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TOTAL MARKS

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DATE: 01 SEPTEMBER 2022

TRIALS
MATHEMATICAL LITERACY – PAPER 2
GRADE 12

STUDENT NUMBER:

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Time: 180 minutes**Marks: 150****Examiner: A Arndt****Moderator: C McLeod/ B Mtawarira****PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY:**

1. This test consists of 25 pages and 5 questions. Please make sure that your question paper is complete.
2. Show all necessary working detail.
3. Answer all questions in the spaces provided.
4. You may use an approved calculator, unless otherwise stated.
5. Round off appropriately, according to the context, unless stated otherwise.

Question	1	2	3	4	5	TOTAL
Total	30	29	29	30	32	150
Marks						

QUESTION 1

The South African rugby team (The Springboks) played matches vs the Wales rugby team in South Africa. The Springboks played at the following venues, Loftus Versveld (Pretoria), Freestate Stadium (Bloemfontein), and the DHL Stadium (Cape Town). In a game of rugby, the team with the highest number of points will win the game.

16 Jul 17:00 ROUND 3	 Springboks	DHL Stadium, Cape Town 30 - 14 Castle Lager Incoming Series	Wales 
9 Jul 17:05 ROUND 2	 Springboks	Toyota Stadium, Bloemfontein 12 - 13 Castle Lager Incoming Series	Wales 
2 Jul 17:05 ROUND 1	 Springboks	Loftus Versfeld, Pretoria 32 - 29 Castle Lager Incoming Series	Wales 

<https://www.sarugby.co.za/sa-teams-players/springboks/>

- 1.1 Refer to the information above regarding the rugby rounds between the Springboks and Wales.

- 1.1.1 On what date was the round in Pretoria? (2)

- 1.1.2 Did all THREE rounds start at the same time? Explain your answer. (2)

- 1.1.3 In which round did Wales win? (2)

- 1.1.4 Calculate the number of points scored by the Springboks across the 3 rounds. (2)

- 1.1.5 Which team scored the most points after 3 rounds? (3)

- 1.2 The Springbok squad consists of SEVEN props in their team as seen in the information below

	Name	Position	Age	Birthdate (dd/mm/yyyy)	Height	Weight	Height ft/in
	Frans MALHERBE	Prop	31 y/o	14/03/1991	1.90 m	130 kg	6 ft 3 in
	Ntuthuko MCHUNU	Prop	23 y/o	05/04/1999	1.88 m	114 kg	6 ft 2 in
	Ox NCHÉ	Prop	27 y/o	23/07/1995	1.75 m	105 kg	5 ft 9 in
	Steven KITSHOFF	Prop	30 y/o	10/02/1992	1.83 m	120 kg	6 ft
	Thomas DU TOIT	Prop	27 y/o	05/05/1995	1.88 m	136 kg	6 ft 2 in
	Trevor NYAKANE	Prop	33 y/o	04/05/1989	1.78 m	121 kg	5 ft 10 in
	Vincent KOCH	Prop	32 y/o	13/03/1990	1.86 m	A	6 ft 1 in

<https://all.rugby/club/south-africa/squad>

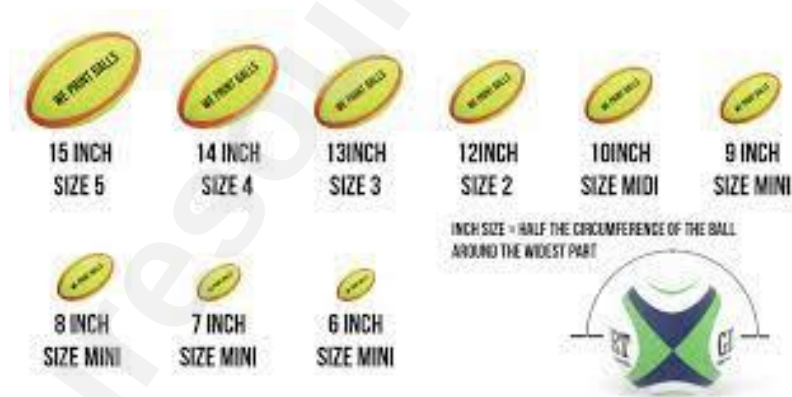
WHO Classification		Associated risks
	BMI between 18.5 and 25 : normal weight	Normal
	BMI between 25 and 30 : overweight	Average
	BMI between 30 and 40 : obesity	Important
	BMI above 40 : morbid obesity	Severe

