EXAMINATION	NATIONAL SENIOR CERTIFICATE
GRADE	12
DATE	NOVEMBER 2025
SUBJECT	MATHEMATICAL LITERACY
PAPER	2
MARK TOTAL	150
DURATION (HOURS)	3
NUMBER OF PAGES	18

SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE

SUID-AFRIKAANSE KOMPREHENSIEWE ASSESSERINGSINSTITUUT

INSTRUCTIONS AND INFORMATION

1. This question paper consists of 5 questions and 18 pages.
2. Answer **ALL** the questions.
3. Number the answers according to the numbering system used in the question paper.
4. Start each question on a new page.
5. An approved non-programmable and non-graphical calculator may be used.
6. Show **ALL** calculations clearly.
7. Round **ALL** final answers off according to the context, unless stated otherwise.
8. Indicate **ALL** units where applicable. Units MUST be shown in final answers.
9. Maps and diagrams are **NOT** necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly, in **BLUE** ink only.

QUESTION 1

1.1 Bridgerton is an American produced historical romance television series created by Chris Van Dusen for Netflix.

Composer	Chris Bowers
Country of origin	United States
Original language	English
Number of seasons	3
Production	
Executive producer	Shonda Rhimes
Editor	Jim Flynn
Running time per episode	Approximately 50 – 70 minutes
Original release	
Network	Netflix
Release date	25 December 2020

[Source: https://en.wikipedia.org/wiki/Bridgerton#Production]

1.1.1 State the release date for the Bridgerton series. (2)

1.1.2 On which network was it originally released? (2)

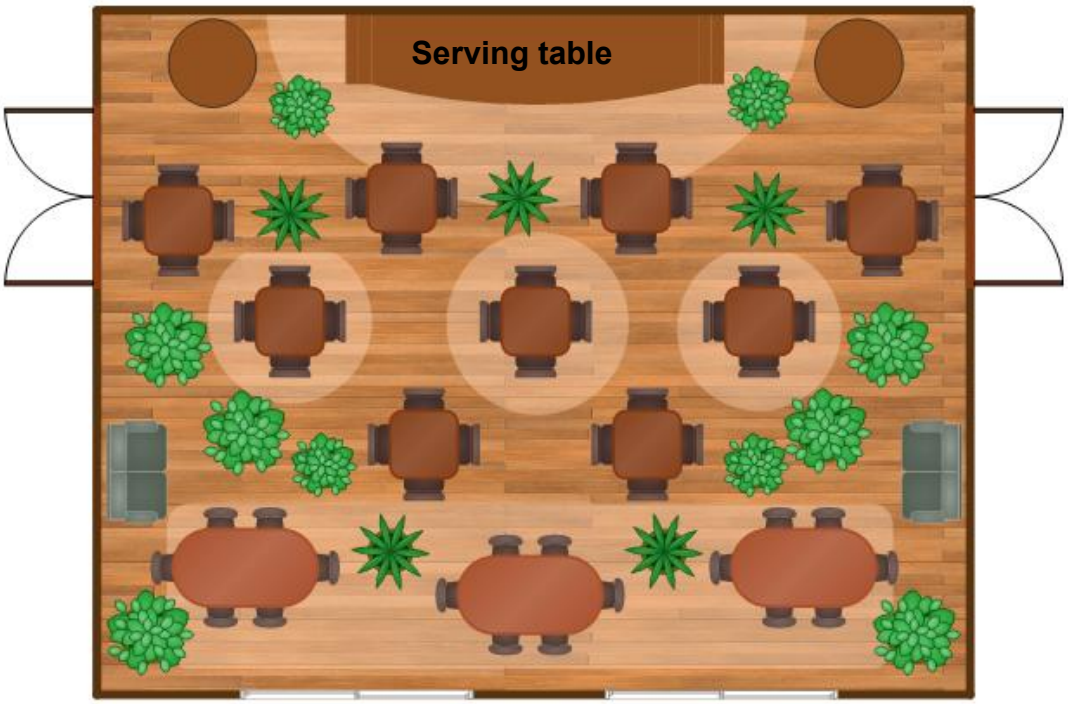
1.1.3 State the number of Bridgerton seasons that have been released. (2)

1.1.4 In which country did Bridgerton originate? (2)

1.1.5 What is the approximate minimum running time of each Bridgerton episode? (2)

1.2 Many fancy dances are hosted in the Bridgerton series.

Below is the floor plan of a ballroom where a fancy dance is held.



