basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

NOVEMBER 2023

MARKS: 150

TIME: 3 hours

This question paper consists of 12 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 to answer the following questions:

        ANNEXURE A for QUESTION 2.3
        ANNEXURE B for QUESTION 4.1
        ANNEXURE C for QUESTION 4.2
        ANNEXURE D for QUESTION 5.3

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 and 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 are NOT drawn to scale, unless stated otherwise.

10.   Write neatly and legibly.

QUESTION 1

1.1   TABLE 1 below contains a list of explanations and definitions of concepts used in Mathematical Literacy.

### TABLE 1: EXPLANATIONS AND DEFINITIONS OF CONCEPTS

A	A drawing showing the streets for a person who drives a car
B	Visual indication of the real-life distance and its distance on the map
C	The boundary that surrounds a circular-shaped object
D	A position which roughly shows the location of an object
E	The sum of the areas of all the faces of a 3D object
F	The rate of covering a certain distance
G	The amount of space that is enclosed by the perimeter of an object

Use TABLE 1 above to write down the letter of the explanation or definition (A to G) of EACH of the following concepts:

1.1.1   Bar scale   (2)

1.1.2   Surface area   (2)

1.1.3   Road map   (2)

1.1.4   Speed   (2)

1.2   Mr Masunte stays at a guesthouse in Hearn Street. Below is a strip chart showing the streets he will use to reach his destination.
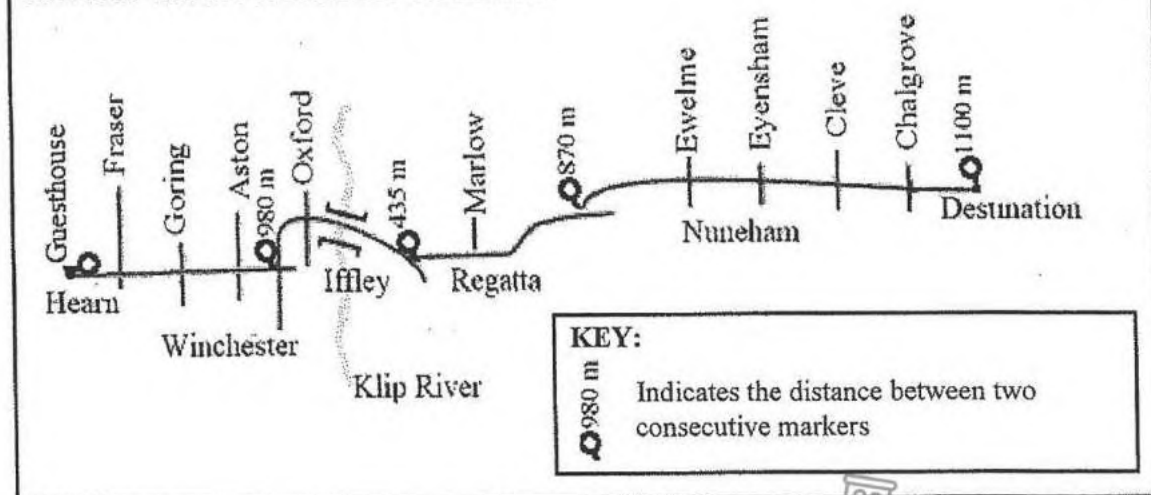
[Adapted from https://scoutwiki.scouts.org.za/wiki/Strip maps]
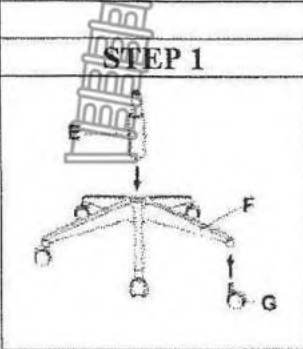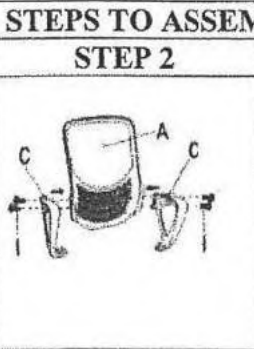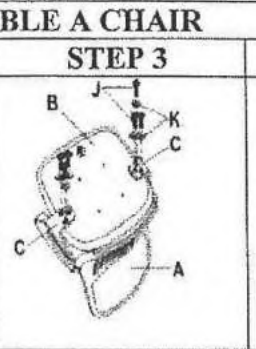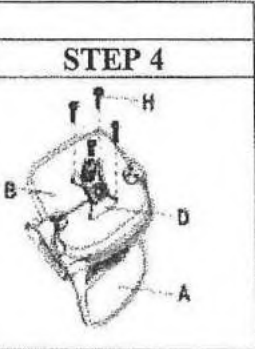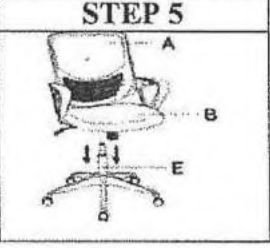
Use the information above to answer the questions that follow.

1.2.1   Write down how many streets Mr Masunte must cross before turning into Winchester Street.   (2)

1.2.2   Name the street that goes over the Klip River.   (2)

1.2.3   Calculate the total distance from the guesthouse to his destination.   (3)

1.3   Illustrated below are the steps and components needed to assemble a chair. The components to assemble the chair are labelled alphabetically (A–K).

STEPS TO ASSEMBLE A CHAIR

STEP 1	STEP 2	STEP 3	STEP 4

STEP 5	COMPLETED CHAIR

COMPONENTS NEEDED TO ASSEMBLE THE CHAIR

A Chair back	B Chair seat	C Seat mechanism	D Gas lift	E Chair base	F Chair arms

G Casters	H Screws	I Screws	J Screws	K Washer	L Assembly tool: Allen key

[Source: http//www.bing.com]

Use the information above to answer the questions that follow.

1.3.1   Determine how many different types of screws are needed to assemble the different parts of the chair.   (2)

1.3.2   Use the steps to assemble a chair to identify the following:

     (a)   The letter that indicates the chair base   (2)

     (b)   The number of screws used in step 4   (2)

1.3.3   Name the tool needed to assemble the chair.   (2)

1.3.4   Identify the component of the chair that comes as a pair.   (2)

[25]

QUESTION 2

2.1   Shown below is the layout plan of a conference room in the Pretoria Hotel.

CONFERENCE ROOM LAYOUT PLAN

KEY		
Chair	Plant	Screen for presentations
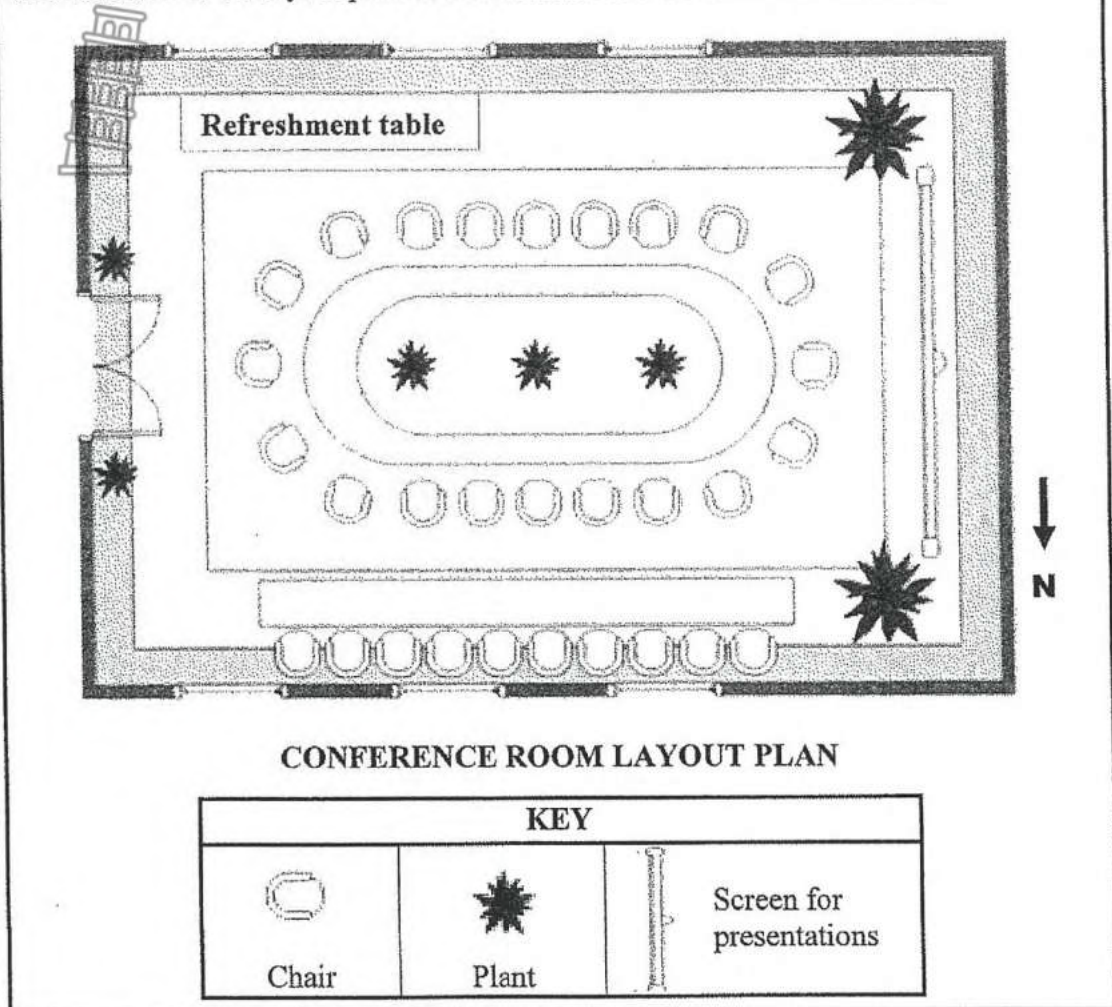
Use the information above to answer the questions that follow.
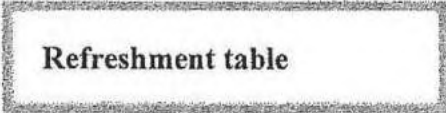
2.1.1   Define the term *layout plan*.   (2)