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m}^2\text{)}}$$

- 1.2.1 State the probability of selecting a Prop that is 27 years old. (2)

- 1.2.2 Vincent Koch's BMI is 36,1 , using the formula on the previous page, calculate his weight in Kgs as indicated by the letter A. (4)

- 1.2.3 If a player has a BMI of 32, classify them according to their associated risk. (2)



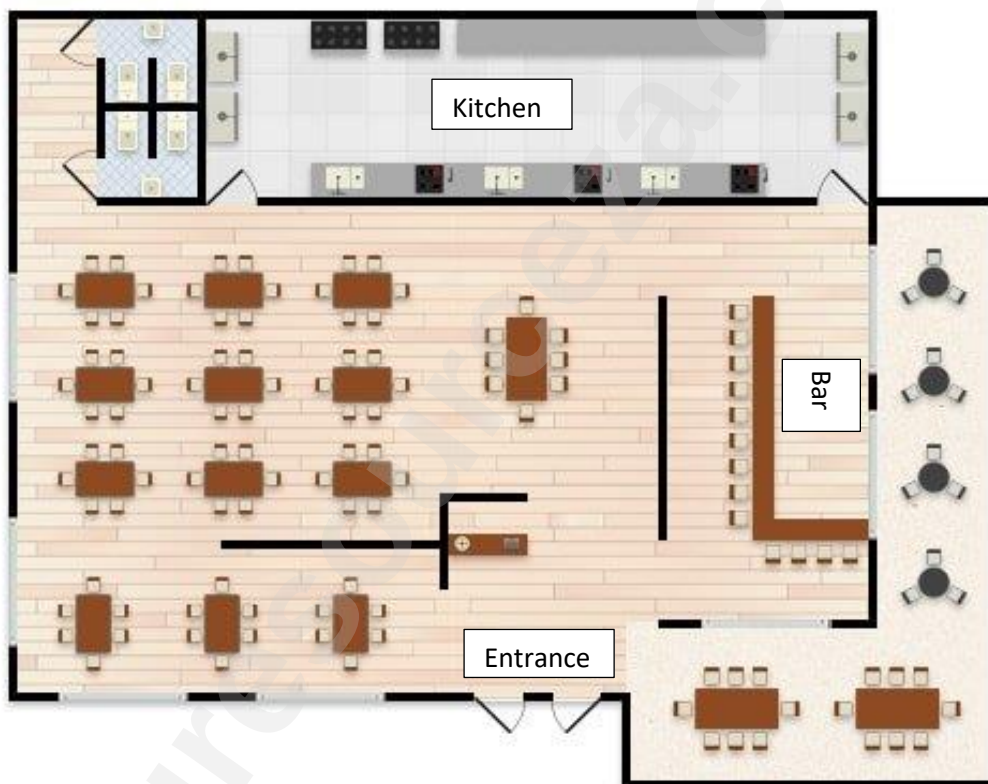
<https://www.google.com/search?q=rugby+ball+dimensions>

- 1.3 A rugby ball has many different sizes as shown in the picture above.

- 1.3.1 Write the length of the size 5 to the size 2 ball as a ratio in its simplest form. (2)

- 1.3.2 If 1 inch = 2,54cm. Calculate the length of the size 4 ball in cm. (2)

- 1.4 The Springboks went out for the evening to a restaurant with a floor plan as can be seen in the diagram below.



<https://www.google.com/search?q=easy+restaurant+floor+plan+with+grid&tbm>

- 1.4.1 State the number of doors that lead into the kitchen. (2)