Key	
Door	
Window	

[Source: https://www.conceptdraw.com/examples/purpose-of-layout-in-building-a-hall]

Use the above information and floor plan to answer the questions that follow.

1.2.1 Answer True or False:

a. There are three entrances leading into the ballroom. (2)

b. 54 guests can be seated around the tables. (2)

c. There is an area designated for a dance floor. (2)

d. There are no windows in the ballroom. (2)

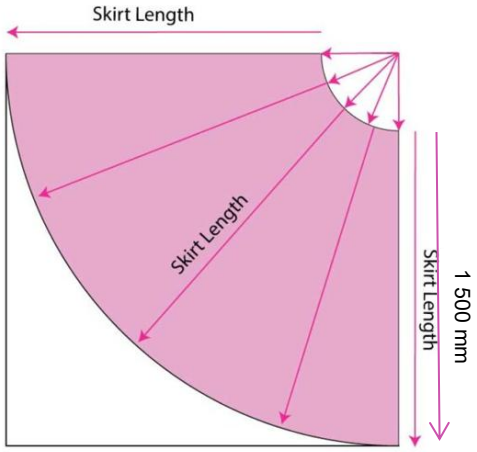
1.2.2 The floor of the ballroom needs to be retiled. Select which formula would be used to calculate the area of the ballroom floor from the list below. Write the formula number e.g., Formula 4.

Formula 1	2(length x width)
Formula 2	length x width
Formula 3	Length + width

(2)

1.3 Daphne, one of the main characters in the Bridgerton series, needs to get a gown made for a ball. She finds a design for a skirt that she is considering.

Study the design and answer the questions that follow.



[Source: https://www.mygoldenthimble.com/circle-skirt-pattern-variations/]

1.3.1 Convert 1 500 mm (the length of the skirt) to meters. (2)

1.3.2 Select the correct unit of measurement for calculating the circumference of the skirt.

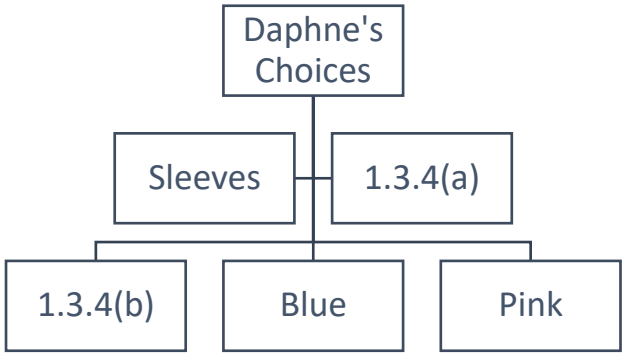
m	m^3	m^2

(2)

1.3.3 Daphne would like to add a strip of silver ribbon around the bottom of the skirt. How wide would the ribbon have to be, in mm, if she wants 1 420 mm of the skirt's pink fabric length to be exposed? (2)

1.3.4 Daphne can choose her skirt to be pink, blue, or yellow. The top of her skirt can have sleeves or be sleeveless.

Using this information, complete the missing words in the tree diagram given below.



(4)

[30]

QUESTION 2

2.1 The current trend of using water bottles filled with water for weight training reflects a broader shift towards more accessible, cost-effective, and adaptable fitness solutions.

Weight – 1kg	Water Bottle – 1 litre
	

[Source: google images]

You do not need much space. You can use different sizes of water bottles and get different weights or fill up water to different levels and adjust the weight. You can buy affordable water bottles at a shop.

Jolene has just started training with water bottles.

