KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

MATHEMATICAL LITERACY P2

COMMON TEST

JUNE 2023

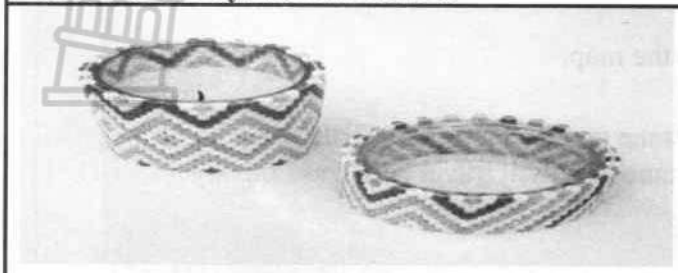
MARKS: 75

TIME: $1\frac{1}{2}$ hours

This question paper consists of 7 pages and the addendum with 2 annexures

QUESTION 1

1.1 Rebecca makes candle holders of colourful beads. The candles are made from cylindrical glass bottles with a height of 8,4cm (3,3 inches) and 65mm in diameter.

Picture of the cylindrical candle	Diagram of the candle
	

[adapted from: http://www.shelterness.com/diy-candle-holders]

Use the information above and answer the questions that follow.

1.1.1 Write down the conversion ratio in the form of **1 inch: …** using the dimensions of the candle. (2)

1.1.2 The 4-ounce candle burns for approximately 30 hours and weighs 113,4 grams

a) Convert a 9-ounce candle to grams. (2)

b) Calculate the number of hours of burning time for a 9-ounce candle. (2)

1.2 Rebecca makes 4 blue candles,3 mixed colour candles, and 7 red colour red candles for her customers.

1.2.1 Define the term *probability*. (2)

1.2.2 Calculate the probability as a common fraction of a customer buying the candle with the same colour. (3)

1.3 Rebecca's brother lives in Pretoria and works at OR Tambo international airport. He uses the Gautrain to travel to work. ANNEXURE A shows the Gautrain route map.

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

1.3.1 Name the train station where he can be able to change train to OR Tambo. (2)

1.3.2 Determine the number of Metrorail stations on the map. (2)

1.3.3 The distance of the Gautrain route is 80km, convert this distance to metres. (2)

[17]

2.1 Sphethelo lives at Ngwelezane which is 6 km away from Empangeni Central Business District. ANNEXURE B shows the street map of Empangeni and surrounding areas.

Note: **Ngwelezane is situated in the south-west direction of Empangeni CBD**.

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

2.1.1 Name the type of the scale used on the map. (2)

2.1.2 The total distance between Ngwelezane and Richards Bay CBD is 17,5km via Empangeni CBD. Calculate the distance she will travel between Empangeni CBD and Richards Bay CBD. (2)

2.1.3 Give the general direction of Enseleni from UNIZUL. (2)

2.1.4 Determine the number of main plants in the vicinity of Empangeni and surrounding areas. (2)

2.1.5 Use the scale to calculate the crow fly distance between N2 and John Ross Highway to Mondi plant intersection along John Ross Highway. (3)

2.2 The Port of Richards Bay in the year 2023 receives more than 1000 side tipper trucks from different coal mining. The port is situated 160km (99,4194 miles) Northeast of Durban. The port was opened on the 1st of April 1976 and occupies a land area of 2157 ha(hectares) with 1495 hectares of water area.

Note: The Port of Richards Bay is located in Richards Bay harbour and is the largest coal export facility in Africa.

[Source:www.kzntransport.gov.za]

Use the information above to answer the questions that follow.

2.2.1 Use the distance between Durban and Richards Bay Port to show that, **1 mile: 1,61km** (2)

2.2.2 Convert 1495 hectares of water to a square kilometre (km^2). Note: **1 km^2= 100ha** (2)

2.2.3 Determine the number of decades since Richards Bay port was opened. (4)

2.2.4 An engineer will fly with an airplane that travels 9531km from London to King Shaka International Airport for 13hours50min for the Richards Bay port site inspection. Calculate to the nearest 100km/h the speed at which the airplane was traveling.