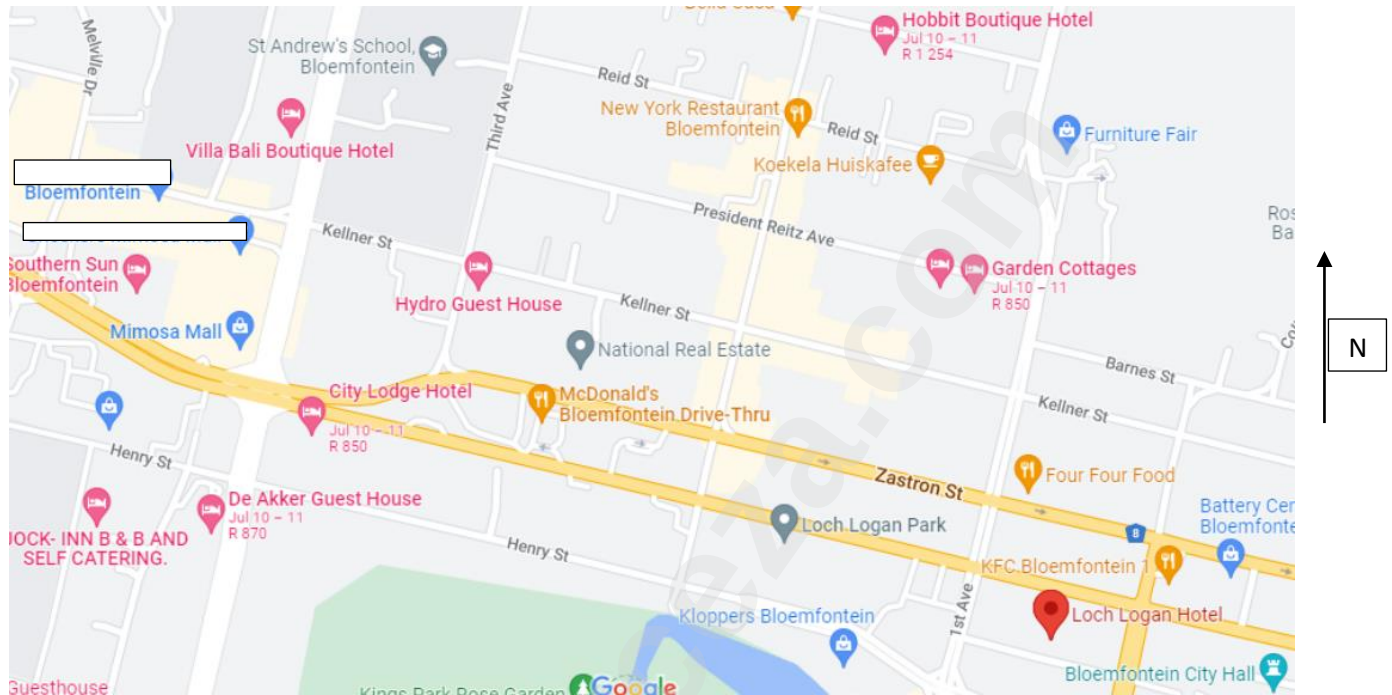
- 1.4.2 How many patrons can sit at the bar? (2)

- 1.4.3 Bobby Skinstad decides to join the Springboks for the evening. He (3)
enters through the doors and makes an immediate left. He passes by 3
tables and turns right and walks past two large windows before turning
right again. He takes a seat at the table directly opposite a door.
Label this table with the letter **B** on the floor plan.

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QUESTION 2

The Welsh Rugby team stayed at the Loch Logan Hotel prior to their match in Bloemfontein. Below is a map of the area they stayed.



<https://www.google.com/maps/place/Loch+Logan+Hotel>

2.1 The Walsh team are currently staying at the Loch Logan Hotel (indicated on the map), and want to make their way to the Mimosa Mall.