[Source: https://francisandterryrogan.co.za/2020/04/26/water-bottle-workout/]

2.1.1 A standard water bottle holds 750 millilitres of water when full.

a. Convert the volume of a full standard water bottle to litres. (2)

b. 1 litre of water has a mass of 1 kilogram. If Jolene uses two full standard water bottles as weights, calculate the total mass she will be lifting? (3)

2.1.2 It is estimated that lifting the water bottles for 10 minutes burns approximately 50 calories.

a. If Jolene exercises for half an hour, how many calories would she burn? (3)

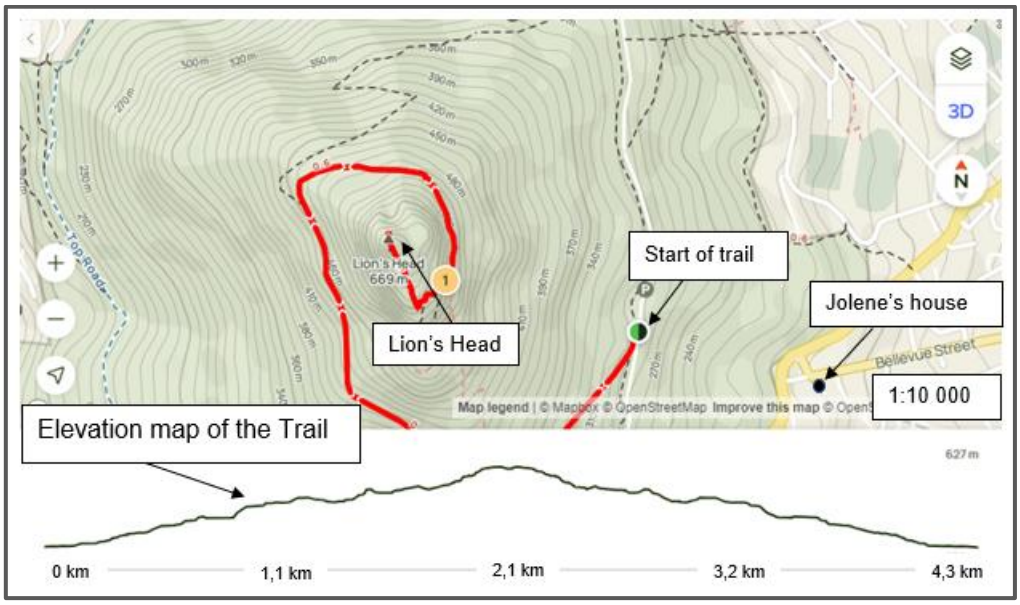
b. How long would Jolene need to exercise to burn 450 calories? Give your answer in hours. (3)

c. Jolene has a full 1,5-litre bottle of water, but during her workout, she drinks 350 mℓ. What percentage of the bottle's volume is left? (4)

2.2 Jolene decides to incorporate a walk into her water bottle training.

Below is a map of the Lion Head Summit walking trail, a 5,5 km round trip, near her home in Bellevue Street.

[Source: https://hikelionshead.co.za/lions-head-hiketimes/]



[Source: https://www.alltrails.com/trail/south-africa/western-cape/lion-s-head-summit/edit?ref=trail-suggest-edit]

Use the above information and answer the questions that follow.

2.2.1 In which general direction is Lion's Head from Jolene's house? (2)

2.2.2 After how many kilometres from the start of the trail would Jolene have reached the highest point of elevation on the trail? (2)

2.2.3 Jolene calculated that the start of the trail is 300 m from her house. Use the scale of the map to verify whether she is correct. (4)

2.2.4 If Jolene walks at a speed of 3 km per hour, how long will it take her to complete the 5,5 km round trip walk? Give your answer in hours and minutes.

$$\boldsymbol{Time = \frac{Distance}{Speed}}$$

(3)

2.3 Jolene found the recipe given below to bake cookies for a cake and candy sale at her daughter's school.

Soft Classic Vanilla Cookies

Preparation time: 10 minutes
Baking time: 20 minutes Method: Baking
Maximum number of cookies: 22 cookies

Oven: 198 °F

Ingredients

225 g unsalted butter

300 g granulated sugar

1 tsp vanilla extract

1 large egg

320 g all-purpose flour

1 tsp salt

$\frac{1}{2}$ tsp baking soda

[Source: https://cloudykitchen.com/blog/classic-vanilla-cookies/#tasty-recipes-23467-jump-target]

Use the above information and answer the questions that follow.