2.1.2   Write down the total number of chairs around the oval-shaped table.   (2)

2.1.3   Which ONE of the following statements regarding the conference room layout is TRUE?

    A   The screen is on the eastern side of the room.
    B   The screen covers some windows.
    C   The screen is opposite the door leading into the room.   (2)

2.1.4   Give ONE possible reason why plants are NOT placed on the table on the northern side of the room.   (2)

2.1.5   The actual outside length of the conference room is 12 m.

    (a)   Measure the outside length of the conference room on the layout plan.   (2)

    (b)   Hence, calculate the scale used in this layout plan.   (3)

2.2

> A single layer of the bottled water will be packed on a rectangular base. The packed bottled water will occupy half of the length of the rectangular refreshment table and will not overlap the edges of the table.
>
> Shown below are the pictures and the dimensions of the top of the rectangular refreshment table and the packed bottled water.

DIMENSIONS OF THE RECTANGULAR REFRESHMENT TABLE TOP	PACKED BOTTLED WATER (Rectangular base packaging)
Refreshment table	
Width = 49 cm Length = 290 cm	Width = 24,2 cm Length = 36,4 cm

Calculate the maximum number of packed bottled water that can fit on this half of the table. (8)

2.3

> On ANNEXURE A is a road map and area information directing the conference attendees to the Pretoria Hotel.

Use ANNEXURE A to answer the questions that follow.

2.3.1   State the general direction of the Atterbury Road off-ramp from the Fountains Circle. (2)

2.3.2   Explain the phrase, 'Map is not drawn to scale'. (2)

2.3.3   Complete: Pretoria Hotel is at the corner of … and … Streets. (2)

2.3.4   State the probability of having a traffic light at Brooklyn Circle. (2)

2.3.5   Give ONE reason why some streets are numbered from 1 to 7. (2)

2.3.6   A receptionist at the Pretoria Hotel has to report for work by 05:30.

She takes 10 minutes to walk from home to board a taxi.

- She leaves home at 04:55.
- She rides in a taxi for 20 minutes.
- She walks 5 minutes from the taxi stop to the hotel.

Verify whether or not the receptionist will get to work on time. (4)

[35]

QUESTION 3

3.1 | Andrew and Duncan went fishing for carp on a friend's farm.
NOTE: Carp is a large freshwater fish that can be eaten by humans.

3.1.1   A female carp can lay 2,7 million eggs.

Write 2,7 million in full, using numerals only.   (2)

3.1.2   Andrew caught a carp with a mass of 2,375 kg. Duncan caught two carp, one weighing 1,2 kg and the other 750 g.

Determine, in kg, the total mass of the carp they caught.   (3)

3.2 | Andrew wants to erect a Vibracrete wall on the boundary of his property.

The wall will consist of concrete posts with precast concrete slabs between them.

The wall will have 12 posts planted into the ground using concrete.

On top of each post, he will place a post cap.

For each post, Andrew digs a square hole in the ground with a side length of 30 cm and a depth of 60 cm.

PICTURE OF A VIBRACRETE WALL

Post cap

Precast concrete slabs
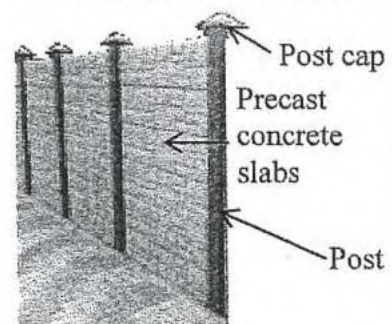
Post

Use the information above to answer the questions that follow.

3.2.1   Calculate, in m³, the total capacity of all the holes dug for the required posts.

You may use the formula:

Volume = length × width × depth   (5)

3.2.2   Andrew mixed the same volume of concrete as the volume calculated in QUESTION 3.2.1.

Give an explanation why he had some concrete left over after planting all the posts in the holes with concrete.   (2)

3.2.3   The concrete is made from a mixture of cement, river sand and stone in the ratio as illustrated below.

Cement	River Sand	Stone
50 kg		
1 Bag	2 Wheelbarrows	2 Wheelbarrows

0,75 m³ of concrete requires 5,5 bags of cement.
One level wheelbarrow full of river sand weighs 102 kg.

Calculate the mass of river sand needed to make 1 m³ of concrete.   (6)

3.3   The square-based post cap has a side length of 15,24 cm and a constant height of 2,5 cm.

The perpendicular height of the triangular face is 7,86 cm, as shown in the diagram alongside.

DIMENSIONS OF THE POST CAP

7,86 cm

2,5 cm

15,24 cm   15,24 cm
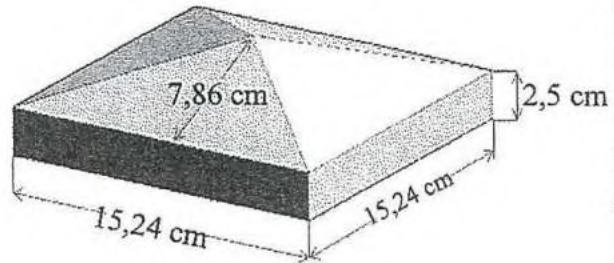
NET OF THE FACES OF ONE OF THE POST CAPS TO BE PAINTED

7,86 cm

2,5 cm

← 15,24 cm →
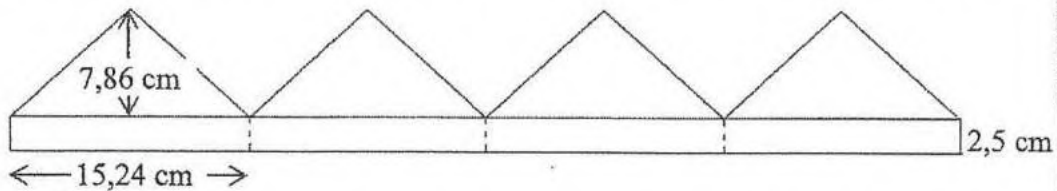
Andrew will paint two sides of each of the concrete posts (each is 125 mm wide and 1,6 m long) and all the outside faces of the post caps.

The following formulae may be used:

Area of a rectangle = length × width

Area of a triangle = $\frac{1}{2}$ × base × perpendicular height

Use the information above to answer the questions that follow.

3.3.1   Calculate, in cm², the total area of all the post sides that have to be painted.   (4)

3.3.2   Duncan stated that the total area of all the posts and the post caps to be painted was 52 704 cm², rounded to the nearest whole number.

Verify, showing ALL calculations, whether his statement is VALID.   (8)

3.3.3   The spread rate of the paint is 12,46 litre/m².

Calculate how many litres of paint is needed to paint 52 704 cm².   (3)

                                                                   [33]

QUESTION 4

4.1

> A programme inspiring people of all ages and genders usually ends with a fashion show.
>
> ANNEXURE B shows the layout of the runways and the seating arrangements at the fashion show.
>
> Next to the floor runway are single seats arranged in rows. Each round table next to the raised runway can seat a maximum of 10 adults.
>
> Each of the runways is 4 feet wide.
>
> **NOTE:** 1 m = 3,28084 feet

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

4.1.1   Write, in simplified form, the ratio of the width to the length of the raised runway.   (3)

4.1.2   Convert the length of the floor runway to metres.   (3)

4.1.3   Give a possible reason for EACH of the following:

     (a)   Why the second- and third-row seats are not arranged exactly behind the first-row seats that are closest to the floor runway   (2)

     (b)   Why there is a gap between the two runways   (2)

4.1.4   The diameter of the round table is 1,8288 m.

     You may use the following formulae in the questions that follow:

     Area of a circle = 3,142 × radius^2

     Circumference of a circle = 3,142 × diameter

     (a)   Calculate the area of the top of ONE round table.   (3)

     (b)   Each person occupies an equal length of the outer edge around the round table.

         Determine the maximum length allocated to each person seated around the round table.   (4)

4.2 | The girls participating in the fashion show need dresses that fit well. The fashion show uses an **equal number** of girls for each size.

ANNEXURE C shows a body type chart used to select the correct dress size.

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

4.2.1   Write down the body size for a girl with a mass of 55 kg and a height of 1,6 m.   (2)

4.2.2   State the mass of a girl with a height of 1,75 m wearing dress size 14–16.   (2)

4.2.3   Calculate the body mass index (BMI) of a girl who weighs 70 kg and is 1,50 m tall.

You may use the formula: $\text{BMI} = \dfrac{\text{mass (kg)}}{(\text{height in metres})^2}$ (3)

4.2.4   Write, as a percentage, the probability of randomly selecting a girl who weighs 50 kg and wears an XS dress.   (2)
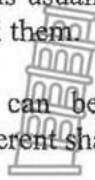
4.2.5   Bonolo stated that the probability of randomly selecting a girl wearing a dress with body size smaller than XXL is 0,833.