2.1.1 Give the general compass direction from Loch Logan Hotel to Mimosa Mall. (2)

2.1.2 Name TWO famous fast food outlets en-route to the Mimosa Mall from Loch Logan Hotel. (2)

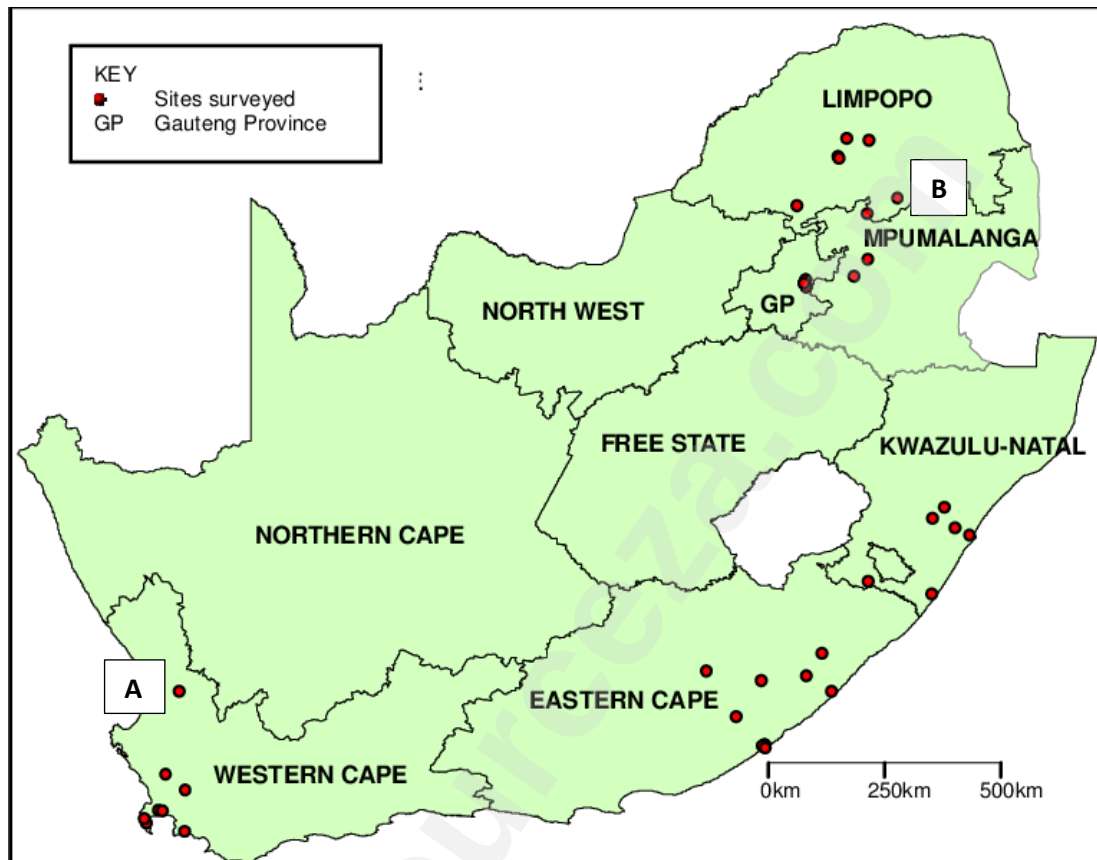
2.1.3 Measure the distance, as the crow flies, between Loch Logan Hotel and Mimosa Mall in centimetres (cm). (2)

- 2.1.4 The actual distance between Loch Logan Hotel and Mimosa Mall is 570m. (3)
Using your answer in 2.1.3, determine an appropriate unit scale for the map.
Round your answer off to the nearest 1 000.

- 2.2 The symbol below is an international symbol indicating a place with rooms to rent for the evening. How many of these places appear on the map? (2)



- 2.3 The Wales rugby team made their way to South Africa from Wales via plane. A map of South Africa can be seen below.



<https://www.google.com/search?q=map+of+south+africa+with+a+bar>

Use the map of South Africa above to answer the following questions.

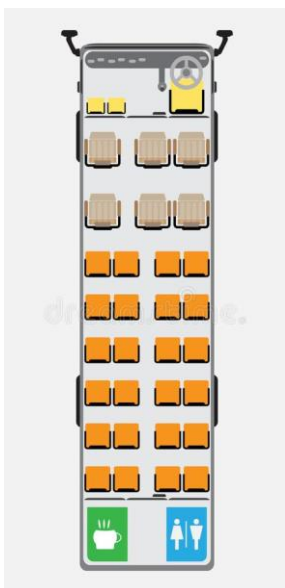
- 2.3.1 Use the bar scale to measure how long 500km is in millimetres (*mm*). (2)

- 2.3.2 Using your answer above, find the actual distance between the **points** marked by A and B. (4)

2.4 The actual distance from Wales to South Africa is 10 500km in reality.

2.4.1 The Wales team left Wales at 21h30 and arrived in South Africa at 08h00 (3)
the next day. Determine the speed of the plane if.

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$



The Welsh Rugby team took a bus from the airport to their hotel which took a total of 1,875 hours. A top view of their bus seats can be seen on the left.

