education
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

SEPTEMBER 2023

MARKS: 150

TIME: 3 hours

This question paper consists of 13 pages and an addendum with 4 annexures.

INSTRUCTIONS AND INFORMATION

1.   This question paper consists of **FIVE** questions. Answer **ALL** the questions.

2.   Use the ANNEXURES in the ADDENDUM for the following questions:

      ANNEXURE A for QUESTION 2.1
      ANNEXURE B for QUESTION 3.1
      ANNEXURE C for QUESTION 4.1
      ANNEXURE D for QUESTION 4.2

3.   Number the answers correctly according to the numbering system used in this question paper.

4.   Start EACH question on a NEW page.

5.   You may use an approved calculator (non-programmable, non-graphical), unless stated otherwise.

6.   Show ALL calculations clearly.

7.   Round off ALL final answers appropriately according to the given context, unless stated otherwise.

8.   Indicate units of measurement, where applicable.

9.   Maps and diagrams may not be drawn to scale, unless stated otherwise.

10.   Write neatly and legibly.

QUESTION 1

1.1 | A 375 kVa electricity generator of 375 kVa with an output of 300 kW is used as a backup during an electricity outage (i.e. load shedding).

   NOTE : kVa = Kilovolt-amps.
            kW = Kilowatts
            1 kW = 1 000 watts.

Use the information above to answer the questions that follow.

1.1.1   Convert the 300kW to watts.   (2)

1.1.2   Determine the ratio of kW to kVa in a simplified form.   (2)

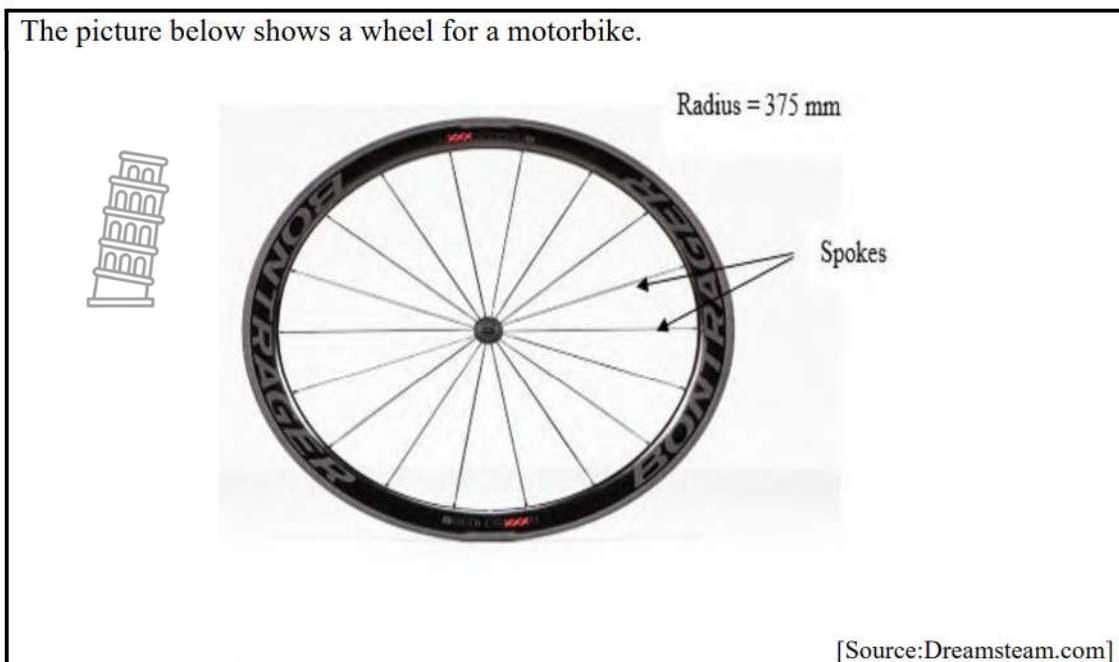1.1.3   Sam started the generator on Tuesday at the time shown on the watch below.

[Source:amazon.com]

(a)   Identify the time format shown on the watch.   (2)

(b)   Determine the day and time of switching the generator off if it ran for 2 hours 15 minutes.   (3)

| 1.2 | The picture below shows a wheel for a motorbike. |

Radius = 375 mm

Spokes

[Source:Dreamsteam.com]

Use the picture of the wheel above to answer the questions that follow.

1.2.1 Convert the radius of the wheel to metres. (2)

1.2.2 Determine in meters, the diameter of the wheel. (2)

1.2.3 State the number of spokes that are on the wheel. (2)

| 1.3 | A picture of the motorbike dashboard is shown below. |

12:35   ECO   MODE 3

33 ⁰C   000077 km   71 km/h

[Source:Dreamsteam.com]
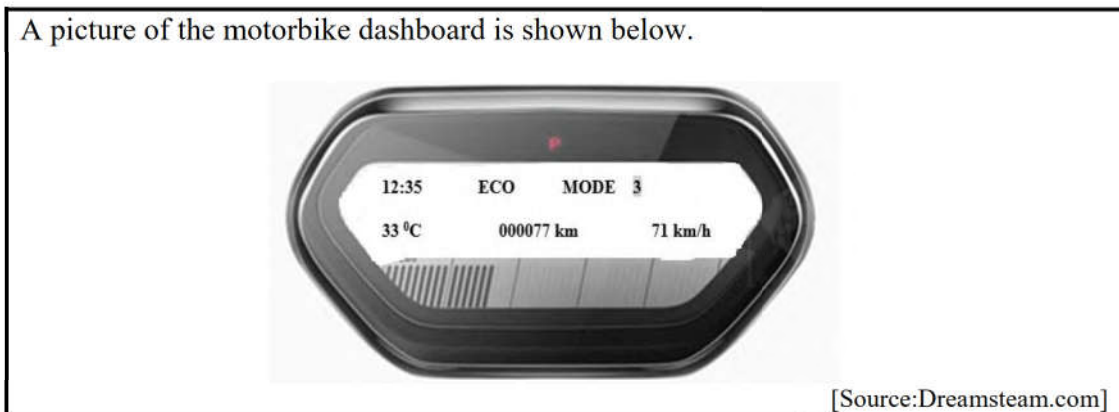
Use the picture above to answer the following questions.