2.3.1 Determine the amount of granulated sugar that would be needed to make 60 cookies? Round your answer to the nearest gram. (3)

2.3.2 Calculate, to the nearest minute, the time needed to prepare and bake 60 cookies. (6)

2.3.3 At what temperature, in ℃, would Jolene have had to set her oven? Round your answer to the nearest 10℃.

$$℃ = (°F - \mathbf{32}) \times \frac{\mathbf{5}}{\mathbf{9}}$$

(3)

2.3.4 Jolene finished her walk at Lion's Head and arrived home at 10h30. She would have loved to rest but needed the 60 cookies to be done by 16h00. How long could Jolene have rested for to make sure the cookies were done by 16h00? (4)

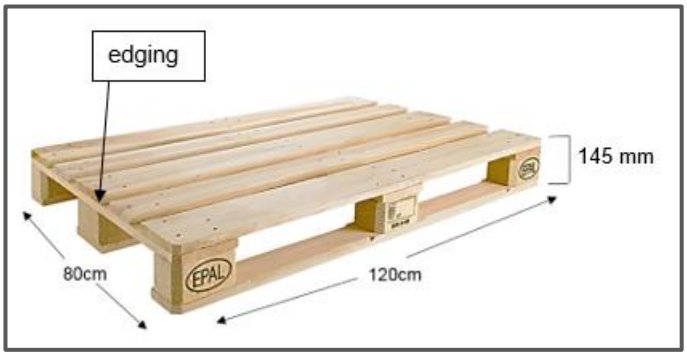
[42]

QUESTION 3

3.1 Virginia and her husband Philip did some renovations to their house recently.

After re-tiling her patio floor, Virginia was left with a few wooden pallets that the tiles were delivered on.

Virginia decides to make her own coffee table from the wooden pallets for her newly renovated patio. She measures the dimensions of the pallets and makes the following drawing.

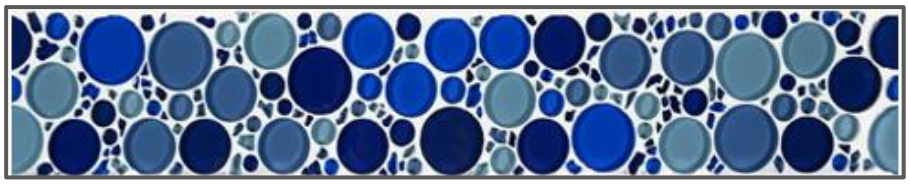


[Source: https://www.homedit.com/21-ways-of-turning-pallets-into-unique-pieces-of-furniture/]

Study the drawing and answer the following questions.

3.1.1 Calculate the total height of the table, in cm, if the wheels she will be attaching are 180 mm in height. (4)

3.1.2 She further planned to finish her table with a decorative edging using mosaic tiles like the design shown below.



[Source: https://www.google.com/search?q=mosaic+tiles+strips]

a. Calculate, in meters, the length of the decorative edging that Virginia will need to go around the table. (3)

b. A hardware store sells decorative strips in 3 m lengths. Calculate the number of whole strips Virginia will have to buy to do the edging. (3)

3.2 Phillip has decided to install solar panels on the roof of the patio. Phillip opts for solar panels sized 2,4 m x 1,3 m for the roof. A panel can be placed either vertically or horizontally but NOT a combination of both.

A minimum of a 50 cm gap must be left along **both sides** and the **bottom** of the roof as shown in the diagram below. Panels may not overlap.

Solar panel (Vertical)

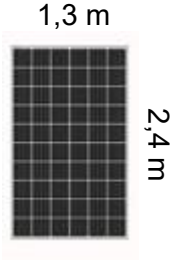
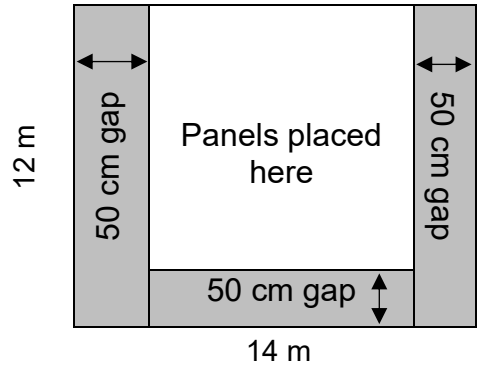


Diagram of part of the roof



The roof has a width of 12 m. The length of the roof is 14 m.

[Source: Geogreenpower.com]

Use the above information to answer the questions that follow.

