

UNIVERSITY OF FORT HARE

ALICE CAMPUS

EDM 322

BACHELOR OF EDUCATION: YEAR 3

**SUPPLEMENTARY JANUARY/FEBRUARY
EXAMINATIONS**

2019

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Subject: MATHEMATICS METHOD

Time: 3 Hours

Marks: 100

This paper consists of 6 pages including the cover page

Examiner: Dr WW Hendricks

Internal Moderator: Mr C Thomas

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 One of the new topics that were introduced in the CAPS curriculum for the Senior Phase is Probability.

1.1.1 Which grades do the Senior Phase include? (2)

1.1.2 Define 'Probability' in mathematics. (2)

1.2 One of the graphical representations (diagrams) in Probability is a Contingency table. Name ONE other diagram. (1)

1.3 The manager of a motor garage has observed that a Toyota Tazz will require:

- a) a tune-up with a probability of 0,6
- b) a brake job with a probability of 0,1
- c) both a tune-up and a brake job probability of 0,02

Draw a Venn-diagram and determine what the probability that the Toyota Tazz will require is:

1.3.1 either a tune- up or a brake job? (3)

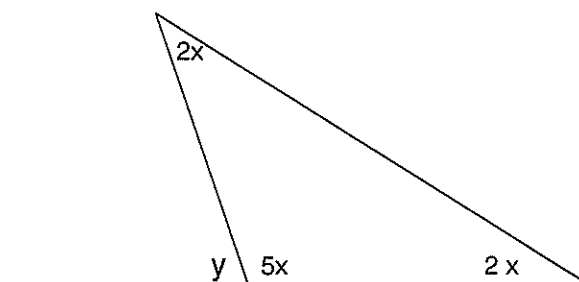
1.3.2 a tune-up but not a brake job? (2)

1.3.3 neither type of repair (3)

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

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

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



(8)
[25]

Question 2

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

2.1.1 Explain to a Grade 7 class the main concepts/ topics covered under Space and Shape in the Senior Phase. (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 Explain the differences between 2- dimensional and 3-dimensional objects as if you are explaining them to Grade7 learners (3)

2.2.2 Sketch and label 5 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 Hence write down the formula for each angle for n number of sides. (2)

2.3 You want your Grade 8 learners to investigate the relation 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 suggest that learners should be able to:

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

3.1.1 Sketch and name the triangles according to the size of the angles. (3)

3.1.2 Explain the properties of the triangles according to the size of the angles. (6)

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

3.2 Match each definition with the correct figure. If a definition applies to more than one figure, then choose the figure that it describes the best. You may only use each definition once. (Write the number of the figure and the letter of the definition – you do not have to rewrite the whole definition.)

FIGURE		DEFINITION
1. square	A	a quadrilateral with diagonals that bisect at 90°
2. rhombus	B	a quadrilateral with one pair parallel sides
3. kite	C	a quadrilateral with 90° angles and four equal sides
4. trapezium	D	a quadrilateral with equal adjacent sides

(8)

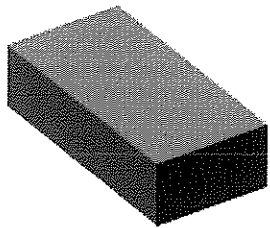
3.3 You are given a regular polygon with 8 sides ($n = 8$)

3.3.1 Name the particular polygon? (1)

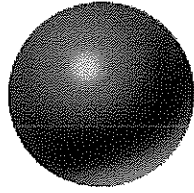
3.3.2 Use the general formula and determine the size of ONE angle. (4)
[25]

Question 4:

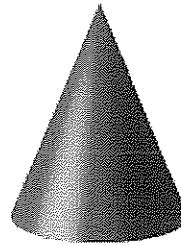
4.1 The pictures and volumes of six platonic solids are given on the next page. Copy the table in your answer book by sorting the solids according to their respective volumes, and also complete their respective surface areas by writing their correct formulas.



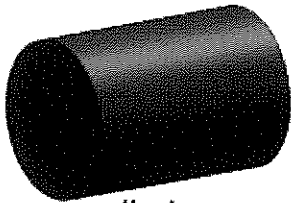
rectangular prism



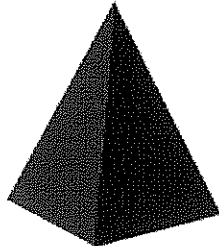
sphere



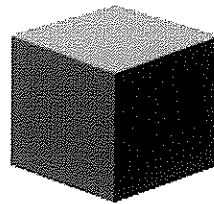
cone



cylinder



pyramid



cube

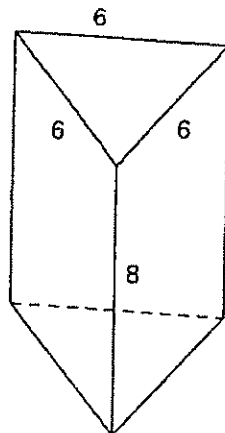
4.1

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 Study the following diagram below. The units are in cm.

Right prism with an equilateral triangle as base



4.2.1 Calculate the area of the triangle at the base of the prism
(Round off your answer to 1 decimal place) (4)

4.2.2 Hence calculate the volume of the prism
(Round off your answer to 1 decimal place) (2)

4.2.3 Calculate the total surface area of the prism (3)

4.3 The volume of a cube is given as 729 cm^3 .
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!☺