1.3.1 Identify the speed of the bike. (2)

1.3.2 State in full the unit of measuring temperature displayed on the picture. (2)

1.3.3 What was the distance traveled by a bike the time picture above was taken. (2)

1.4 The floor plan below shows a layout of a boardroom.
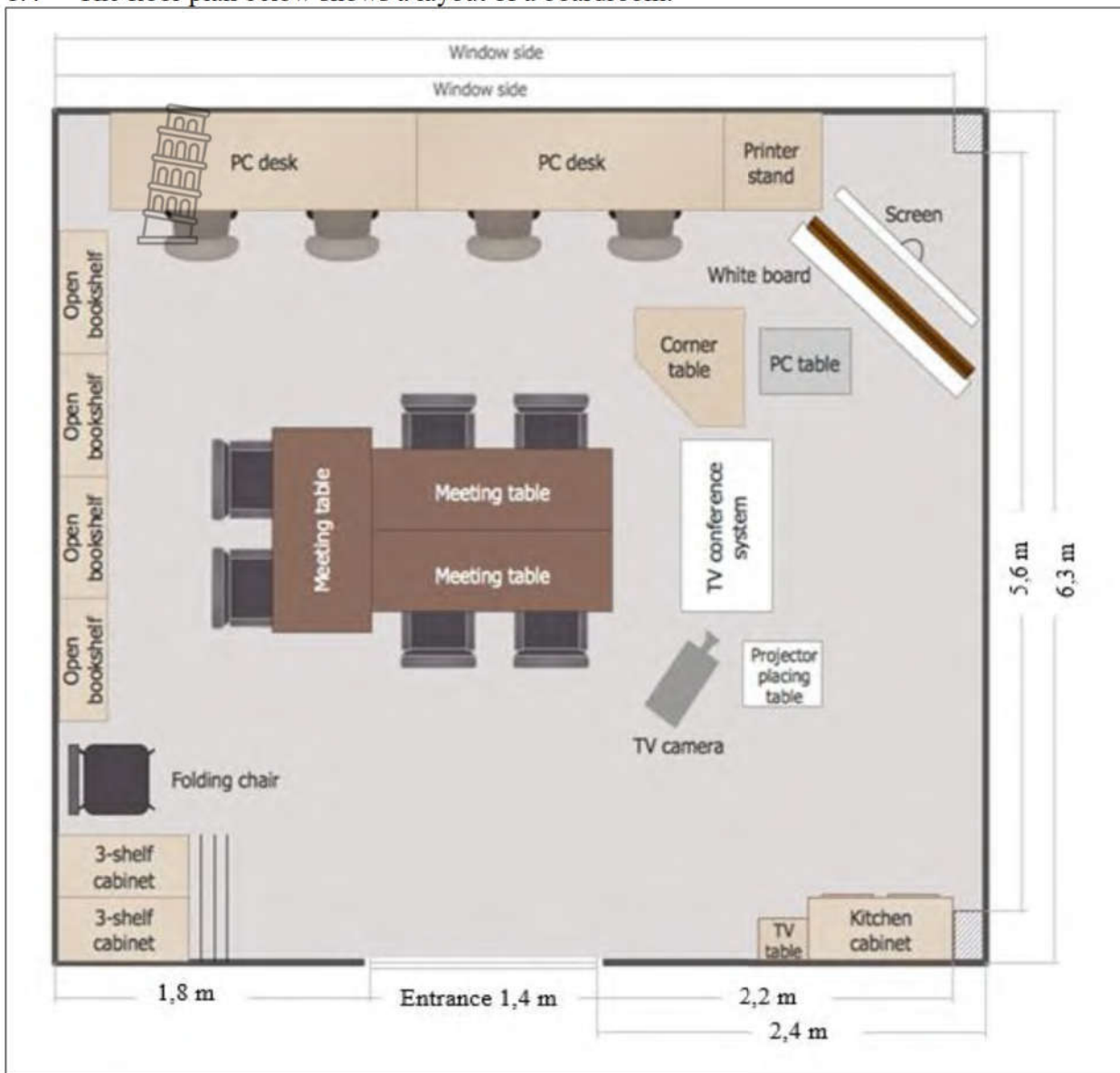
NOTE: The entrance is on the South

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

1.4.1 Determine the number of open bookshelves in the boardroom. (2)

1.4.2 How many types of chairs are in the boardroom. (2)

1.4.3 State the mathematical shape is the meeting tables. (2)

1.4.4 Measure the length of the white board in mm. (2)

1.4.5 Calculate the maximum length of the southern wall. (2)

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QUESTION 2

2.1 ANNEXURE A shows a route map of the TWO OCEANS marathon

Use ANNEXURE A to answer the questions that follow.

2.1.1 Explain the term "route map." (2)

2.1.2 Identify the number of refreshment stations shown on the map. (2)

2.1.3 Explain the purpose of the following:

(a) Refreshments stations at the marathon (2)

(b) Having medical points on average 2 – 5 km distance apart in a marathon. (2)

(c) Cut-off points in a marathon after certain distances. (2)

2.1.4 Identify the general direction of Noordhoek from the START. (2)

2.1.5 Identify the name of the place on the Two Oceans marathon after refreshment station 4 (2)

2.1.6 Why do you think the organizers have registrations dates for the Two Oceans marathon? (2)

2.2 The marathon starts at 05:00 and has a maximum of 7 hours' duration from start to finish.
Gerda Steyn 2022 women runner record breaker covered the marathon distance in 3:30:42.

The marathon organizers claimed that she was running at an average speed of 20 km/h.

Use calculations to verify if the organisers claim is CORRECT.

The following formula may be used: $\text{Time} = \dfrac{\text{Distance}}{\text{Speed}}$ (4)

[20]

QUESTION 3

3.1 | A car manufacturer wants to design new fuel tanks for a Micra 66 Kw Turbo Visia. Their options were to build a rectangular or cylindrical fuel tank.

On ANNEXURE B are pictures and diagrams of rectangular and cylindrical fuel tanks with dimensions for the designs.

Use information above and ANNEXURE B to answer the questions that follow.

  3.1.1   Determine the volume of the rectangular prism fuel tank in litres.

            You may use the formula: **Volume = length × width × height**   (5)

  3.1.2   The manufacturer mentioned that the capacity of the cylindrical fuel tank is 10 litres more than the capacity of the rectangular prism fuel tank.

            Verify, showing all calculations, whether the statement is CORRECT.

            You may use the formula: **Volume = 3,142 × radius² × height**   (7)

  3.1.3   (a)   Calculate (in m²) the surface area of cylindrical fuel tank due to receive ONE coat of paint, if:

-      The spread rate of the paint is 4 m² per litre.
-      The cylindrical fuel tank has two openings with an area of 12,568 cm² each.