3.2.1 Using calculations, show that Phillip could fit more panels in **ONE** row if he placed them vertically along the length instead of horizontally along the width of the roof by completing the missing values below:

Horizontal placing:

Number of panels = $\frac{(3.2.1(a))}{1,3} = (3.2.1(b)) \approx (3.2.1(c))$

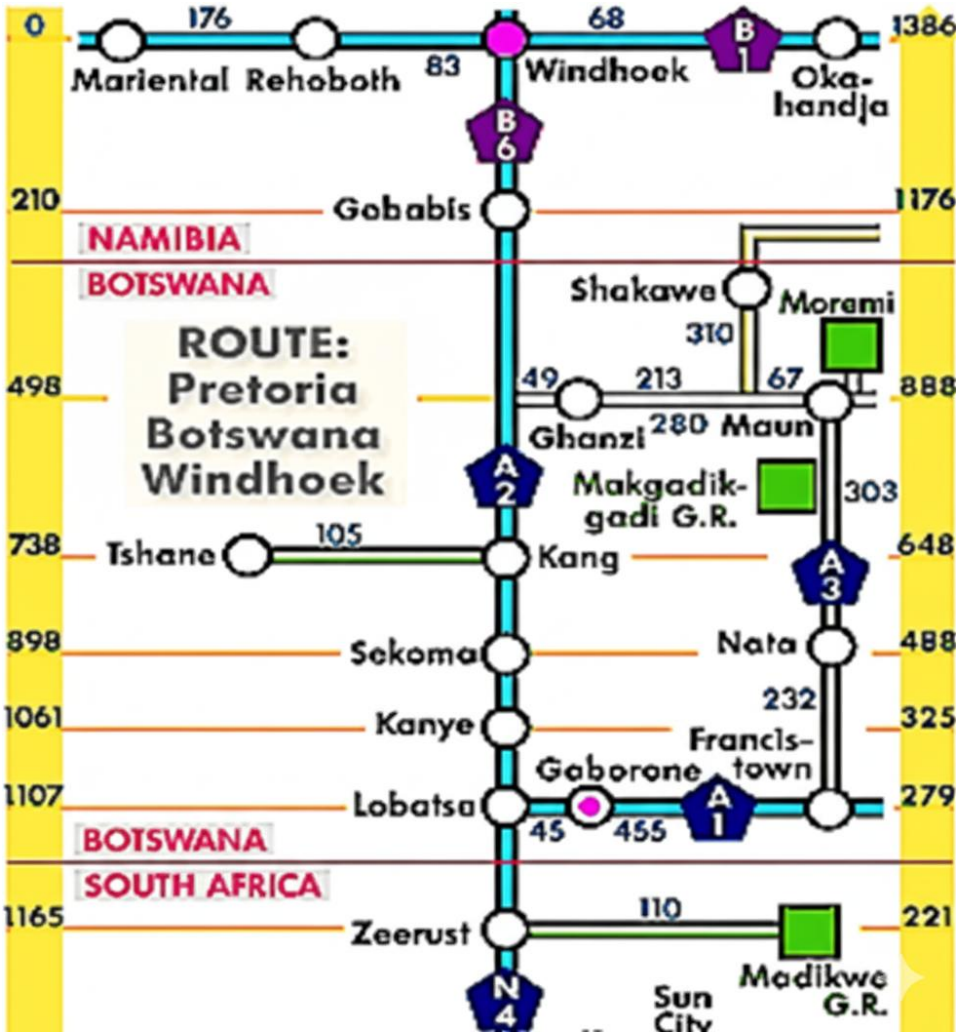
Vertical placing:

Number of panels = $\frac{13}{(3.2.1(d))} = (3.2.1(e))$ (5)

3.2.2 Phillip goes online to see what the solar panels cost. He sees that the length of the solar panels he wants is given as 94,48 inches.
Write the ratio of meters to inches in the form 1 m =….. inches.
Round your answer to two decimal places. (2)

3.2.3 Give ONE reason why relying on solar panels for electricity could be problematic. (2)

3.3 Virginia plans to visit her parents in Maun and drives from her place in Gaborone. She finds the following map.



Note: National roads in Botswana are indicated with the letter A.

Distances of towns and cities from Windhoek along route B6 and A2 are indicated in the yellow columns.

Distances between towns along A1 and A3 are indicated next to the routes.