You may use the following formula: **Speed = $\frac{\text{Distance}}{\text{Time}}$** (4)

[23

QUESTION 3

3.1 Below is the rectangular fence of Ngwelezane clinic with a length of 120m and a width of 70m.

[Source: https://bookabillboard.co.za/billboard/ngwelezane-clinic]

Note: The **width of the gate is 5,7% of width of the clinic.**

Use the information and the diagram above to answer the following questions

3.1.1 Define the term *perimeter* according to the given context. (2)

3.1.2 Hence, calculate the perimeter of the fence in metres.

You may use the following formula: (3)

Perimeter of the rectangle = 2× length + 2 × width

3.1.3 Determine to the nearest metre the width of the gate. (3)

3.1.4 Identify the type of instrument that can be most appropriate to measure the perimeter of the clinic fence. Write only a letter next to the corresponding answer.

A	B	C
 **3m tape measure**	 **Grip measuring wheel(trundle) up to 10 000m**	**Reading the Odometer**  **Odometer in km**

(2)

3.1.5 Give ONE possible reason for installing a fence in the premises of the clinic. (2)

3.2 A 200 ml cough syrup bottle is stored in temperature that is below 25°C in a clinic storage.

[Source:www.google.com/images]

- 200 ml
- Children over 12 years dosage 5ml every 4 hours.
- Dosage not to be exceeded.

Conversion formula: $°F = (°C \times 1{,}8) + 32°$

°F =Fahrenheit, °C = *Celcius*

Use the information above to answer the questions that follow.

3.2.1 Convert 25°C to degrees Fahrenheit. (3)

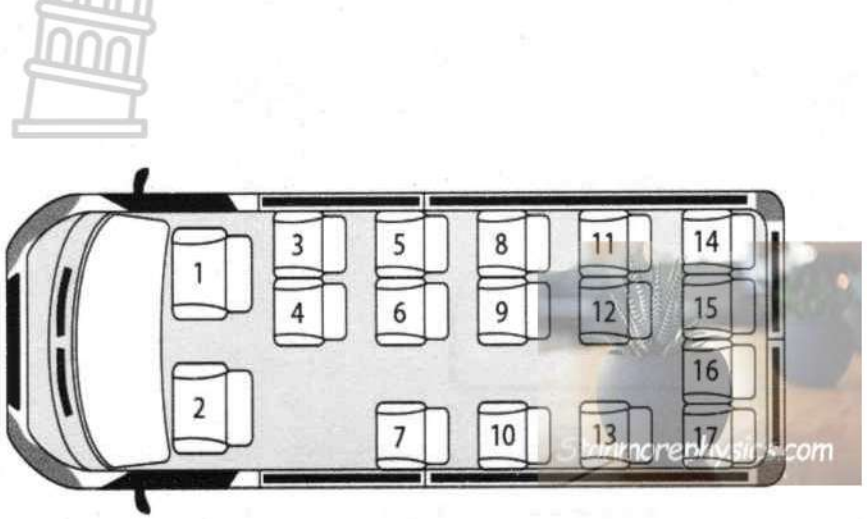
3.2.2 Calculate the maximum number of days ONE bottle of syrup will last for a 15-year-old child and take a maximum dosage. (3)

3.2.3 Give ONE possible reason why a dosage cannot be exceeded. (2)

[20]

QUESTION 4

4. Below is the bus seating plan used by the soccer technical team and the players when travelling for away matches.



1:40

cm

[adapted from: www.google.com/images]

Study the information above to answer the questions that follow.