Verify, with calculations, whether her statement is VALID.   (4)
     [30]

QUESTION 5

5.1

Ice is usually used in cool drinks to further cool them.	PICTURE OF ICE CUBES AND DIAGRAM OF AN ICE CUBE
Ice can be made by freezing water in different shapes. Cubes are the most common shape used to make ice.	Side length of the cube = 4,5 cm

Use the information above to answer the question that follows.

Determine the surface area of a cube.

You may use the formula:　**Surface area of a cube = 6 × side length^2**　　(3)

5.2

Countries surrounding the North Pole have started building ice hotels for travellers to stay overnight.	ICE HOTEL
The hotel buildings, with furniture and decorations, are made of big blocks of ice, each weighing two tons. Blocks of ice are stacked on top of each other to build a room. Ice can also be carved to form different shapes.	Ice carved to make a frame for taking photos

Use the information above to answer the questions that follow.

5.2.1　Calculate the total mass (in kg) of a wall built with 60 big blocks of ice.

NOTE: 1 kg = 0,001 ton　　(4)

5.2.2　A block of ice was carved out to make a circular opening. The carved-out ice was melted resulting in water with a volume of 38 500 cm^3.

Calculate the volume of the ice that was carved out.

You may use the formula: **Volume of water = volume of ice × 0,92**　　(3)

5.3

> Alaska is one of the states in the USA. Anchorage is the largest city in Alaska.
>
> ANNEXURE D shows a part of the globe indicating the shortest distances, in nautical miles, between Anchorage and a few selected cities in the world.
>
> NOTE: 1 nautical mile = 1,151 miles
> 1 km = 0,6215 miles

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

5.3.1   Determine, in nautical miles, the difference in the distances from Tokyo to Honolulu and from Washington to Anchorage. (3)

5.3.2   Convert, to kilometres, the distance from Berlin to Anchorage. (4)

5.3.3   Cargo needs to be shipped from Los Angeles to Honolulu and then from Honolulu to Tokyo.

Phenyo searched the internet to determine how long it would take the cargo to reach its destination. Shown below are the search results. Some information has been omitted.

OCEAN ROUTE		TIME	DISTANCE
USLAX USHNL Los Angeles Honolulu		10 days 4 hours	2 607 nautical miles
USHNL JPYOK Honolulu Tokyo		...	3 350 nautical miles

NOTE: Ships sail 24 hours a day.

(a)   Calculate the average speed of the ship, rounded to TWO decimal places, in nautical miles per hour.

You may use the formula: **Distance = speed × time** (4)

(b)   Hence, determine the date and time of arrival in Tokyo if the ship leaves Honolulu on 24 September at 16:00 and sails at the same average speed. (6)

[27]

TOTAL: **150**

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MATHEMATICAL LITERACY P2

ADDENDUM

NOVEMBER 2023

This addendum consists of 5 pages with 4 annexures.

PR1-R1 Oct 26 2023 11:51:03

ANNEXURE A

QUESTION 2.3

PRETORIA HOTEL 193 – ROAD MAP AND AREA INFORMATION

KEY:

Traffic light	=	St
Street	=	N
North	=	N10
National Road	=	Int
International	=	

Map is not drawn to scale.
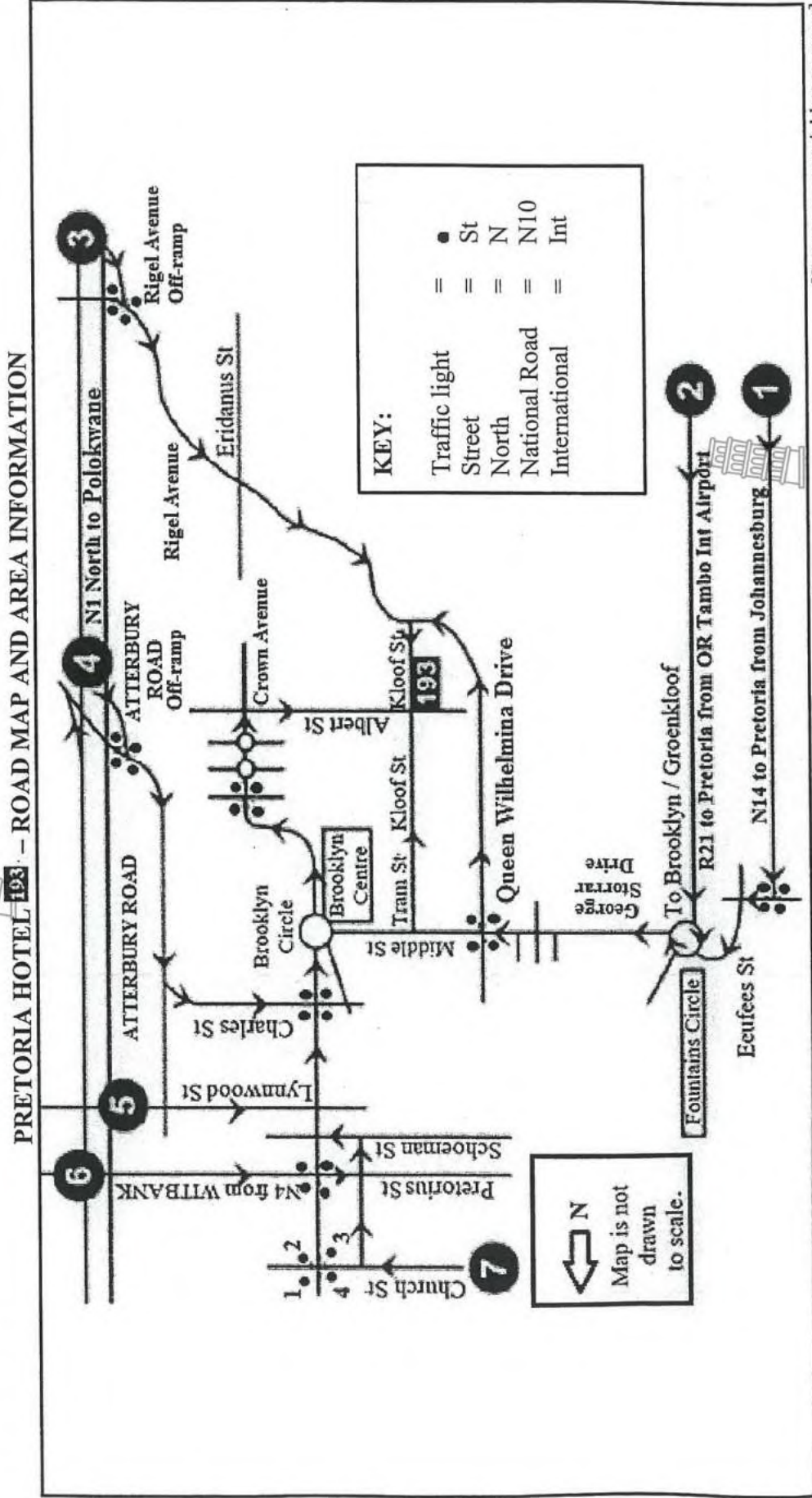
ANNEXURE B

QUESTION 4.1

LAYOUT OF THE RUNWAYS AND THE SEATING ARRANGEMENTS AT A FASHION SHOW

54' means 54 feet
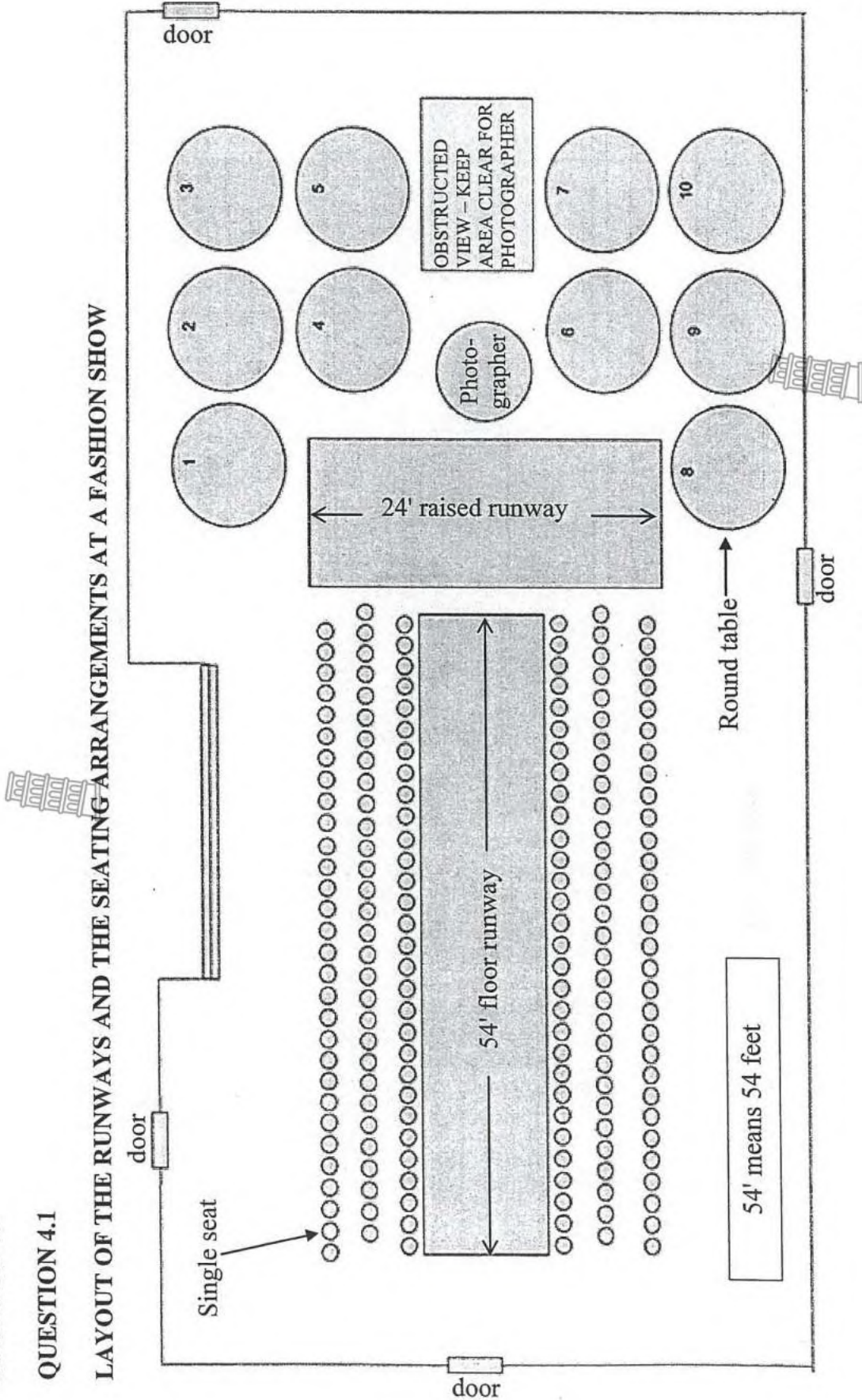
ANNEXURE C

QUESTION 4.2

TABLE 1: BODY TYPE CHART USED TO SELECT DRESS SIZE

BODY TYPE CHART

Mass → / Height ↓	50 kg	55 kg	60 kg	65 kg	67 kg	70 kg	75 kg	80 kg	85 kg	90 kg	100 kg
1,50 m	XS	S	S	M	L	L	XL	XL	XL	XL	XXL
1,55 m	XS	XS	S	M	M	L	L	XL	XL	XL	XXL
1,60 m	XS	XS	S	S	M	L	L	L	XL	XL	XXL
1,65 m	XS	XS	S	S	M	L	L	L	XL	XL	XXL
1,70 m	XS	XS	S	S	M	M	L	L	XL	XL	XXL
1,75 m	XS	XS	XS	S	S	M	M	L	L	XL	XXL

Dress size	0–2	2–4	4–6	6–8	8–10	10–12	12–14	14–16	16–18	18–20	20–22
Body size	XS	XS	S	S	M	M	M	L	L	XL	XXL

[Adapted from https://cmmodels.com/model-measurements-for-catwalks-and-fashion-shows/]

ANNEXURE D

QUESTION 5.3

PART OF THE GLOBE INDICATING THE SHORTEST DISTANCES, IN NAUTICAL MILES, BETWEEN ANCHORAGE AND A FEW SELECTED CITIES IN THE WORLD

[Adapted from anchorage.net]

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2023 -11- 15
APPROVED MARKING GUIDELINE
PUBLIC EXAMINATION

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Basic Education
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GRADE 12

MATHEMATICAL LITERACY P2/
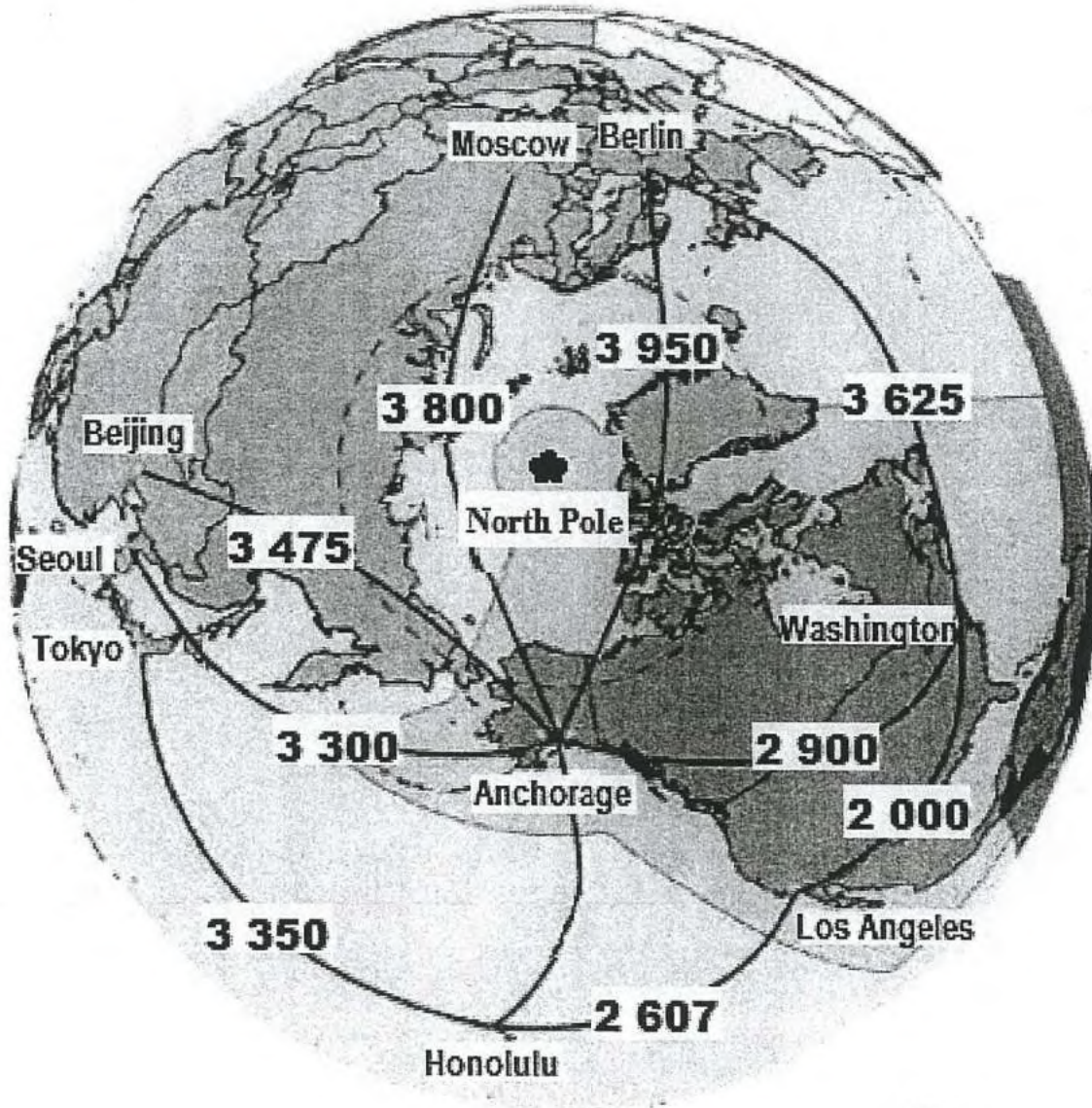### *WISKUNDIGE GELETTERDHEID V2*

NOVEMBER 2023

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

Symbol/*Kode*	Explanation/*Verduideliking*
MA	Method with accuracy/*Metode met akkuraatheid*
MCA	Method with constant accuracy/*Metode met volgehoue akkuraatheid*
CA	Consistent accuracy/*Volgehoue akkuraatheid*
A	Accuracy/*Akkuraatheid*
C	Conversion/*Herleiding*
S	Simplification/*Vereenvoudiging*
RT	Reading from a table/a graph/document/diagram/*Lees vanaf tabel/grafiek/diagram*
SF	Correct substitution in a formula/*Korrekte vervanging in formule*
O	Opinion/Explanation/Reasoning /*Opinie/Verduideliking/redenasie*
P	Penalty, e.g. for no units, incorrect rounding off, etc./*Penalisering bv. vir geen eenhede/verkeerde afronding, ens.*
R	Rounding off/*Afronding*
NPR	No penalty for rounding/*Geen penalisering vir afronding nie*
NPU	No penalty for omitting the unit, but a wrong unit is penalised. / *Geen penalisasie indien die eenheid uitgelos is nie, maar 'n verkeerde eenheid word wel gepenaliseer.*
AO	Answer only/*Slegs antwoord*
RCA	Rounding consistent with accuracy/*Afronding met volgehoue akkuraatheid*

These marking guidelines consist of 18 pages and 2 pages of notes.
Hierdie nasienriglyne bestaan uit 18 bladsye en 2 bladsye notas.