            The following formula may be used:

            Surface area of cylinder = 2 × π × radius² + 2 × π × radius × height, where **π** is **3,142**   (5)
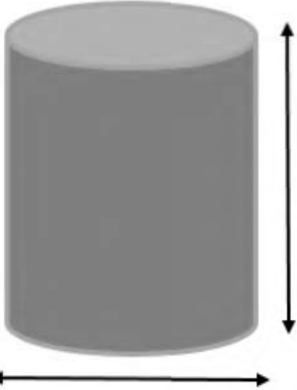
       (b)   Determine the total surface area to be painted with two layers of paint.   (2)

       (c)   Give the amount of paint (to the nearest litre) needed to paint the outside of the cylindrical fuel tank.   (2)

       (d)   Give one reason why the fuel tank must be painted.   (2)

3.1.4 | The paint is filled to 90% of the capacity of the tin.

The diagrams and dimensions of the paint tin are given below.

PICTURE OF PAINT TIN	DIAGRAM OF PAINT TIN WITH DIMENSIONS
GLOSS TT5-14 Ford Grey EASYCARE XORUST DIRECT TO METAL SUPERIOR ALL-WEATHER DURABILITY Capacity of tin = 1 000 cm³ Stanmorephysics.com	Height Diameter = 8,92 cm

[Source: Alibaba.com]

Use the information above to answer the questions that follow.

Determine:

(a)   The radius of the paint tin.   (2)

(b)   The highest level reached by paint in the tin.

You may use the following formula: **Volume = 3,142 × radius² × height**   (4)

(c)   In litres, the amount of empty space in the tin.   (3)

3.2 | The garage sells three brands of Nissan Micra cars which are Micra 66 Kw Turbo Visia, Micra 66 Kw Turbo Acenta and Micra 66 Kw Turbo Acenta Plus.

The colours on each are white, silver grey or metallic blue.

The pictures of the cars are shown below.

PICTURES OF NISSAN MICRA CARS

MICRA 66 Kw TURBO VISIA	MICRA 66 Kw TURBO ACENTA	MICRA 66 Kw TURBO ACENTS PLUS

[Source:nissancars.com]

Use information above to answer the questions that follow.

3.2.1   State the number of possible combinations when buying any of the Micra cars.   (2)

3.2.2   Determine the probability of a buyer randomly choosing a white coloured car.   (2)

3.2.3   Calculate the probability (to the nearest percentage) of a buyer randomly selecting a Micra Turbo Acenta or Micra Turbo Visia.   (3)

[39]

QUESTION 4

4.1 | Mercy intends taking a ride in her car Micra 66 Kw from Bloemfontein to visit her family who lives in Paarl. On her way to Paarl she will visit a friend in Britstown.
ANNEXURE C is a strip map showing distances and towns on part of Cape Town and Bloemfontein.

Use the information above and ANNEXURE C to answer the questions that follow.

4.1.1   Determine the distance from Bloemfontein to Paarl in context above.   (3)

4.1.2   Show that the distance from the right off ramp at Hanover using **N10**, **N12** and back to **N1** is 300 km.   (3)

4.1.3   On her way back from Paarl, Mercy left at 5:30.

Determine her arrival time if she was travelling at an average speed of 110 km/h.

You may use the following formula: $\text{Time} = \dfrac{\text{Distance}}{\text{Speed}}$ (6)

4.1.4 (a)   The petrol consumption of the Micra 66 Kw is 5,1 litres per 100 km and its fuel capacity is 46 litres.

Mercy filled the fuel tank of the car to capacity in Paarl on her way back to Bloemfontein as it was empty. She stated that, she will have to refuel in Springfontein.

Verify, using calculations if the statement is CORRECT.   (5)

(b)   Determine the amount, in Rands, spent to fill up the car in Paarl if the cost is R21,60 per litre.   (2)

4.2 | Mercy needs to buy a house for her parents in Paarl. The elevation and floor plan of the house she is interested to buy is shown on ANNEXURE D.

Use ANNEXURE D to answer the questions that follow.

4.2.1   Determine the total number of doors on the floor plan.   (2)

4.2.2   Mercy decides that the floor of bedrooms 1 and 2 must be carpeted while the rest of the house will be tiled.

Each bedroom has a built-in cupboard of 0,9 m × 0,6 m, the carpet will not be put on the floor in the cupboards.

Determine the total area to be carpeted.

You may use the formula: **Area = length × width**   (6)

4.2.3   Study the floor plan and suggest if it is an open plan or not an open plan.
Explain the term "Open Plan".   (4)

4.3 | The builder wants to pave the carport using octagonal shaped pavements bricks. The dimensions of the carport are **500 cm × 300** cm.

The picture below shows octagonal shaped paving bricks to be used as pavement.

PICTURE OF OCTAGONAL SHAPED PAVING BRICKS.
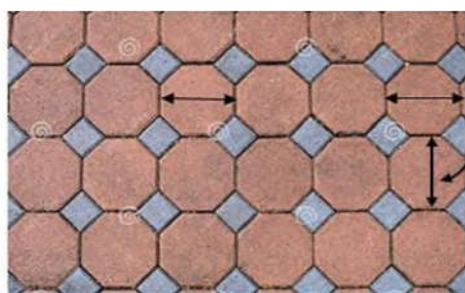
Vertical and horizontal dimensions of the octagon = 25 cm

[Source: Adapted from dreamstime.com]

4.3.1   Determine the number of octagonal shaped pavements bricks to be used on the length of the carport.   (2)

4.3.2   Hence, determine the total number of octagonal shaped pavements bricks to be used on the carport.   (3)

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QUESTION 5

5.1

> South Africa has been experiencing daily power cuts on electricity supply. The South African households need 207,10 billion kWh of electricity per year.
>
> An average household uses approximately 3,449 kWh - 9,5 kWh of electricity per day.
>
> **NOTE:** 1kWh = 1000 watts
>
> <div align="right">[Source adapted from www.worlddata.info & Mg.co.za 9 Nov 2022]</div>

Use the information above to answer the questions that follow.

5.1.1   Calculate, in kWh, the annual maximum amount of electricity needed by each South African household.   (2)

5.1.2   Determine the number of households that can be supplied with electricity per year.   (2)

5.2

> Linda a resident of Emalahleni decides to buy a generator because of the power cuts. The generator consumes 1,5 litres of fuel per kilowatt per hour. A household with six appliances uses 2 kW per hour.
>
> **NOTE: 1 gallon = 3,785 litres**
>
> <div align="right">[Source: https://mybroadband.co.za> energy]</div>

Use the information above to answer the questions that follow.