[Source: https://online.htseden.co.za/wp-content/uploads/2021/08/Mathematical-Literacy-Grade-11-Term-3-week-2_2020.pdf]

Study the map and answer the questions that follow.

3.3.1 Identify the type of map that is represented above. Choose from the list of options given below.

Strip map	Route map	Grid reference map

(2)

3.3.2 List the national road(s) that join Gaborone and Maun. (2)

3.3.3 Calculate the distance of the trip from Gaborone to Maun via Francistown. (2)

3.3.4 Because of road conditions, Virginia decided to take the route via Lobatse, a total distance of 983 km. It took her 9 hours and 46 minutes to make the trip without stopping. Calculate the average speed at which she was driving to Maun. (3)

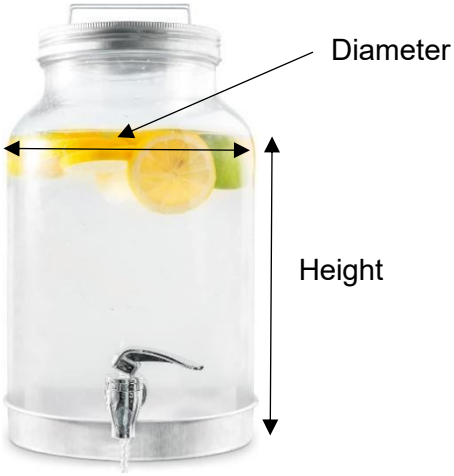
3.3.5 Virginia's car has a tank capacity of 40 litres, and it covers 13 km per litre. Her tank is empty, so she goes to get petrol. She spends R500,00 on petrol at a cost of R23,46 per litre. Virginia claims she will be able to reach Sekoma with the fuel she bought.

Verify, showing ALL calculations, if Virginia's claim is correct. (6)

[34]

QUESTION 4

4.1 Rhoane, a Grade 11 learner, is helping prepare for a leadership function at school and needs to set up several large cylindrical drink containers. Each container needs to be filled with a specific volume of lemonade. Below is a picture of one such container used for lemonade preparation.



Container specifications:

- Height: 12 inches
- Diameter: 18 inches

[Source: https://www.amazon.com/Style-Setter-1-5-Gallon-Galvanized-Leak-Proof/dp/B097QD22Q1]

Study the information given above and answer the following questions.

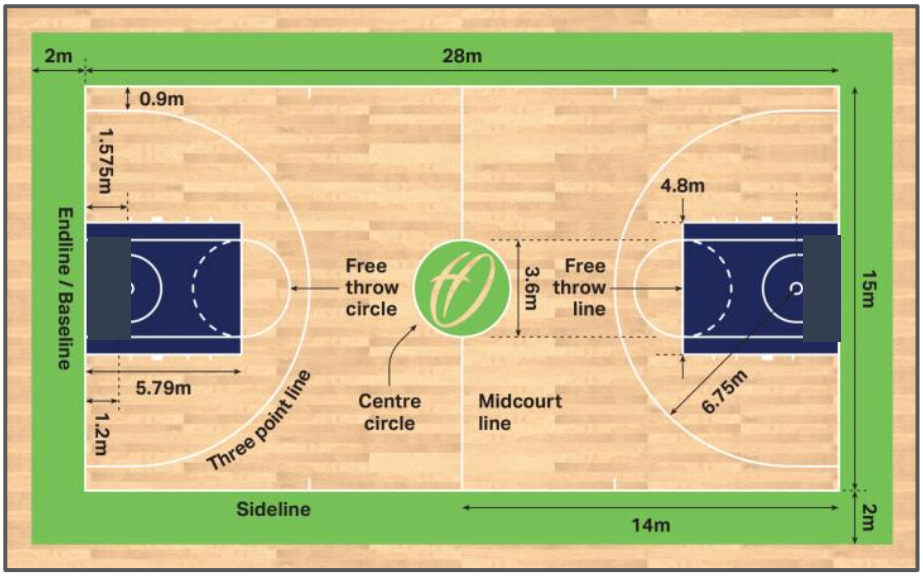
4.1.1 If 1 foot = 12 inches, show that the volume of one cylindrical container in cubic feet (ft^3), rounded to one decimal place, is 3,5 cubic feet when filled to the height indicated.