<https://www.google.com/search?q=bus+seats+top+view&rlz=>

2.5 Convert the travel time of 1,875 hours into hours, minutes and seconds. (4)

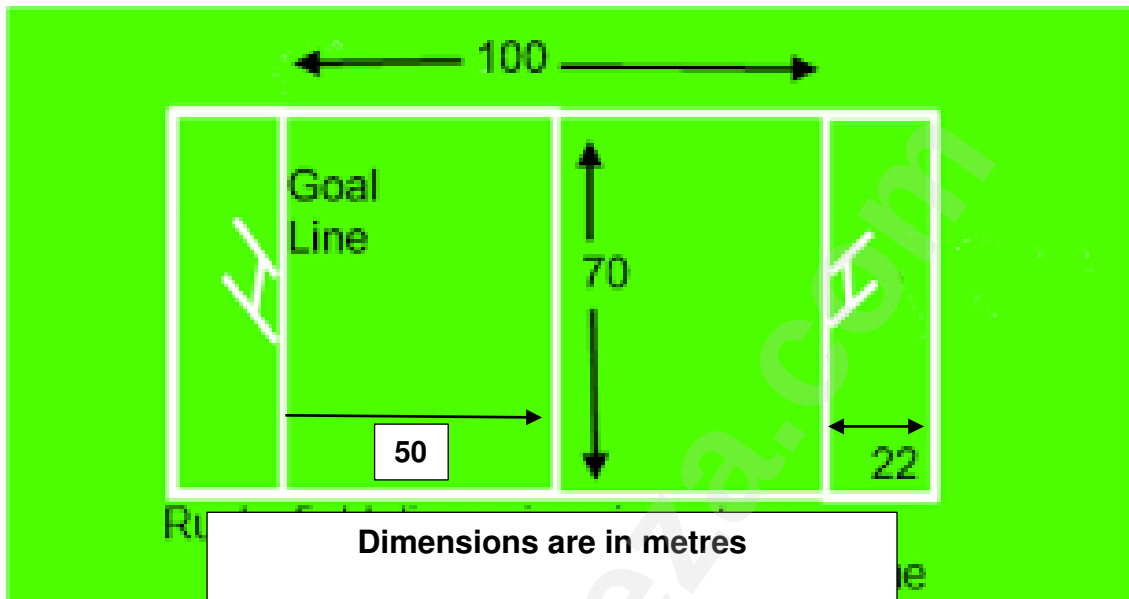
2.6 Does the bus have a toilet facility on the bus? Explain your answer. (2)

- 2.7 Explain why this bus could be classified as a luxury bus by referring to the diagram. (3)

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QUESTION 3

- 3.1 The Springboks go to training every day of the week on a rugby field with the following dimensions.



<https://www.google.com/search?q=rugby+union+field+marking>

- 3.1.1 Determine the perimeter of the field (as indicated by the white lines). (3)

- 3.1.2 Calculate the area in m^2 of the field between the two goal lines (2)

- 3.1.3 The grounds keeper needs to mark the field in white paint before the Springboks train there. The width of each line is exactly 100mm. 2 litres of white paint can cover a total of $3m^2$. Using the given field as a reference, determine how much paint the grounds keeper will need in order to paint the field. (7)

3.2. Andy Edwards is the Springboks strength and conditioning coach and he makes a protein shake for each of the **23 players** on match day.

EACH protein shake consists of the following.

- 2 bananas
- 22g protein powder
- 6 roasted almonds
- 375ml of skimmed milk
- 3 tbsp. peanut butter
- 55g flax seeds

1 tsp. = 5ml/g:

1 tbsp. = 15ml/g:

1 cup = 250ml/g



Using the recipe for the protein shake, answer the following questions.

- 3.2.1 Determine how many cups of milk are used in ONE protein shake. (2)

- 3.2.2 Calculate how many litres of skimmed milk would be needed in order to make protein shakes for ALL the players. (3)

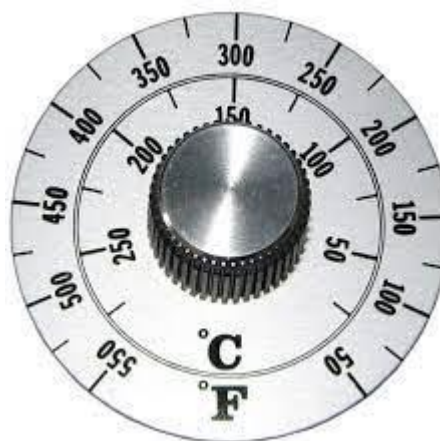
- 3.2.3 Eben Etzebeth bought 1 litre of peanut butter and stated that it would be enough to make shakes for everyone. Verify whether Eben is correct. (4)

- 3.3 The roasted almonds are to be baked in the oven for 25min at 180°C. The chef only has an oven with °F (*Fahrenheit*) dials on them.

