sum of the interior angles of a triangle is equal to 180° . (4)

1.3.2 Determine, giving reasons, the values of the unknown angles in the figure given below.



(8)

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Question 2

2.1 One of the content areas included in the Senior Phase mathematics is 'Space and Shape' (Geometry)

2.1.1 Geometry is a fundamental part of the Senior Phase curriculum. What key topics fall under the 'Space and Shape' category, and how would you introduce these to Grade 7 learners? (4)

2.1.2 Give four reasons why Space and Shape (Geometry) should be included in the Senior Phase mathematics curriculum. (4)

2.2 Classification of 2D shapes and 3D solids is part of mathematics in the Senior Phase.

2.2.1 In simple terms, how would you help Grade 7 learners differentiate between 2D shapes and 3D solids? (3)

2.2.2 Sketch and label 5 regular polygons. (5)

2.2.3 Write down the formula for the sum of the interior angles for a regular polygon with n number of sides. (2)

2.2.4 Write down the formula for each angle for n number of sides. (2)

2.3 You want your Grade 8 learners to investigate the relationship connecting the number of vertices, edges, and faces of the Platonic solids.

2.3.1 Explain to your learners the following concepts:

a) vertices (1)

b) edges (1)

2.3.2 Write the rule relating to the number of vertices, edges, and faces of a Platonic solid (2)

2.3.3 A solid has 5 vertices and 5 faces. Name the solid. (1)

[25]

Question3:

3.1 CAPS for the Senior Phase in Mathematics for Grade 7 suggests that learners should be able to:

Describe, sort, name, and compare triangles according to their sides and angles.

3.1.1 Name, define, and provide an example of each type of triangle based on sides and angles. (6)

3.1.2 Can a triangle be right-angled and equilateral? Give a reason for your response. (3)

3.2 Match the following 2D shapes with their corresponding definitions. Each definition applies to one shape only. Write the number of the shape and the letter of the definition, e.g., 1A, 2B. (10)

2D Shapes:

1. Rectangle
2. Kite
3. Parallelogram
4. Rhombus
5. Trapezium

Definitions:

- A. A quadrilateral with at least one pair of parallel sides.
- B. A quadrilateral with opposite sides that are equal and parallel.
- C. A quadrilateral with all sides equal and opposite angles equal.
- D. A quadrilateral with opposite sides equal and all angles equal to 90° .
- E. A quadrilateral with two pairs of equal adjacent sides.

3.3 You are given a regular polygon with 6 sides ($n = 6$)

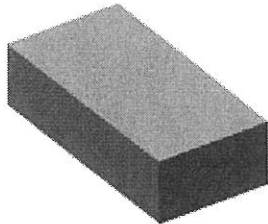
3.3.1 Name the polygon. (1)

3.3.2 Use the general formula and determine the size of ONE angle. (4)

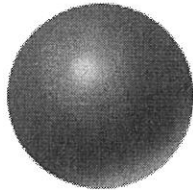
[24]

Question 4:

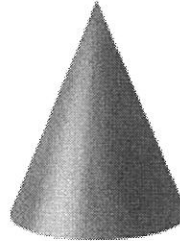
4.1 The pictures and volumes of six platonic solids are given below. Copy the table in your answer book by sorting the solids according to their respective volumes, and complete their respective surface areas by writing their correct formulas.



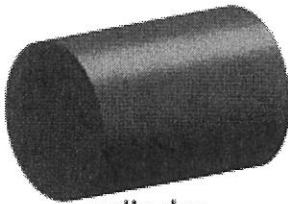
rectangular
prism



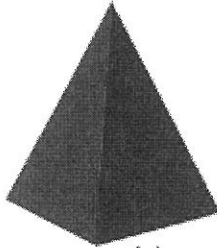
sphere



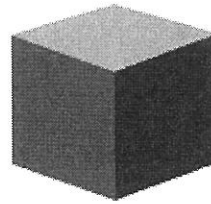
cone



cylinder



pyramid



cube

Name of Solid	Volume	Surface Area
a)	$V = l \times b \times h$	SA =
b)	$V = s^3$	SA =
c)	$V = \pi r^2 h$	SA =
d)	$V = \frac{4}{3} \pi r^3$	SA =
e)	$V = \frac{1}{3} \pi r^2 h$	SA =
f)	$V = \frac{1}{3} \text{area of } b \times h$	SA =

(12)

4.2 Consider triangle ABC with the following vertices:

- A (2,3)
- B (5,7)
- C (3,1)

4.2.1 Translate triangle ABC 4 units to the right and 2 units down and calculate the new coordinates of vertices A' after the translation. (2)

4.2.2 Rotate triangle ABC 90° clockwise about the origin and find the new coordinates of vertices B'. (2)

4.2.3 Reflect triangle ABC across the x-axis and determine the coordinates of vertices C' after the reflection. (2)

4.2.4 Enlarge triangle ABC by a scale factor of 3 and determine the coordinates of vertices A'B'C' after the enlargement. (3)

4.3 The volume of a cube is given as 729 cm³.

Calculate:

4.3.1 The length of the sides of the cube (2)

4.3.2 The total surface area of the cube. (2)

[25]

GRAND TOTAL:

{100}

THE END OF YOUR QUESTION PAPER!☺