APPROVED ON 15 Nov 2023	External Moderators		Internal Moderators	
	R I Singh	E Cronje	L R de Waal	S Tune

UMALUSI
EXT. MODERATOR
R I SINGH

UMALUSI
EXT. MODERATOR
E.D. CRONJE

Please turn over/*Blaai om asseblief*

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.
- NOTE: consistent accuracy (CA) does not apply in cases of a breakdown.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.
- As a general marking principle, if a candidate has incurred one mistake and there is evidence of sound mathematics thereafter, then that candidate should lose one mark only.
- Rounding is an independent mark.
- A conclusion mark can only be given if relevant calculations precede it.
- No penalty for rounding (NPR) if the first decimal is correct.

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 op by die tweede berekeningsfout.*
- *Let wel: volgehoue akkuraatheid (CA) geld nie in die geval van 'n afbreuk nie.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *'n Algemene nasienbeginsel is dat indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, dat die kandidaat slegs een punt verloor*
- *Afronding tel as 'n onafhanklike punt*
- *'n Gevolgtrekkingspunt kan slegs gegee word indien relevante berekeninge dit voorgaan.*
- *Geen penalisering vir ronding (NPR) as die eerste desimaal korrek is nie.*

NOTE: Questions marked with * refers to the notes.
       Questions where the numbers are encircled are the ones where we have a tolerance range.

QUESTION/*VRAAG* 1 [25 MARKS/*PUNTE*] Answer Only AO - full marks

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
1.1.1*	B. ✓✓ A	2A explanation (2)	MP L1 E
1.1.2*	E. ✓✓ A	2A explanation (2)	M L1 E
1.1.3*	A. ✓✓ A	2A explanation (2)	MP L1 E
1.1.4*	F. ✓✓ A	2A explanation (2)	M L1 E
1.2.1*	3 ✓✓ A	2A number of streets (2)	MP L1 E
1.2.2*	Iffley ✓ ✓RT	2RT correct street (2)	MP L1 E

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.2.3*	✓ RT ✓ RT Tot. dist. = 980 m + 435 m +870 m + 1 100 m = 3 385 m ✓ CA	1RT 1st 2 correct values 1RT 2nd set of values 1CA distance (3)	MP L1 M
1.3.1*	3 ✓✓ A	2A number of types of screws (2)	MP L1 E
1.3.2* (a)	F ✓✓ A	2A correct letter (2)	MP L1 E
1.3.2 (b)	4 ✓✓ A	2A correct number (2)	MP L1 E
1.3.3*	✓✓ A Allen key. /Allensleutel	2A correct tool (2)	MP L1 E
1.3.4*	✓✓A Chair arms/Stoelarms OR/OF F	2A correct item (2)	MP L1 E
		[25]	

QUESTION/*VRAAG* 2 [35 MARKS/*PUNTE*]

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.1.1	A layout plan describes the physical arrangement of all structures that consume space within a facility. ✓✓ A *'n Uitlegplan toon die rangskikking van al die strukture, stoele ens. wat die ruimte van die lokaal beslaan.* **OR/*OF*** ✓✓ A A layout plan is a top view that shows the arrangement of features / structures / location or position of items. *'n Uitlegplan is die bo-aansig wat die rangskikking van die voorwerpe/ strukture / ligging of posisie van items aantoon.*	2A correct definition (2)	MP L1 E
2.1.2	20 ✓✓ A	2A number of seats (2)	MP L1 E
2.1.3	C ✓✓ A **OR/*OF*** The screen is opposite the door leading into the room/ *Die skerm is oorkant die ingangsdeur.*	2A correct option (2)	MP L1 M
2.1.4	North table is narrow or small or limited space./*Noord-tafel is baie nou of te min spasie.* ✓✓ O **OR/*OF*** ✓✓ O Plants will block or obscure the view of participants seated there/*Plante sal die uitsig van deelnemers wat hier sit belemmer.*	2O acceptable reason (2)	MP L4 E
2.1.5* (a)	12,7 cm or 127 mm ✓✓A	2A measured value Accept: 12,4 – 12,8 cm (2)	MP L2 E
2.1.5* (b)	GP, MP, NC: 12,7 cm : 12 m ✓ MCA 12,7 : 1 200 ✓ C 1 : 94,49 ✓ CA **OR/*OF*** FS, NW, WC 12,4 cm : 12 m ✓ MCA 12,4 : 1 200 ✓ C 1 : 96,77 ✓ CA	CA from 2.1.5(a) 1MCA correct order of the ratio 1C conversion 1CA simplified unit ratio **OR/*OF*** 1MCA correct order of the ratio 1C conversion 1CA simplified unit ratio	MP L2 M

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L

	OR/*OF*
	 EC, KZN, LP
	 12,5 cm : 12 m ✓ MCA
	 0,125 : 12 ✓ C
	   1 : 96 ✓ CA
	
	 OR/*OF*
	
	 125 mm : 12 m ✓ MCA
	  125 : 12 000 ✓ C
	   1 : 96 ✓ CA
		1MCA correct order of the ratio
		 1C conversion
		 1CA simplified unit ratio
		
		 OR/*OF*
		 1MCA correct order of the ratio
		 1C conversion
		 1CA simplified unit ratio
		 NPR
		
		 (3)	

2.2*	Half the table length/*halwe tafel lengte* = 145 cm ✓A Pack length wise along table's top length/ *lengte teen lengte:* $\dfrac{145\,cm}{36,4\,cm} = 3,98$ ✓ MA ≈ 3 packs./*pakke.* ✓ R And the width against the table width / *breedte teen breedte* ✓ A $\dfrac{49\,cm}{24,2\,cm} = 2,02$ = 2 packs./*pakke* Number that can be packed / *getal wat gepak kan word* ✓ MA = 3 × 2 = 6 packs/*pakke* ✓ CA But/*Maar* 36,4 × 3 = 109,2*cm* And/*en* 145*cm* − 109,2*cm* = 35,8*cm* Pack width wise along table's top length / *Breedte teen lengte* $\dfrac{35,8\,cm}{24,2} = 1,479338843 ≈ 1\ pack$ ✓ A Length against the width / *lengte teen breedte* $\dfrac{49\,cm}{36,4} = 1,346153846 ≈ 1\ pack$ Total number of packs /*Totale getal pakke* = 6 + 1 = 7 ✓CA ∴The maximum is 7 packs / *Maksimum is 7 pakke*	1A calculating half length 1MA dividing 1R rounding down 1A simplification 1MA multiplying 1CA correct number of packs 1A extra pack 1CA correct number of packs (8)	MP L3 D
2.3.1*	✓✓A South East **OR** SE./ *Suidoos OF SO*	2A direction (2)	MP L2 M

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.3.2	✓✓A There is no relationship (or ratio) between distances on a map and the corresponding distance on the ground. *Daar is geen verwantskap tussen die afstande op die kaart en die ooreenstemmende afstand op die grond nie.* **OR/OF** ✓✓A Distances on map are not accurate therefore one should not measure the length on the document and then expect to be able to calculate the real-life distance from it. *Afstande op die kaart is nie akkuraat nie gevolglik kan jy nie die afstande op die kaart meet en verwag om die korrekte afstand in werklikheid uit te werk nie.* **OR/OF** ✓✓A The map is a free hand drawing/ rough sketch since scale was not used when it was drawn *Die kaart is 'n vryhand tekening / rofwerkskets aangesien geen skaal gebruik was om dit te teken nie.*	2A correct statement (2)	MP L1 M
2.3.3	✓RT ✓RT Tram/Kloof Street and Albert Street. *Tram/Kloofstraat en Albertstraat*	1RT Tram or Kloof 1RT Albert (2)	MP L2 M
2.3.4	0 ✓ ✓A **OR/OF** Impossible/ none / no chance *Onmoontlik/ nul / geen kans*	2A correct probability (2)	P L2 E
2.3.5	Different roads/routes that lead to the hotel. ✓ ✓O *Verskillende roetes/paaie wat na die hotel toe gaan.* **OR/OF** The streets are possible entry points for conference attendees. ✓ ✓O *Die strate is die moontlike ingange punte vir die konferensie gangers.* **OR/OF** ✓ ✓O For getting direction easily to the destination. *Dit vergemaklik rigting aanwysings na die bestemming.*	2O reason (2)	MP L4 M

2023-11-15
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PRIVATE BAG X895, PRETORIA 0001
APPROVED MARKING GUIDELINE
PUBLIC EXAMINATION

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EXT. MODERATOR
R. I. SINGH

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.3.6	Arrival time / *Aankomstyd* ✓MA ✓A = 04:55 + 10 min + 20 min + 5 min = 05:30 ✓CA ✓O The receptionist will be on time for work. *Sy sal betyds wees.* **OR/*OF*** Duration of time from home to work /*Duur van tyd van huis tot werk* = 10 min + 20 min + 5 min = 35 min ✓A Arrival time/ *Aankomstyd.* 04:55 + 00:35 ✓MA = 05: 30 ✓CA The receptionist will be on time for work. ✓O *Sy sal betyds wees.* **OR/*OF*** Duration to reach hotel/ *Duur om die hotel te bereik* = 05:30 – 04:55 = 35 min ✓MA Duration of time from home to work /*Duur van tyd van huis tot werk* 10 min + 20 min + 5 min = 35 min ✓MA ✓A Yes she will reach the hotel on time./ *Sy sal betyds wees* ✓O **OR/*OF*** 4:55 + 0:20 = 05:15 ✓A 05:15 + 0:10 = 05:25 ✓MA 05:25 + 0:05 = 05:30 ✓CA She will arrive on time/ *Sy sal betyds wees* ✓O **OR/*OF*** ✓A ✓MA 05:30 – 5 mins – 20 mins – 10 mins = 04:55 ✓CA The receptionist will be on time for work./ *Sy sal betyds wees* ✓O	1MA adding the time 1A all the values 1CA arrival time 1O verification **OR/*OF*** 1A all the values 1MA adding time 1CA arrival time 1O verification **OR/*OF*** 1MA subtracting time 1MA adding all values 1A simplification 1O verification **OR/*OF*** 1A all the values 1MA adding time 1CA arrival time 1O verification **OR/*OF*** 1A all the values 1MA subtracting time 1CA departure time 1O verification (4)	MP L4 M