5.2.1   Calculate the amount of fuel needed by a household on a 4-hour load reduction experienced in a day.   (2)

5.2.2   Linda claimed that he needs more than 20 gallons of fuel for a 4-hour load reduction experienced each day for 5 days.

Verify, using calculations if the claim is VALID.   (5)

5.2.3   Linda buys the fuel in litres from a supplier in Pounds (£). The price of the fuel is £1,6605 per litre.

You may use the exchange rates: £1: R21,97.

Use the information above to determine, in Rands, the amount spent on fuel used on 4-hour load reduction experienced each day for 5 days.   (4)

5.3 | Linda decides to buy a generator to be used during when electricity is cut-off. This generator will be transported on the rectangular trailer.

The picture and actual dimensions of the generator bought are given below.

BUNDU POWER
BPD5000S

Length = 2,5 m   Width = 1,5 m
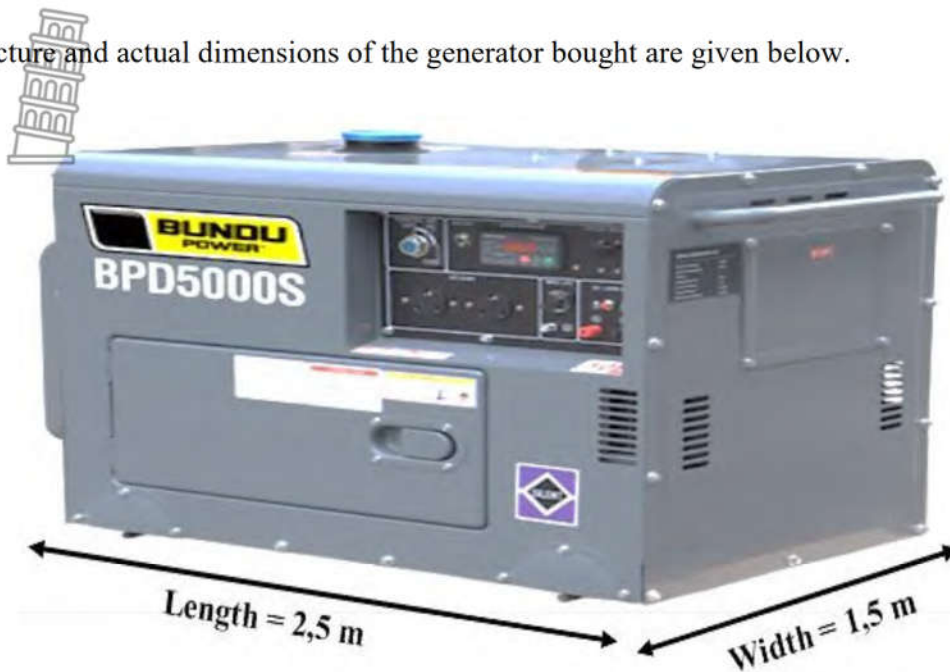
[Source: Adapted from classicindustries.com]

Use the information above to answer the questions that follow.

5.3.1   Determine the area of the trailer if the area of the trailer is 2% more than the area of the base of the generator.

You may use the formula: **Area of a rectangle = length × width**   (4)

5.3.2   Use the actual length of the generator to determine the scale used on the drawing. (Round off you answer to the nearest whole number).   (5)

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GRADE 12

**MATHEMATICAL LITERACY P2
SEPTEMBER 2023
ADDENDUM**

This addendum consists of 5 pages with 4 annexures.

NSC - Addendum

MDE/September 2023

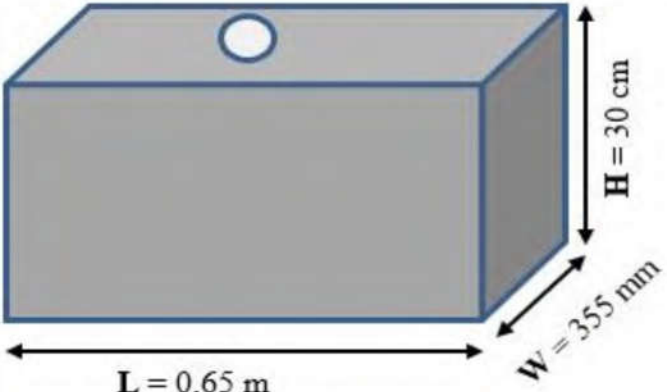**ANNEXURE A : ROUTE MAP OF TWO OCEANS MARATHON**
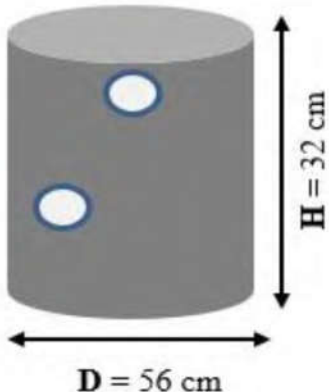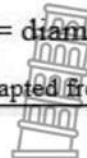
QUESTION 2.1

ANNEXURE B

QUESTION 3.1

THE PICTURES AND DIAGRAMS WITH DIMENSIONS OF RECTANGULAR AND CYLINDRICAL FUEL TANKS MODELS

| DIAGRAM OF RECTANGULAR PRISM FUEL TANK	DIAGRAM OF CYLINDRICAL FUEL TANK.
DIMENSIONS OF A RECTANGULAR PRISM FUEL TANK	DIMENSIONS OF A CYLINDRICAL FUEL TANK
H = 30 cm W = 355 mm L = 0,65 m Where L = length W = width and H = height	H = 32 cm D = 56 cm Where D = diameter and H = height [Source: adapted from classicindustries.com]