- 3.3.1 Convert 180°C to °F. (2)

$$^{\circ}\text{F} = \frac{9}{5} \times ^{\circ}\text{C} + 32^{\circ}$$

- 3.3.2 Represent your answer for °F above on the diagram below by drawing a line to the appropriate reading. (2)



<https://www.google.com/search?q=fahrenheit+temp+oven>

3.3.3. The oven can bake in batches of 50 almonds at a time. It takes 25minutes to bake as well as 5minutes to prep and 7minutes to clean for the next batch to be baked.

a) How long would the entire process take to bake 1 batch of almonds including the cleaning time? (2)

b) How long would it take to bake the almonds for the entire Springbok team? (2)

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QUESTION 4

Whilst in Pretoria, the Welsh rugby team decided to use one of their days to sight see a few of Gauteng's attractions.

They booked tickets with "City sightseeing Jo-burg". Their timetable can be seen below.

City Tour

Hop On - Hop Off - Thursday to Sunday

		FIRST DEPARTURE						LAST DEPARTURE	
5	Constitution Hill	DEPART Switch at Stop 5 for the Green Tour	09h45	10h45	11h45	12h45	13h45	14h45	15h45
10	Mining District		09h55	10h55	11h55	12h55	13h55	14h55	15h55
11	Calrton Centre		10h00	11h00	12h00	13h00	14h00	15h00	16h00
12	James Hall Transport Museum		10h10	11h10	12h10	13h10	14h10	15h10	16h10
13	Gold Reef City Casino Hotel		10h39	11h39	12h39	13h39	14h39	15h39	16h39
14	Apartheid Museum		10h44	11h44	12h44	13h44	14h44	15h44	16h44
15	Newtown		11h02	12h02	13h02	14h02	15h02	16h02	17h02
16	The Grove, Braamfontein		11h11	12h11	13h11	14h11	15h11	16h11	17h11
5	Constitution Hill	ARRIVE Switch at Stop 5 for the Green Tour	11h15	12h15	13h15	14h15	15h15	16h15	17h15
Depart Constitution Hill								16h20	17h20
Arrive Rosebank								16h35	17h35

https://res.cloudinary.com/hynomj8e0/image/upload/c_fit,w_1200,h_1200/pcyhqsnqdtq5dyhb3ig9.pdf

4.1 The Welsh team arrive at Constitution Hill at 10h30 ready to depart.

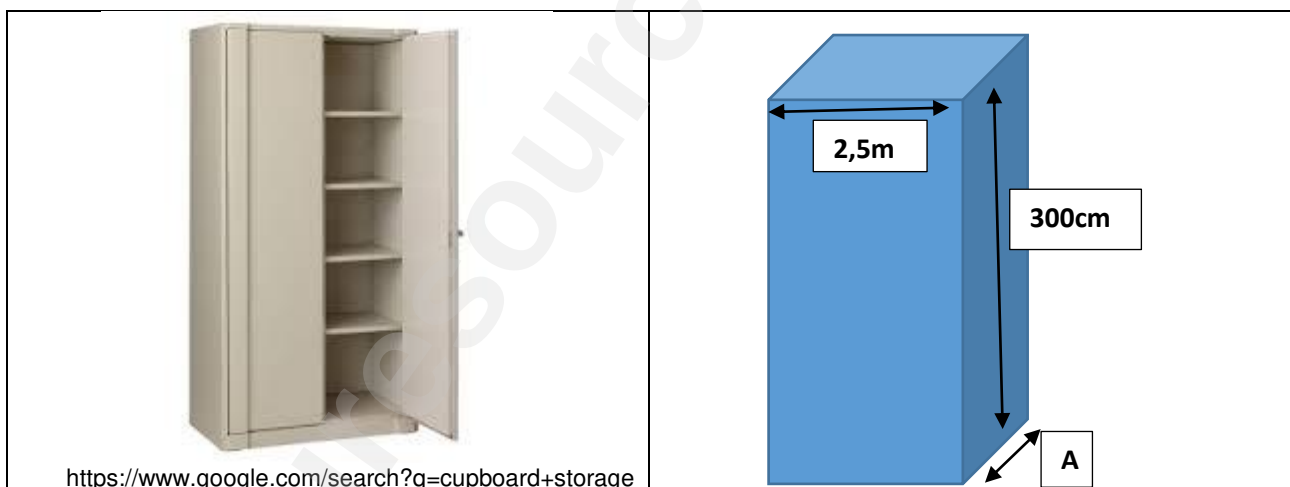
Use the timetable above to answer the following questions.