[35]

QUESTION/*VRAAG* 3 [33 MARKS/*PUNTE*]

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
3.1.1	Number of eggs/ *Getal eiers* $= 2{,}7 \times 1\,000\,000$ ✓MA $= 2\,700\,000$ ✓A **OR/*OF*** Two million seven hundred thousand/ *Twee miljoen sewe honderd duisend*	1MA multiply by 1 000 000 1A correct answer AO (2)	M L1 E
3.1.2*	Total mass/ *Totale massa* $= 2{,}375\ \text{kg} + 1{,}2\ \text{kg} + (\frac{750}{1\,000})\text{kg}$ ✓C ✓MA $= 4{,}325\ \text{kg}$ ✓CA	1C conversion 1MA adding all the mass 1CA total mass in kg (3)	M L2 M
3.2.1	Volume $= 30\ \text{cm} \times 30\ \text{cm} \times 60\ \text{cm}$ ✓SF $= 54\,000\ \text{cm}^3$ ✓CA Total /*Totale* volume $= \frac{54\,000}{1\,000\,000}\ \text{m}^3 \times 12$ ✓C ✓MA $= 0{,}648\ \text{m}^3$ ✓CA **OR/*OF*** Volume $= 0{,}3\ \text{m} \times 0{,}3\ \text{m} \times 0{,}6\ \text{m}$ ✓C ✓SF ✓MA $= 0{,}054\ \text{m}^3$ ✓CA Total /*Totale* volume $= 0{,}054\ \text{m}^3 \times 12$ $= 0{,}648\ \text{m}^3$ ✓CA **OR/*OF*** Total volume in $\text{m}^3 = 12(0{,}3 \times 0{,}3 \times 0{,}6)$ ✓MA ✓C ✓SF ✓MA $= 0{,}648$ ✓CA	1SF substitution into formula 1CA volume of the hole 1C conversion factor 1MA multiply converted volume by 12 posts 1CA simplification **OR/*OF*** 1C conversion 1SF substitution 1MA multiply converted values 1CA simplification 1CA simplification for 12 posts **OR/*OF*** 1MA multiply by 12 posts 1C conversion 1SF substitution 1MA simplify bracket 1CA simplification (5)	M L3 D
3.2.2	The post's volume will take some volume of the concrete. ✓✓O *Die pilare se volume sal van die volume beton opneem.* **OR/*OF*** The posts will take up <u>space</u> in the <u>hole</u>. /*Die pilare neem <u>spasie</u> op in die <u>gat</u>.*	2O opinion (2)	M L4 M

Q/V	Solution/oplossing	Explanation/Verduideliking	T/L
3.2.3*	5,5 bags of cement make/sakke sement maak $0,75 \ m^3$ For $1 \ m^3$ the cement / Vir $1 \ m^3$ is die sement $= \dfrac{5,5}{0,75} \ \checkmark MA = 7,33..$ bags /sakke ✓A But 1 bag cement mix with 2 wheelbarrows of sand Maar 1 sak sement meng met 2 kruiwaens sand Number of wheelbarrows of sand Getal kruiwaens sand $= 7,333... \times 2 \overset{\checkmark MA}{=} 14,666..$ ✓CA Mass of the sand / Massa sand $= 102 \times 14,6666...$ ✓MA $= 1 \ 496 \ kg$ ✓CA **OR/OF** Sand needed for $0,75 \ m^3$ concrete Sand nodig vir $0,75 \ m^3$ beton $= 5,5 \times 2$ ✓MA $= 11$ wheel barrows /kruiwaens ✓A Mass of sand need for $0,75 \ m^3$ of concrete Massa sand nodig vir $0,75 \ m^3$ beton $= 11 \times 102 \ kg$ ✓MCA $= 1 \ 122 \ kg$ ✓CA Mass of sand for $1 \ m^3$ the concrete Massa van sand vir $1 m^3$ beton $= 1 \ 122 \ kg \times \dfrac{1}{0,75}$ ✓MA $= 1 \ 496 \ kg$ ✓CA **OR/OF** For /Vir $0,75 \ m^3$: $5,5 \times 50 = 275 \ kg$ cement/sement ✓MA ✓CA $1 \ m^3$: $275 \div 0,75 = 366,666..$ kg cement/sement Mixing ratio / Meng verhouding 1 bag/sak : 2 wheelbarrows sand Cement/ sement 50 kg : 204 kg sand ✓A 366,66 : n $n = \dfrac{366,66}{50} \times 204$ ✓MCA $= 1 \ 496 \ kg$ ✓MA ✓CA	1MA working with ratio 1A number of bags 1MA multiplying by 2 1CA number of wheelbarrows 1MA multiply with mass 1CA simplification **OR/OF** 1MA working with ratio 1A number of wheelbarrows 1MCA multiplying by mass 1CA simplification 1MA dividing by 0,75 1CA simplification **OR/OF** 1MA dividing by 0,75 1CA simplification 1A mass of wheelbarrows 1MCA multiplying by mass 1MA working with ratio 1CA simplification	M L3 D

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF*	1MCA multiplying by mass	
	$5,5 \times 102$ kg $= 561$ kg ✓MCA	1MA working with ratio	
	So 561 kg $\times 2 = 1\,122$ kg. ✓MA ✓A	1A number of wheelbarrows	
	$0,75$ m³ is $1\,122$ kg ✓CA	1CA simplification	
	So: 1 m³ will be $= \dfrac{1\,122}{0,75}$ ✓MA	1MA dividing by 0,75	
	$= 1\,496$ kg ✓CA	1CA simplification	
	OR/*OF*	**OR/*OF***	
	$5,5$ bags cement/*sakke sement* is $0,75$ m³ ✓MA	1MA working with ratio	
	0.75 m³ $\div 5,5 = 0,1363636...$ m³ per bag /*sak*		
	1 m³ $\div 0,13636... = 7,333...$ bags/*sakke* ✓A	1A number of bags	
	Wheelbarrows/ *Kruiwaens* $= 7,333.. \times 2$ ✓MA	1MA multiplying by 2	
	$= 14,666...$ ✓CA	1CA number of wheelbarrows	
	Mass / *massa* $= 14,666... \times 102$ kg ✓MA	1MA multiply with mass	
	$= 1\,496$ kg ✓CA	1CA simplification	
	OR/*OF*	**OR/*OF***	
	Mass/*massa* in kg $= \dfrac{102}{0,75}^{✓MA} \times (5,5 \times 2)^{✓MA\ ✓MA}$ ✓MA	3MA marks ratio, × 2, × mass	
	$= 136 \times 11$ ✓A	1MA dividing by 0,75	
	✓CA	1A multiply by 11 bags	
	$= 1\,496$	2CA simplification & final answer	
		(6)	
3.3.1	Area of rectangle/ *Opp. van reghoek*	1SF substitution	M L2 M
	$= 1,6$ m $\times 125$ mm ✓SF		
	$= 160$ cm $\times 12,5$ cm ✓C	1C converting both	
	$= 2\,000$ cm²		
	Total surface area/ *Totale oppervlakte* ✓MA	1MA multiply by 2 and 12	
	$= 2\,000$ cm² $\times 2$ sides/*kante* $\times 12$ posts/*pilare*		
	$= 48\,000$ cm² ✓CA	1CA simplification	
	OR/*OF*	**OR/*OF***	
	Area of one face / *Opp. van een aansig*	1C converting both	
	$= (\frac{125}{10})^{✓C}$ cm $\times (1,6 \times 100)$ cm ✓SF	1SF substitution	
	$= 2\,000$ cm²		
	Area of all the posts / *Opp. van al die pilare*		
	$= 2\,000$ cm² $\times (2 \times 12)$ ✓MA	1MA multiply by 2 and 12	
	$= 48\,000$ cm² ✓CA	1CA simplification	