NOTE: 1 litre = 1000 cm³

ANNEXURE C

QUESTION 4.1

STRIP MAP SHOWING DISTANCES AND TOWNS BETWEEN CAPE TOWN AND BLOEMFONTEIN.
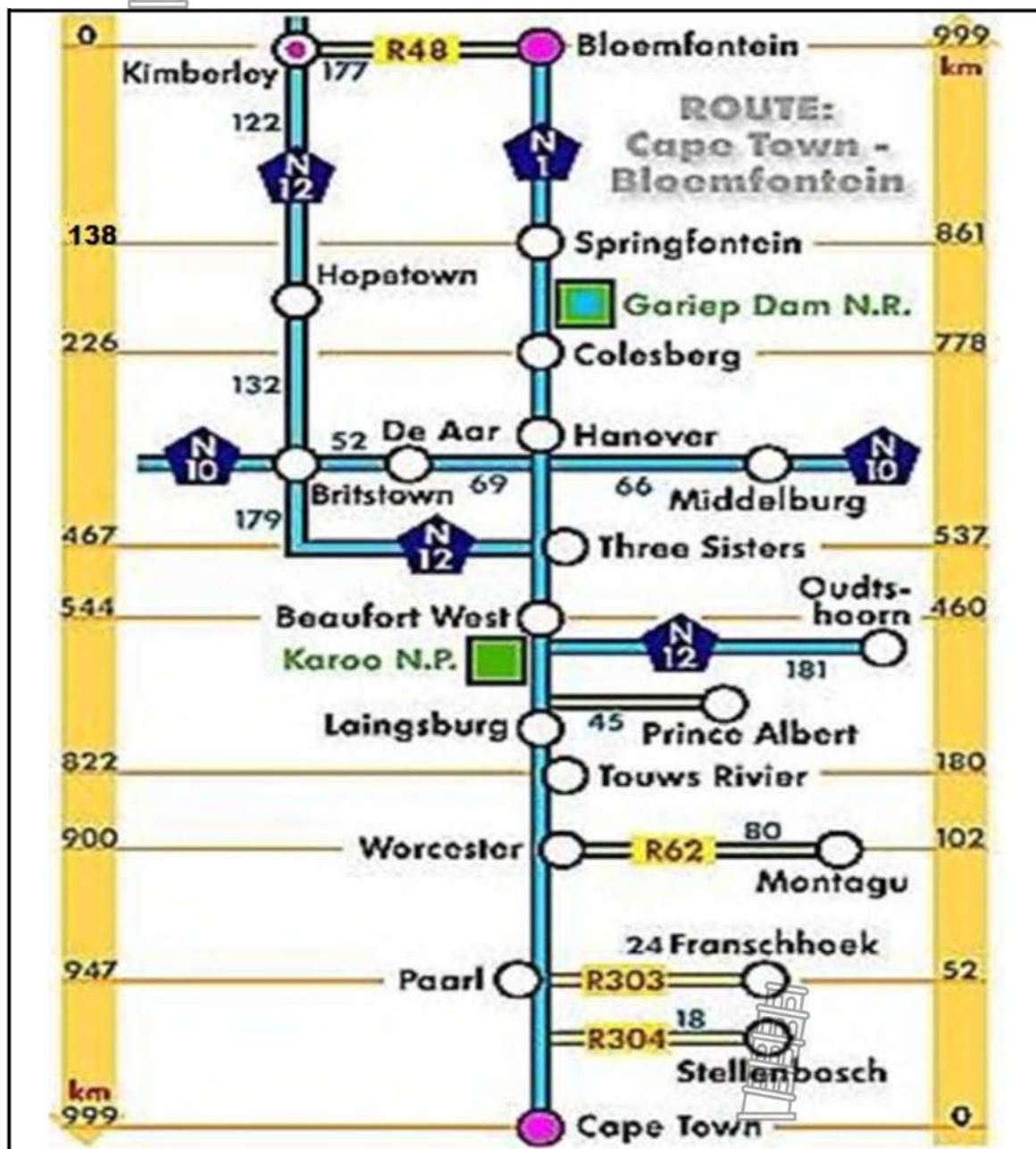
ANNEXURE D

QUESTION 4.2

FLOOR AND ELEVATION PLAN OF A HOUSE.

NOTE:
- The front of the house is facing north.
- All measurements are in meters.

- Door =

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GRADE/GRAAD 12

MATHEMATICAL LITERACY P2/
WISKUNDIGE GELETTERDHEID V2
SEPTEMBER 2023
MARKING GUIDELINES/NASIENRIGLYNE

MARKS: 150

Symbol/*Simbool*	E×planation/*Verduideliking*
M	Method/*Metode*
MA	Method with accuracy/*Metode met akkuraatheid*
CA	Consistent accuracy/*Volgehoue akkuraatheid*
A	Accuracy/*Akkuraatheid*
C	Conversion/*Herleiding*
S	Simplification/*Vereenvoudiging*
RT	Reading from a table/graph/document/diagram / *Lees vanaf tabel/grafiek/dokument/diagram*
SF	Correct substitution in a formula/*Korrekte vervanging in formule*
O	Opinion/E×planation/*Mening/Verduideliking*
P	Penalty, e.g. for no units, incorrect rounding off, etc. / *Straf, bv. Geen eenhede/verkeerde afronding, ens.*
R	Rounding off/*Afronding*
NPR	No penalty for rounding/units/*Geen straf vir afronding/eenhede*
AO	Answer only/*Slegs antwoord*
MCA	Method with consistent accuracy/*Metode met volgehoue akkuraatheid*

These marking guidelines consists of 12 pages and a 2 - page analysis grid. / *Hierdie nasienriglyne bestaan uit 12 bladsye en 'n 2-bladsy ontledingsrooster.*
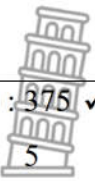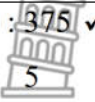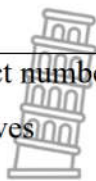
NOTE:

- If a candidate answers a question TWICE, only mark the FIRST attempt.

- If a candidate has crossed out (cancelled) an attempt to a question and NOT redone the solution, mark the crossed out (cancelled) version.

- Consistent accuracy (CA) applies in ALL aspects of the marking guidelines; however, it stops at the second calculation error.

- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.

- The general principle of marking is that if a candidate makes one mistake and there is sound mathematics thereafter, the candidate loses one mark.

LET WEL:

- As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.

- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.*

- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou egter by die tweede berekeningsfout op.*

- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem het en ekstra antwoorde gee, straf vir elke ekstra item.*

- *Die algemene beginsel van merk is dat as 'n leerder een fout maak en dis daarna wiskundig korrek, verloor die leerder een punt.*

QUESTION 1/ *VRAAG 1* [31 MARKS/*PUNTE*]

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	Level
1.1.1	✓MA ✓A $300 \times 1000 = 300\,000$	1MA multiply by 1 000 1A correct answer (2)	M L1
1.1.2	$300 : 375$ ✓MA $4 : 5$ ✓A	1MA correct ratio order 1A simplification (2)	M L1
1.1.3 (a)	24 hr format ✓✓A *24 uur formaat*	2A correct format. (2)	M L1
(b)	Wednesday/*Woensdag* ✓A ✓MA ✓A $21{:}58{:}13 + 2$ hours 15 minutes $= 00{:}13{:}13$	1A day 1MA adding 2 hours 15 minutes 1A correct time (3)	M L1
1.2.1	$\dfrac{375}{1000}$ ✓C $= 0{,}375$ m ✓A	1C dividing by 1 000 1A simplification (2)	M L1
1.2.2	✓MA ✓A $0{,}375$ m $\times 2 = 0{,}75$ m	1MA multiply radius by 2 1A simplification (2)	M L1
1.2.3	18 spokes/*speke* ✓✓A	2A correct number of spokes (2)	M L1
1.3.1	71 km/hr ✓✓RT	2RT correct speed (2)	M L1
1.3.2	Degrees Celsius/*Grade Celsius* ✓✓RT **OR/*OF*** ⁰C ✓✓RT	2RT correct unit (2)	M L1
1.3.3	77 km ✓✓RT	2RT correct distance (2)	M L1
1.4.1	4 ✓✓A	2A correct number of open bookshelves (2)	Maps L1
1.4.2	3 ✓✓A	2A correct types of chairs (2)	Maps L1
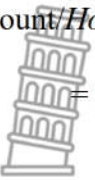
Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	Level
1.4.3	Rectangle / *Reghoek*✓✓A	2A correct shape (2)	Maps L1
1.4.4	34 mm ✓✓A	2A correct measurement **Accept 33 mm – 35 mm** (2)	Maps L1
1.4.5	✓MA 1,8 m + 1,4 m + 2,4 m = 5,6 m ✓S	1MA adding correct values 1S simplification (2)	Maps L1
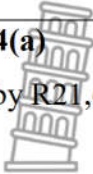
QUESTION/*VRAAG* 2 [20 MARKS/*PUNTE*]

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	Level
2.1.1	Map showing roads from one point to another/ *Kaart wat paaie van een punt na 'n ander punt wys.* ✓✓A	2A correct definition (2)	Maps L1
2.1.2	✓✓RT 16 points/*punte*	2RT correct number of points (2)	Maps L2
2.1.3 (a)	✓✓O To supply water , Juice , Energy drinks , etc/*Om water, sap, energiedrankies ens. te verskaf.*	2O opinion (2)	Maps L4
2.1.3 (b)	✓✓O For treatment of minor medical problems and will be used to treat or stabilise runners till arrival of ambulance./ *Vir behandeling van geringe mediese probleme en sal gebruik word om hardlopers te behandel of te stabiliseer tot aankoms van ambulans.*	2O temporary health treatment (2)	MP L4
2.1.3 (c)	✓✓O To manage race finishing time./*Om die tyd wanneer die marathon eindig te bestuur.* **OR/*OF*** To remove an athlete in a race because they will not finish the race in an expected time with that pace./ *Om 'n atleet in 'n wedloop te verwyder omdat hulle nie die wedloop in 'n verwagte tyd met daardie pas sal voltooi nie.*	2O time management (2)	MP L4
2.1.4	✓✓ RT South West/*Suidwes* **OR/*OF*** SW	2RT correct direction (2)	Maps L2
2.1.5	Kalk bay ✓✓ RT	2RT correct town (2)	Maps L2
2.1.6	To prepare for the number of athletes that will attend the event/ *Om voor te berei vir die aantal atlete wat die byeenkoms gaan bywoon..* ✓✓O Any relevent opinion/ *Enige relevante opinie.*	2O opinion (2)	Maps L4
2.2	$\dfrac{\overset{✓SF}{56}}{3{,}51166667 \text{ Hrs}} \overset{✓MA}{} = 15{,}9468 \text{ km / hr} \overset{✓CA}{}$ INCORRECT/*NIE KORREK* ✓O	1SF substitution to formula 1MA change subject of formula 1CA speed 1O Justification (4)	Maps L4

QUESTION/VRAAG 3 [39 MARKS/PUNTE]

Q/V	Solution/Oplossing	Explanation/Verduideliking	Level
3.1.1	$0{,}65$ m $\times 100 = 65$ cm ✓C $\dfrac{355 \text{ mm}}{10 \text{ mm / cm}} = 35{,}5 \ cm$ $65 \ cm \times 35{,}5$ cm $\times 30$ cm ✓SF $\dfrac{69\ 225}{1000}$ ✓A ✓C $69{,}225$ litres/liter ✓A	1C both correct conversions 1SF substituting to correct formula 1A volume in cm³ 1C convert to litres 1A correct volume in litres (5)	M L2
3.1.2	$\dfrac{56}{2} = 28$ cm ✓MA $3{,}142 \times 28^2 \times 32 = 78\ 826{,}496$ cm³ ✓SF $\dfrac{78\ 826{,}496}{1000}$ ✓MA $78{,}826496$ litres ✓CA $78{,}826496$ litres $- 69{,}225$ litres ✓M $9{,}601496$ litres ✓CA INCORRECT/NIE KORREK ✓O	**Ca from 3.1.1** 1MA calculating radius 1SF substituting to correct formula 1MA dividing by 1000 1CA answer 1M calculating difference 1CA simplification 1O conclusion (7)	M L4
3.1.3(a)	✓SF SA $= 2 \times 3{,}142 \times 28^2 + 2 \times 3{,}142 \times 28 \times 32$ $4\ 926{,}656 \ + \ 5630{,}464$ ✓A $10\ 557{,}12$ cm² $- (12{,}568 \times 2)$ ✓M $\dfrac{10\ 531{,}984 \text{ square cm}}{10\ 000} = 1{,}0531984$ m² ✓CA ✓MA	1SF substitute to correct formula 1A surface area in cm² 1M subtract area of openings 1MA divide by 10 000 1CA answer area in m² (5)	M L3
3.1.3(b)	✓MA $1{,}0531984$ m² $\times 2 = 2{,}1063968$ m² ✓CA	**Ca from 3.1.3(a)** 1MA multiply by 2 coats 1CA area to be painted (2)	M L1