4.1.1 At what time will the next bus depart from Constitution Hill, if they plan to depart on the next available bus? (2)

4.1.2 Determine how long it takes to travel between the Mining District and Gold Reef City Casino Hotel. (2)

- 4.2 The Welsh team decide to use the City Tour for a **SECOND** day and arrive at Newtown at 10h57. They wish to visit The Grove for 15 minutes as well as the Apartheid Museum for 1, 75 hours. If they wish to complete the trip in the quickest possible route, at what time will they arrive back Newtown? (4)

- 4.3 The Walsh rugby team leave their bags in the following cupboard whilst sightseeing. The diagram on the right indicates the dimensions of the cupboard with the letter **A** representing the breadth of the cupboard.



- 4.3.1 Given that the **volume** of the cupboard is $5,625m^3$. Find the value of **A** in metres. (3)

- 4.3.2 Convert $5,625m^3$ to cm^3 . (2)

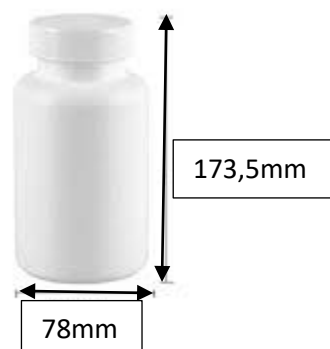
- 4.3.3 Using your answer for **A** (in 4.3.1), calculate how many litres of paint is required to paint the exterior surface area of the cupboard, **EXCLUDING** the bottom of the cupboard. The paint spreads at $5m^2$ per litre. (6)

Dimensiones:

$80cm \times 47cm \times 36cm$



Supplement Bottles



<https://www.google.com/search?q=sports+bag+dimensions>

- 4.4 The Wales rugby team were all sponsored a sports bag, as seen above, from Sportsman's Warehouse. The dimensions are as indicated in the diagram above to the left.

Each bag was filled with cylindrical supplement bottles as seen above to the right.

- 4.4.1 Determine the **VOLUME** of the supplement bottles in mm^3 , by using the given formula (4)