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF* ✓ SF ✓C A = 12,5 cm × 160 cm × 2 × 12 ✓MA = 48 000 cm² ✓CA **OR/*OF*** $\frac{125}{1\,000} = 0,125$ m ∴ Area = length × width / *lengte × breedte* = 1,6 m × 0,125 m ✓SF = 0,2 m² (2 × 12) ✓MA = 4,8 m² × 10 000 ✓C = 48 000 cm² ✓CA **OR/*OF*** ✓SF Area of rectangle = 125 mm × (1,6 × 1 000) *Opp. Van reghoek* = 125 mm × 1 600 mm = 200 000 mm² In cm² = 200 000 ÷ 100 = 2 000 cm² ✓C Total surface area = 2 000 cm² × 12 × 2 ✓MA *Totale buite opp.* = 48 000 cm² ✓CA	**OR/*OF*** 1C converting both 1SF substitution 1MA multiply by 2 and 12 1CA simplification **OR/*OF*** 1SF substitution 1MA multiply by 2 and 12 1C converting both 1CA simplification **OR/*OF*** 1SF substitution 1C converting both 1MA multiply by 2 and 12 1CA simplification (4)	
③.3.2*	Area of the rectangular part /*Opp. van reghoekige deel* ✓SF = (15,24 cm × 2,5 cm) × 4 = 38,1 cm² × 4 = 152,4 cm² ✓CA Area of the 4 top triangles/ *Opp. van 4 driehoeke* = ($\frac{1}{2}$ ×base × height) × 4 ✓A ✓SF = ($\frac{1}{2}$ × 15,24 cm × 7,86 cm) × 4 = 59,8932 cm² × 4 = 239,5728 cm² ✓CA Total area of 1 post cap / *Totale opp. van 1 pilaardop* = 152,4 cm² + 239,5728 cm² = 391,97 cm² Total area for 12 posts/ *Totale opp. vir die 12 pilare* ✓A = 391,9728 cm² × 12 + 48 000 cm² ≈ 52 704 cm² ✓MCA VALID/ *GELDIG* ✓O	**CA post's area from 3.3.1** 1SF substitution 1CA area of 4 rectangles 1A multiply 4 1SF substitution 1CA simplification 1A multiply 12 1MCA adding two areas 1O verification	M L4 M

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF*	**OR/*OF***	
	Area of the triangle/ *Opp. van driehoek*		
	$= (\frac{1}{2} \times base \times height)$	1SF substitution	
	$=(\frac{1}{2} \times 15,24 \text{ cm} \times 7,86 \text{ cm})$ ✓SF $= 59,8932 \text{ cm}^2$ ✓CA	1CA area of triangle	
	Area of the rectangle /*Opp. van reghoekige deel*	1SF substitution	
	$= (15,24 \text{ cm} \times 2,5 \text{ cm})$ ✓SF $= 38,1 \text{ cm}^2$ ✓CA	1CA simplification	
	Area of one face / *Opp. van een aansig*		
	$= 59,8932 \text{ cm}^2 + 38,1 \text{ cm}^2 = 79,9932 \text{ cm}^2$		
	Total Area/*Totale opp.* $= 79,9932 \text{ cm}^2 \times 4 =$ ✓A $391,9728 \text{ cm}^2$	1A multiply 4	
	Area for 12 caps/*Opp. van 12 pilaardoppe* $= 391,9728 \text{ cm}^2 \times 12 = 4703,6736 \text{ cm}^2$ ✓A	1A multiply 12	
	Total area to be painted/*Totale opp. om te verf* $= 1703,6736 \text{ cm}^2 + 48000 \text{ cm}^2$ $= 52\,703,6736 \text{ cm}^2$ $\approx 52\,704 \text{ cm}^2$ ✓MCA VALID/ *GELDIG* ✓O	1MCA adding two areas 1O verification	
	OR/*OF*	**OR/*OF***	
	Area of posts / *Pilare se opp.* $= 48\,000 \text{ cm}^2$		
	Area of all caps (rectangular part)/ *Opp. pilaardop (reghoekige deel)* $= (15,24 \text{ cm} \times 2,5 \text{cm}) \times 4 \times 12$ ✓SF $= 1828,8 \text{ cm}^2$ ✓CA	1SF substitution 1CA simplification	
	Area of all caps (triangular part)/ *Opp. pilaardop (driehoekige deel)* ✓SF ✓A $= \frac{1}{2} \times 15,24 \text{ cm} \times 7,86 \text{ cm} \times 4 \times 12$ ✓A $= 2874,8736 \text{ cm}^2$ ✓CA	1SF substitution 1A multiply 4 1A multiply 12 1CA area of triangle	
	Total area /*Totale opp.* $= 1828,8 \text{ cm}^2 + 2\,874 \text{ cm}^2 + 48\,000 \text{ cm}^2$ $= 5\,2703,67 \text{ cm}^2 \approx 5\,2704 \text{ cm}^2$ ✓MCA	1MCA adding two areas	
	VALID/ *GELDIG* ✓O **OR/*OF***	1O verification	

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Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L

	Area cap triangle /*Opp. pilaardop driehoek*
	 = ½ × 15,24 cm × 7,86 cm² ✓SF
	 = 59,8932 cm² ✓CA
	 So: 59,8932 × 4 = 239,5728 cm²
	    239,5729 cm² × 12 = 2 874,8736 cm²
	
	 Area rectangle/ *Reghoekige opp.* = 15,24 cm × 2,5 cm ✓SF
	                 = 38,1 cm² ✓CA
	 So: 38,1 cm² × 4 = 152,4 cm² ✓A
	    152,4 cm² × 12 = 1 828,8 cm² ✓A
	
	 Total area = 1828,8 cm² + 2 874 cm² + 48 000 cm²
	 Totale opp. = 5 2703,67 cm²
	         ≈ 5 2704 cm² ✓MCA
	
	 VALID/ *GELDIG* ✓O
	
	 OR/OF
	 Total area to be painted / *Opp. om te verf* in cm²
	   ✓A ✓A ✓SF ✓SF
	 = (12 × 4 × 0,5 × 15,24 × 7,86) + (12 × 4 × 15,24 × 2,5)
	     ✓CA ✓CA
	 = 2 874,8736 + 1 828,8
	 = 4 703,6736
	 = 4 704
	 Posts + Caps = 48 000 + 4 704
	         = 52 704 ✓MCA
	
	 VALID/ *GELDIG* ✓O
		1SF substitution
		 1CA area of triangle
		
		 1SF substitution
		 1CA simplification
		
		 1A multiply 4
		 1A multiply 12
		
		 1MCA adding two areas
		
		 1O verification
		
		 OR/OF
		 1A multiply 4
		 1A multiply 12
		 1SF substitution
		 1SF substitution
		 1CA area of triangle
		 1CA simplification
		
		 1MCA adding two areas
		
		 1O verification
		
		                      (8)	

3.3.3	Area in m² /*Opp. in m²*
	
	 = 52 704 ÷ 100²
	 = 5,2704 m² ✓C
	
	 Number of litres needed /*Getal liter nodig*
	
	 = 5,2704 × 12,46 ✓MCA
	  = 65,669... ✓CA
	 ≈ 66
		
		 1C conversion
		
		 1MCA multiplying
		
		 1CA simplification
		 NPR
		                   (3)
			M
			 L3
			 D

			[33]

QUESTION/*VRAAG* 4 [30 MARKS/*PUNTE*]

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.1.1*	$\checkmark$RT 4 : 24 $\checkmark$A = 1 : 6 $\checkmark$CA	1RT correct values 1A correct order 1CA simplification AO (3)	MP L2 E
4.1.2	Length of runway /*Lengte van die loopplank* $= \dfrac{54 \quad \checkmark\text{RT}}{3,28084 \quad \checkmark\text{MA}}$ = 16,459199... m $\checkmark$CA	1RT correct runway 1MA dividing by 3,28084 1CA length of runway **NPR** (3)	M L2 M
4.1.3 (a)	To eliminate the obstruction that could be caused by front row spectators $\checkmark\checkmark$O *Dit elimineer obstruksie wat deur eerste ry toeskouers veroorsaak word* **OR/*OF*** $\checkmark\checkmark$O To have a clear view of the models on the floor runway. *Om 'n duidelike siglyn van die modelle op die vloerloopplank te hê.*	2O reason (2)	MP L4 E
4.1.3 (b)	$\checkmark\checkmark$O The other runway is higher than the floor runway *Die ander loopplank is hoër as die vloer-loopplank* **OR/*OF*** $\checkmark\checkmark$O Passage where people can pass through/ *Deurgang vir mense* **OR/*OF*** $\checkmark\checkmark$O A step between the two runways /*n Trap tussen die twee loopplanke* **OR/*OF*** $\checkmark\checkmark$O To avoid collisions/*Om botsings te verhoed*	2O reason (2)	MP L4 E
4.1.4 (a)	Radius = $\dfrac{1,8288m}{2}$ = 0,9144 m $\checkmark$A Area of a circle / *Opp. van die sirkel* = 3,142 × (0,9144 m)² $\checkmark$SF = 2,627112... m² $\checkmark$CA	1A calculating radius 1SF substitution 1CA area of circle **NPR** (3)	M L2 M

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.1.4* (b)	Circumference / *Omtrek* = 3,142 × 1,8288 m ✓SF = 5,7460896 m ✓CA Length allocated/ *Lengte toegeken* $= \dfrac{5,7460896\,m}{10}$ ✓MCA = 0,5746… m ✓CA	1SF substitution 1CA simplification 1MCA dividing by 10 1CA length per person **NPR** (4)	M L3 M
4.2.1*	XS ✓✓RT	2RT correct size (2)	M L1 E
4.2.2	80 kg ✓✓RT	2RT correct weight (2)	M L2 E
4.2.3	BMI / *LMI* $= \dfrac{70\text{ kg}}{(1,50\text{ m})^2}$ ✓MA ✓MA = 31,11… kg/m² ✓A	1MA numerator 1MA denominator 1A correct BMI **NPR** (3)	M L2 M
4.2.4*	100% ✓✓A	2A correct probability (2)	P L2 E
4.2.5*	$P = \dfrac{5}{6}$ ✓A ✓A = 0,833 ✓CA VALID/ *GELDIG* ✓O	1A Numerator 1A Denominator 1CA simplification 1O opinion (4)	P L4 M
		[30]	