Q/V	Solution/Oplossing	Explanation/Verduideliking	Level
3.1.3(c)	Amount/Hoeveelheid = $\dfrac{2,1063968 \ m^2}{4}$ ✓M = 0,5265992 litres ≈ 1 litre ✓RCA	**Ca from 3.1.3(b)** 1M divide by 4 1RCA paint in litres (2)	M L1
3.1.3(d)	Make it last/*Laat dit langer hou* / Durability/ *Duursaamheid* ✓✓O **OR/OF** Avoid rust/*Voorkom roes* ✓✓O **OR/OF** Any revelant opinion/*Enige relevante opinie*	2O opinion (2)	M L4
3.1.4(a)	✓MA Radius = 8,92 ÷2 = 4,46 cm ✓A	1MA divide by 2 1A correct radius (2)	M L1
3.1.4(b)	Level/*Vlak* = $\dfrac{90}{100} \times 1\ 000$ cm³ ✓MA Paint/*Verf* = 900 cm³ Height/*Hoogte* = $\dfrac{900}{3,142 \times 4,46 \times 4,46}$ ✓SF ✓A Height/*Hoogte* = 14,40 cm ✓CA	1MA calculating 90% 1SF correct formula 1A radius 1CA height (4)	M L2
3.1.4(c)	✓MA Empty space/*Leë spasie* = 1 000 cm³ – 900 cm³ = 100cm³ ✓C $\dfrac{100}{1000}$ = 0,1 litres ✓CA	**Ca 3.1.4(b)** 1MA calculating empty space 1C converting to litres 1CA simplification (3)	M L1
3.2.1	9 combinations/*kombinasies* ✓✓A	2A correct number of combinations (2)	P L2
3.2.2	$\dfrac{1}{3}$ ✓A ✓A	1A numerator 1A denominator (2)	P L2
3.2.3	✓A $\dfrac{6}{9}$ ✓MA × 100 = 66,67% ✓CA ≈ 67%	1A numerator 1MA multiply by 100 1CA percentage (3)	P L2

QUESTION/*VRAAG* **4 [36 MARKS/***PUNTE*]			
Q/*V*	**Solution/***Oplossing*	**Explanation/***Verduideliking*	**Level**
4.1.1	$$\text{Distance/}Afstand = \overset{\checkmark RT\ \checkmark M}{999 - 52}$$ $$= 947 \text{ km}^{\checkmark A}$$	1RT both values correct 1M subtracting 1A correct km **AO** (3)	Maps L2
4.1.2	$$\overset{\checkmark RT}{52 \text{ km}} + \overset{\checkmark M}{69 \text{ km}} + 179 \text{ km} = \overset{\checkmark CA}{300 \text{ km}}$$	1RT all three roads 1M adding distances 1CA answer (3)	Maps L2
4.1.3	$$\text{Time/}Tyd = \frac{\overset{\checkmark RT}{947}}{110} \;\checkmark SF$$ $$= 8{,}609090909 \text{ hrs } \checkmark A$$ 8 hours/*ure* 36 min $\checkmark C$ $$5{:}30 + 8 \text{ hours/}ure \overset{\checkmark M}{36 \text{ min}} = 14{:}06\; {}^{\checkmark CA}$$	**CA from 4.1.1** 1RT distance 1SF substitute to correct formula 1A travelling time in hrs 1C convert to hrs and minutes M adding travelling time to departure time 1CA arrival time (6)	Maps L3
4.1.4(a)	$$861 \text{ km} - 52 \text{ km} = 809 \text{ km } \checkmark MA$$ $$\text{Capacity/}Kapasiteit = \frac{\overset{\checkmark MA}{809 \times 5{,}1}}{100}\; \checkmark M$$ $$= 41{,}259 \text{ litres } \checkmark CA$$ CORRECT full tank is 46 litres/*KORREK vol tenk is 46 liter* $\;{}^{\checkmark O}$	1MA calculating distance 1MA multiplication of correct values 1M divide by 100 1CA amount in litres 1O Justification (5)	M L4
4.1.4(b)	$$41{,}259 \text{ litres} \overset{\checkmark M}{\times} R21{,}60 = \overset{\checkmark CA}{R891{,}19}$$	**Ca from 4.1.4(a)** 1M multiply by R21,60 1CA amount (2)	F L1

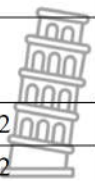| Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	Level
4.2.1.	8 doors/*deure* ✓✓RT	2RT correct number of doors (2)	Maps L2
4.2.2	Area of Bed rooms/*Oppv van slaapkamers* $3 \text{ m} \times 3 \text{ m} = 9 \text{ m}^2$ ✓A $9 \text{ m}^2 \times 2 = 18 \text{ m}^2$ ✓MA Area of cupboards/*Oppv van kaste* $0{,}9 \text{ m} \times 0{,}6 \text{ m} = 0{,}54 \text{ m}^2$ ✓A $0{,}54 \text{ m}^2 \times 2 = 1{,}08 \text{ m}^2$ ✓A Total area to be carpeted/*Totale oppv van mat* ✓M $= 18 \text{ m}^2 - 1{,}08 \text{ m}^2$ $= 16{,}92 \text{ m}^2$ ✓A	1A area of bedrooms 1MA multiply area by 2 1A area of cupboards 1A total area of cupboards 1M subtract area of cupboards from 18m² 1A correct area (6)	M L3
4.2.3	An open plan/*Oopplan* ✓✓A Plan with any two rooms without separating walls./ *'n Plan waar enige twee kamers* ✓✓O *aanmekaar is sonder mure wat hul skei.*	2A correct type of plan 2O correct definition (4)	Maps L2
4.3.1	Octagonal shapes/*Oktagoon-vorms* $= \dfrac{500}{25}$ ✓MA $= 20$ ✓A	1MA divide by 25 1A correct number of paving bricks (2)	Maps L2
4.3.2	$\dfrac{300}{25} = 12$ ✓A ✓MCA ✓CA $20 \times 12 = 240$ paving bricks/*plaveistene*	**Ca from 4.3.1** 1A correct number of paving bricks 1MCA multiplication 1CA simplification (3)	Maps L2

QUESTION/VRAAG 5 [24 MARKS/PUNTE]