$$V = (\pi \times \text{radius})^2 \times \text{height}.$$

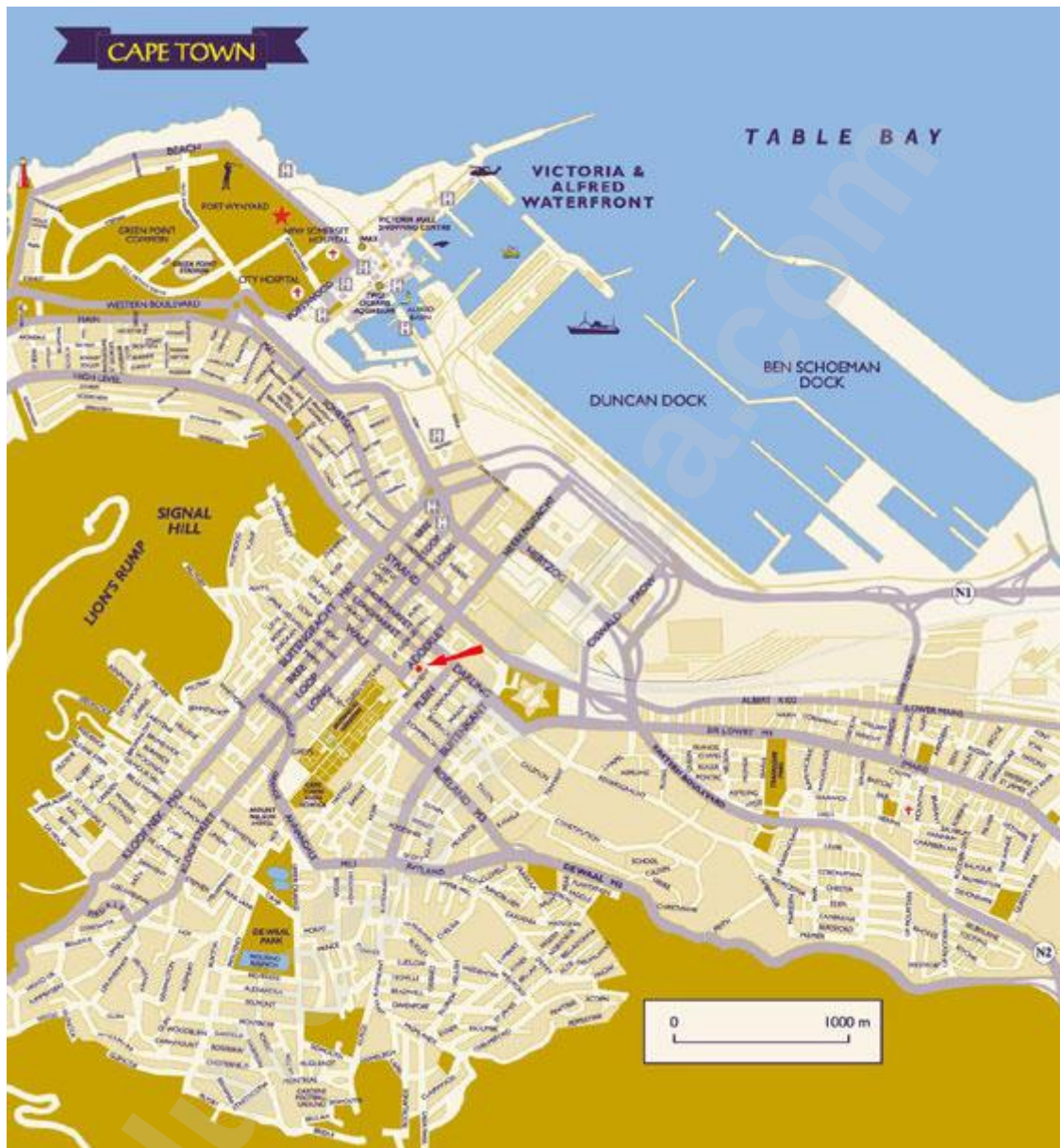
$$\pi = 3,142$$

- 4.4.2 Dan Biggar from the Walsh rugby team stated that he could pack a **maximum** of 96 bottles of supplements in his bag. Verify his statement by showing all calculations. (NB, the bottles do not need to stand upright) (6)

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QUESTION 5

Below is a map of one the venues the Springboks will be playing at during their rugby series vs Wales.



<https://www.orangesmile.com/travelguide/cape-town/high-resolution-maps.htm>

5.1 Refer to the map above to answer the questions that follows.

5.1.1 State the name of the city given in the map. (2)

5.1.2 What type of map has been given? (2)

- 5.1.3 Does the city have the infrastructure to accommodate boats and ships? (2)
Give a reason for your answer.

- 5.1.4 The actual distance of Kloof Nek Drive is 3,2km. Calculate the length of this (3)
on the map in centimetres.

- 5.2 Rassie Erasmus, the Springboks' director of rugby, likes to bring a toy car with him to each round as his 'lucky charm', the toy car can be seen below.



Aston Martin DB11
(2016)

1:43 Scale by Ex Mag
(MK06) - 9cm / 3.5in long

<https://minimodelshop.com/model-cars>

- 5.2.1 Describe the scale of 1: 43 in words. (2)

- 5.2.2 Using the information above, calculate how many centimetres (cm) are there (2)
in an inch (in).



5.3 The Springboks flew to Cape Town in a Boeing 737-800 plane. The plane consists of 24 rows with 6 seats in each row. Row 11, however only has 2 seats on the left hand side of the plane.

5.3.1 How many seats are there on the plane for passengers? (3)

5.3.2 The Springboks fly with 23 players and 3 coaches, determine the probability that a seat chosen at random will contain a Springbok player or coach. (2)

5.4 The Springboks flew in a Southerly direction as indicated on the plane in 5.3.

5.4.1 If the Springboks flew at 16h00 (afternoon), which side of the plane would have sunlight? Give a reason for your answer. (3)

- 5.5 Rassie's house is shown on the floor plan below. Use the floor plan to answer the following questions.



<https://www.google.com/search?q=house+floor+plan&tbm=isch&ved>

- 5.5.1 Describe the make-up of the house. (2)

- 5.5.2 Measure the length and width of the smaller bedroom. (2)

- 5.5.3 The actual length of the smaller bedroom is 3,4m. Use the actual length of the smaller bedroom and your answer in 5.5.2 to determine the actual length of the longest side of the larger bedroom. (4)

- 5.5.4 Sketch the Western Elevation wall in the space provided, it does not need to be drawn to scale. (4)



[33]

Please indicate which question you are answering.

This image shows a blank sheet of white paper with horizontal black ruling lines. A diagonal watermark with the text "eduresourceza.com" is visible across the page. The watermark is light gray and oriented from the bottom-left towards the top-right. There are no other markings or text on the page.