QUESTION/*VRAAG* 5 [27 MARKS/*PUNTE*]

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
5.1	Surface area of a cube / *Buite opp. van kubus* $= 6 \times (4,5 \text{ cm})^2$ ✓SF ✓A $= 121,5 \text{ cm}^2$ ✓A	1SF substitution 1A simplification 1A unit AO (3)	M L2 E

5.2.1	Total mass / *Totale massa* $= 60 \times 2$ ton $= 120$ ton
	      ✓MA ✓A
	      $= \dfrac{120}{0,001} \text{ kg}$ ✓C
	
	      $= 120\ 000 \text{ kg}$ ✓CA
	
	 OR/*OF*
	 1 ton $= 1\ 000$ kg ✓C
	
	      ✓MA
	 1 000 kg $\times 2 = 2\ 000$ kg ✓A
	
	 Mass of 60 blocks/ *Massa van 60 blokke*
	     $= 2\ 000 \times 60$
	
	     $= 120\ 000 \text{ kg}$ ✓CA
		1MA multiplying by 2
		 1A simplification
		 1C conversion
		 1CA simplification
		
		 OR/*OF*
		 1C conversion
		 1MA multiplying by 2
		 1A simplification
		
		 1CA simplification
		
		 (4)
			M L1 E

5.2.2	$38\ 500 \text{ cm}^3$ = volume of ice/ *ys* $\times 0,92$ ✓SF $\dfrac{38500}{0,92} \text{ cm}^3$ ✓MA = volume of ice/ *ys* ✓A $41\ 847,826... \text{ cm}^3$ = volume of ice / *ys*	1SF substitution 1MA changing the subject of the formula 1A volume of ice **NPR** (3)	M L2 M

5.3.1*	Difference / *Verskil*
	    ✓RT ✓RT
	 $= 3\ 350 - 2\ 900$
	
	      ✓CA
	 $= 450$ nautical miles /*seemyl*
		1RT 1st value
		 1RT 2nd value
		
		 1CA with subtraction
		 NPU
		 AO
		
		 (3)
			MP L2 E

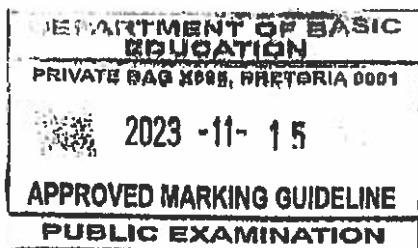| Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L

5.3.2	Distance in miles / *Afstand in myl*
	    ✓ RT
	 =3 950 × 1,151 ✓ C
	 = 4 546,45 miles.
	
	 Distance in km / *Afstand in km*
	 = $\dfrac{4\ 546,45}{0,6215}$ ✓ C
	 = 7 315,285599 km ✓ CA
	
	 OR/OF
	 Distance /*afstand* in km:
	    ✓ RT ✓ C
	 3 950 × $\dfrac{1,151}{0,6215}$ ✓ C
	
	 = 7 315,285599 km. ✓ CA
		1RT value of 3 950
		 1C multiply by 1,151
		
		 1C dividing by 0,6215
		
		 1CA simplification
		
		 OR/OF
		
		 1RT value of 3 950
		 1C multiply by 1,151
		 1C dividing by 0,6215
		
		 1CA simplification
		 NPR
		             (4)
			M
			 L2
			 E

(5.3.3) (a)	10 days/*dae* 4 hours/*uur* = 244 hours/*uur* ✓ C
	
	 2 607 = speed/*spoed* × 10 days/*dae* 4 hours/*uur* ✓ SF
	    2 607 = speed/*spoed* × 244 hours/*uur*
	 $\dfrac{2\ 607}{244}$ = speed/*spoed* ✓ MA
	           ✓ R
	 Ave speed/*spoed* ≈ 10,68 nautical miles/hour /*seemyl/uur*
	
	 OR/OF
	
	 10 days/*dae* 4 hours/*uur* = 244 hours/*uur* ✓ C
	
	 Hrs for the second part/*Ure vir die tweede deel*
	
	 = $\dfrac{3\ 350×244}{2\ 607}$
	
	 = 313,54
	
	 Ave Speed/*Gem.Spoed* = $\dfrac{distance}{time}$ ✓ MA
	
	 = $\dfrac{3\ 350+2\ 607}{313,54+244}$ ✓ SF
	
	 = $\dfrac{5\ 957}{557,54}$
	
	       ✓ R
	 = 10,68 nautical miles/hour /*seemyl/uur*
		1C conversion
		
		 1SF substitution
		
		 1MA changing subject of formula
		 1R simplification correctly rounded
		
		 OR/OF
		
		 1C conversion
		
		 1MA changing subject of formula
		
		 1SF substitution
		
		 1R simplification correctly rounded
		             (4)
			M
			 L3
			 M

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
5.3.3* (b)	Time/ *tyd* = $\dfrac{3\ 350 \text{ miles}}{10{,}68 \text{ nautical miles /hour}}$ ✓ MA $= 313{,}67 \text{ hours}$ ✓ CA $= \dfrac{313{,}67 \text{ hours}}{24 \text{ hours}}$ ✓ C ✓ CA ✓ CA $= 13 \text{ days /}dae \text{ and } 1{,}67 \text{ hours/ } uur$ ✓ CA Arrival date and time 7 October at 17:40 *Aankoms datum en tyd 7 Oktober om 17:40* **OR/*OF*** Ship travels 2 607 in 244 hours 3 350 in *n* hours $n = \dfrac{3\ 350 \times 244}{2\ 607}$ ✓ MA ✓ CA $= 313{,}5404679708 \div 24$ ✓ C $= 13{,}064186$ ✓ CA ✓ CA $= 13 \text{ days/}dae \text{ and } 1{,}54 \text{ hours / } uur$ $= 13 \text{ days } 1 \text{ hour } 32 \text{ min}$ Arrive 7 Oct at 17:32 ✓ CA *Aankoms 7 Okt. Om 17:32*	**CA from 5.3.3 (a)** 1MA dividing by speed 1CA hours 1C conversion 1CA number of days 1CA hours 1CA correct date and time **OR/*OF*** 1MA using the ratio 1CA hours 1C conversion 1CA number of days 1CA hours 1CA correct date and time **(6)**	M L3 D
		[27]	
		TOTAL/ *TOTAAL*: 150	

NOTES

QUESTION 1

ITEM	SOLUTION OR RESPONSE	MARK ALLOCATION
1.1.1	Visual indication of the real-life distance and its distance on the map.	Full marks.
1.1.2	The sum of the areas of all the faces of a 3-D object	Full marks.
1.1.3	A drawing showing the streets for a person who drives a car.	Full marks.
1.1.4	The rate of covering a certain distance.	Full marks.
1.2.1	Listing three correct streets: Fraser ; Goring and Aston.	1 mark out of 2
1.2.2	Accept: Winchester	Full marks.
1.2.3	CA mark will kick in provided the 3 relevant items are added.	Maximum of 2 marks.
1.3.1	Listing the three types of screws: H ; I ; J	1 mark out of 2
1.3.2 (a)	E	Full marks.
1.3.3	L	1 mark out of 2
1.3.4	C	Full marks.

QUESTION 2

2.1.5 (a)	**Accept**: 1 mm on either side (i.e. below or above) of the province's measurement. Province Measured (cm) Measured (mm) EC => 12,5 125 FS => 12,4 124 GP => 12,7 127 KZN => 12,5 125 LP => 12,5 125 MP => 12,7 127 NC => 12,7 127 NW => 12,4 124 WC => 12,4 124	Full marks.
2.1.5 (b)	A scale given in unit form using units of measure (verbal scale) e.g. 12,7 cm : 12 m 1 cm : 0,94 m	Full marks
2.2	If the candidate has calculated 6 packs correctly	6 marks out of 8
2.3.1	Northwest or NW	1 mark out of 2

QUESTION 3

3.1.2	Answer in grams (g)	2 marks out of 3.

3.2.3	Rounded number of wheelbarrows of sand too early (**penalty of 1 mark**):	**Max. 5 marks out of 6**
3.3.2	**Using 4 poles and 4 caps:** Give candidates benefit of doubt.	Full marks.

QUESTION 4

4.1.1	**Accept fraction form:** $\dfrac{4}{24} = \dfrac{1}{6}$	Full marks.
4.1.4 (b)	Using the radius instead of diameter and if every step mathematically correct.	Max. 3 marks out of 4
4.2.1	**Accept in words:** Extra small / *Ekstra klein*.	Full marks.
4.2.4	$\dfrac{6}{6}$	1 mark out of 2.
4.2.5	**Accept:** $\dfrac{10}{11}$ = 0,909 or 0,91 Not valid / *NIE GELDIG*. 10 out of 11. Not valid / *Nie geldig*.	Full marks with correct conclusion
	but $(60 \div 66)$ = 0,909 allocate 2 marks for CA and correct Opinion.	2 marks out of 4

QUESTION 5

5.3.1	**Accept:** Difference: $2\,900 - 3\,350 = -450$ nautical miles. $2\,900 - 3\,350 = 450$ nautical miles. Recovered.	Full marks
	Accept: Time rounded up due to seconds e.g.41 min	

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