Volume of a cylinder = 3,142 x $(radius)^2$ x height (4)

4.1.2 Calculate the volume of one cylindrical container in gallons if 1 cubic foot = 7,48 gallons. (2)

4.1.3 If the cups Rhoane bought for the party have a volume of 0,0625 gallons, calculate how many full cups you will be able to fill from the lemonade of one full container. (3)

4.2 Below is a diagram of a basketball court at the school. The Grade 11 Mathematical Literacy learners were given an assignment to calculate the cost to repaint all the green parts on the court (The outside borders as well as the centre circle).



[Source: https://www.harrodsport.com/advice-and-guides/basketball-court-dimensions-markings]

Study the court and its dimensions and answer the questions that follow.

4.2.1 Using calculations, show that the total area of the green parts on the court is 198,18 m^2. The area of the centre circle is given as 10,18 m^2.

Area of a rectangle = length x width (3)

4.2.2 Rhoane claims that only one 5 litre tin of paint will be needed to paint the green parts of the court with two coats of paint. Determine the number of 5 litre tins of paint that will be needed to paint the green parts of the court with two coats of green paint.
(Note: 1 litre covers 14 m^2) (5)

4.2.3 The principal of the school finds the following advertisement on the Makro website.

[Source: Makro.co.za]

Calculate what it will cost for the school to paint the green parts on the court with two coats of green paint. (2)

4.3 Derick, also a Grade 11 learner at the school, decides to focus on the basketball hoops.

[Source: https://www.freepik.com/free-photos-vectors/basketball-hoop]

By calculating the diameter of a basketball with a surface area of 1 809,792 cm^2, determine whether the basketball will fit through the hoop.

Surface area of a basketball = 4 x 3,142 x (radius)^2 (5)

[24]

QUESTION 5

5.1 Kelegiso works for a company that needs to package small cylindrical jars for shipment. The jars will be packaged into larger boxes for delivery.

The company wants to explore two different packaging box models to determine which one is more cost-effective in terms of wasted space.

Box Model 1:

- Shape: Rectangular Prism
- Dimensions: Length = 105 cm, Width = 100 cm, Height = 120 cm
- Volume: 1 260 000 cm^3

Box Model 2:

- Shape: Rectangular Prism
- Dimensions: Length = 200 cm, Width = 190 cm, Height = 100 cm

Study the information given above and answer the following questions.

5.1.1 If a scale of 1:10 is used to draw a scale drawing of Box Model 2, select the correct dimensions for the scale drawing of the box. Write letter A, B or C only.

	Length	**Width**	**Height**
A	100 cm	45 cm	50 cm
B	2 000 cm	900 cm	1 000 cm
C	20 cm	19 cm	10 cm

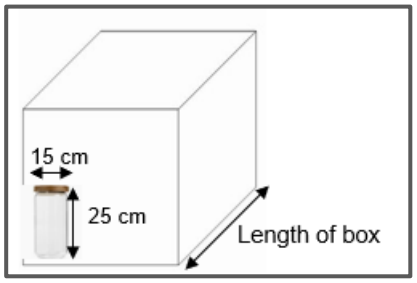
(2)

5.1.2 Calculate, in m^3, the volume of Box Model 2.

Volume of rectangular prism = length x breadth x height (3)

5.1.3 The jars are placed upright in the box as shown below.

It is calculated that 468 jars can be packaged into Box Model 2. Using calculations, show that a smaller number of jars can be packaged in Box Model 1.



(5)

5.1.4 Using calculations, determine which large box is more cost-effective in terms of wasted space, Box Model 1 or Box Model 2? One jar has a volume of 4 418,44 m^3. (5)

5.2 Kelegiso's manager is not happy with the boxes of jars that are returned due to some jars being broken during delivery.

She is asked to go check the 6 returned boxes in the warehouse and record the number of broken jars in each box.

Below are her findings:

Box number	Total jars	Total broken jars
1	70	4
2	55	5
3	48	3
4	72	8
5	46	2
6	50	4

5.2.1 Her manager wants to verify her findings. If he selects box number 3 and selects a jar at random, what is the probability, as a percentage, that the jar will **not** be broken? (3)

5.2.2 Give ONE suggestion as to how the company can prevent jars from being broken during the delivery process. (2)

[20]

GRAND TOTAL: [150]