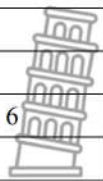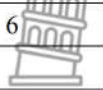| Q/V	Solution/Oplossing	Explanation/Verduideliking	Level
5.1.1	✓RT $9,5 \times 365 = 3\,467,50$ kWh ✓A	1RT correct value 1A correct units (2)	M L1
5.1.2	$\dfrac{207,10 \text{ bil kWh}}{3\,467,50 \text{ kWh}}$ ✓MA $=$ 59 726 027,4 households $\approx 59\,726\,027$ households/huishoudings ✓CA	**Ca from 5.1.1** 1MA divide by 3 467,5 1CA Simplification (2)	M L2
5.2.1	✓MA $1,5 \times 2 = 3$ litres per hour per household /liter per uur per huishouding 3 litres $\times$ 4 hours = 12 litres/liter ✓S	1MA multiply with correct values 1S Simplification (2)	M L2
5.2.2	✓CA 12 liters $\times$ 5 days = 60 litres/liter ✓MA ✓CA $\frac{60 \text{ liters}}{3,785} = 15,85204756$ gallons/gallonne ✓M INVALID/ONGELDIG ✓O	**CA from 5.2.1** 1MA multiply by 5 1CA amount in litres 1M divide by 3,785 1CA amount in gallons 1O Justification (5)	M L4
5.2.3	✓MA ✓A £1,6605 $\times$ 60 litres = £99,63 ✓MA £99,63 $\times$ R21,97 = R2188,87 ✓CA	**Ca from 5.2.2** 1MA multiply correct values 1A amount in pounds 1MA multiply by R21,97 1CA amount in Rands (4)	M/ F L3

Q/V	Solution/Oplossing	Explanation/Verduideliking	Level
5.3.1	Area of base/Oppv van basis $= 1,5 \text{ m} \times 2,5 \text{ m}$ ✓SF $= 3,75 \text{ m}^2$ ✓S $\dfrac{2}{100} \times 3,75 \text{ m}^2 = 0,075 \text{ m}^2$ Area of trailer/Oppv van sleepwa $= 3,75 \text{ m}^2 + 0,075 \text{ m}^2$ ✓MA $= 3,825 \text{ m}^2$ ✓CA **OR/OF** Area of base/Oppv van basis $= 1,5 \text{ m} \times 2,5 \text{ m}$ ✓SF $= 3,75 \text{ m}^2$ ✓S Area of trailer/Oppv van sleepwa $= 3,75 \text{ m}^2 \times 1,02$ ✓MA $= 3,825 \text{ m}^2$ ✓CA **OR/OF** Area of base/Oppv van basis $= 1,5 \text{ m} \times 2,5 \text{ m}$ ✓SF $= 3,75 \text{ m}^2$ ✓S Area of trailer/Oppv van sleepwa $= 3,75 \text{ m}^2 \times 102 \text{ %}$ ✓MA $= 3,825 \text{ m}^2$ ✓CA **OROF** Area of base/Oppv van basis $= 1,5 \text{ m} \times 2,5 \text{ m}$ ✓SF $= 3,75 \text{ m}^2$ ✓S Area of trailer/Oppv van sleepwa $= 3,75 \text{ m}^2 \times \dfrac{102}{100}$ ✓MA $= 3,825 \text{ m}^2$ ✓CA	1SF substitution to correct formula 1S simplification 1MA calculating 2% and adding to area of base 1CA total area of trailer. 1SF substitution to correct Formula. 1S simplification 1MA multiply by 1,02 1CA area of trailer. 1SF substitution to correct Formula. 1S simplification 1MA multiply by 102% 1CA area of trailer. 1SF substitution to correct formula 1S simplification 1MA multiply by 102% 1CA area of trailer (4)	M L3

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	Level
5.3.2	6 cm : 2,5 m 6 cm : 2,5 m × 100 ✓C 6 cm : 250 cm $\frac{6}{6}$: $\frac{250}{6}$ ✓MA 1 : 41,66666667 ✓CA 1 : 42 ✓R **OR/*OF*** ✓A 6 cm : 2,5 m ✓C 0,06 m : 2,5 m 0,06 m : 2,5 m $\frac{0,06}{0,06}$: $\frac{2,5}{0,06}$ ✓MA 1 : 41.66666667 ✓CA 1 : 42 ✓R	**Accept 5,9 cm – 6,1 cm** 1A measurement 1C conversion 1MA divide by 6 1CA simplification 1R rounded 1A correct measurement 1C conversion 1MA dividing correct values 1CA simplification 1R rounded (5)	Maps L3

Ques	Measurement	Maps, Plans	Probability	Total	L1	L2	L3	L4	Total		Easy	Medium	Hard
											Easy	Medium	Hard
1.1.1	2				2				2		2		
1.1.2	2				2				2		2		
1.1.3 a	2				2				2		2		
1.1.3 b	3				3				3			3	
1.2.1	2				2				2		2		
1.2.2	2				2				2		2		
1.2.3	2				2				2		2		
1.3.1	2				2				2		2		
1.3.2	2				2				2		2		
1.3.3	2				2				2		2		
1.4.1		2			2				2		2		
1.4.2		2			2				2		2		
1.4.3		2			2				2		2		
1.4.4		2			2				2		2		
1.4.5		2			2				2		2		
									31				
2.1		2			2				2		2		
2.2.1		2				2			2		2		
2.2.2		2						2	2			2	
2.3		4						4	4			4	
2.4		2				2			2		2		
2.5		2				2			2		2		
2.6		4						4	4			4	
2.7		2						2	2			2	
									20				
3.1.1	5					5			5			5	
3.1.2	7							7	7			7	
3.1.3 a	5						5		5			5	
3.1.3 b	2				2				2		2		
3.1.3 c	2				2				2		2		
3.1.3 d	2							2	2				2
3.1.4 a	2				2				2		2		
3.1.4 b	4					4			4			4	
3.1.4 c	3				3				3		3		
3.2.1			2			2			2		2		
3.2.2			2			2			2		2		
3.2.3			3			3			3		3		
									39				

4.1.1		3				3			3		3		
4.1.2		3				3			3		3		
4.1.3		6					6		6				6
4.1.4 a	5							5	5				5
4.1.4 b		2			2				2		2		
4.2.1		2				2			2		2		
4.2.2	6						6		6			6	
4.2.3		4				4			4				4
4.3.1		2				2			2			2	
4.3.2		3				3			3			3	
									36				
5.1.1	2				2				2			2	
5.1.2	2					2			2			2	
5.2.1	2					2			2			2	
5.2.2	5							5	5			5	
5.2.3	4						4		4			4	
5.3.1	4						4		4				4
5.3.2		5					5		5				5
									24				
Total	83	60	7	150	46	43	30	31	150	150	62	62	26
Tot.%	55	40	5	100	31	29	20	21	100		41,3	41,3	17,4
% Target	55	40	5	100	30	30	20	20	100		40	40	20
Target	83	60	7	150	46	40	32	32	150				