4.1 Explain the meaning of the scale in the given context above. (2)

4.2 Describe the direction of the player sitting in seat 11 to follow in order to sit in seat number 3. (3)

4.3 Calculate to ONE decimal place the actual length in metres of the bus. (4)

4.4 The bus driver occupies seat number one and the technical team occupies the back four seats. Determine the probability as a percentage that the player will be seated in the odd number seat. (3)

4.5 Calculate the area of the bus if the actual width is 2,6m (3)

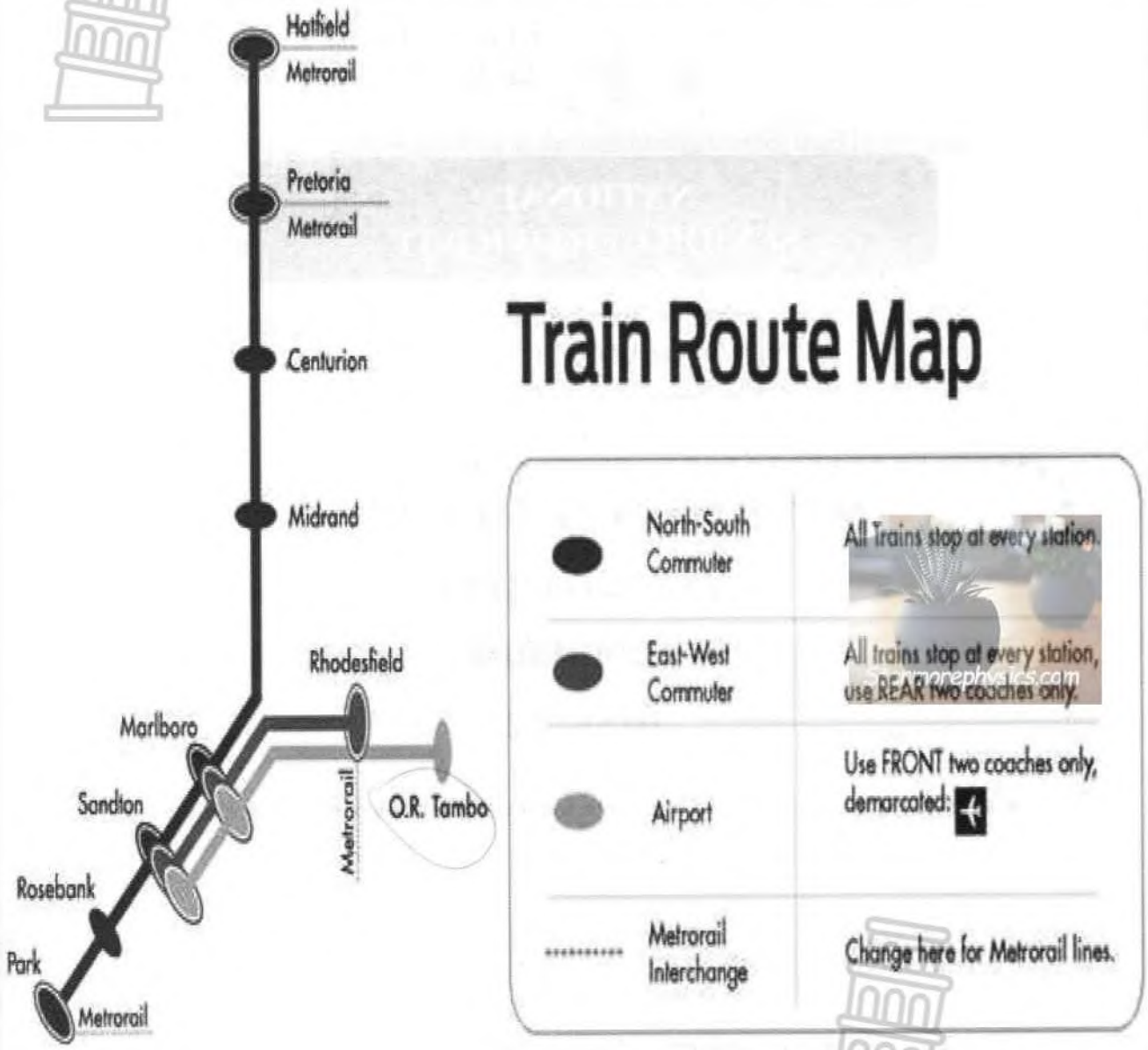
[15]

TOTAL MARKS:75

ANNEXURE A

QUESTION 1.3

GAUTRAIN ROUTE MAP

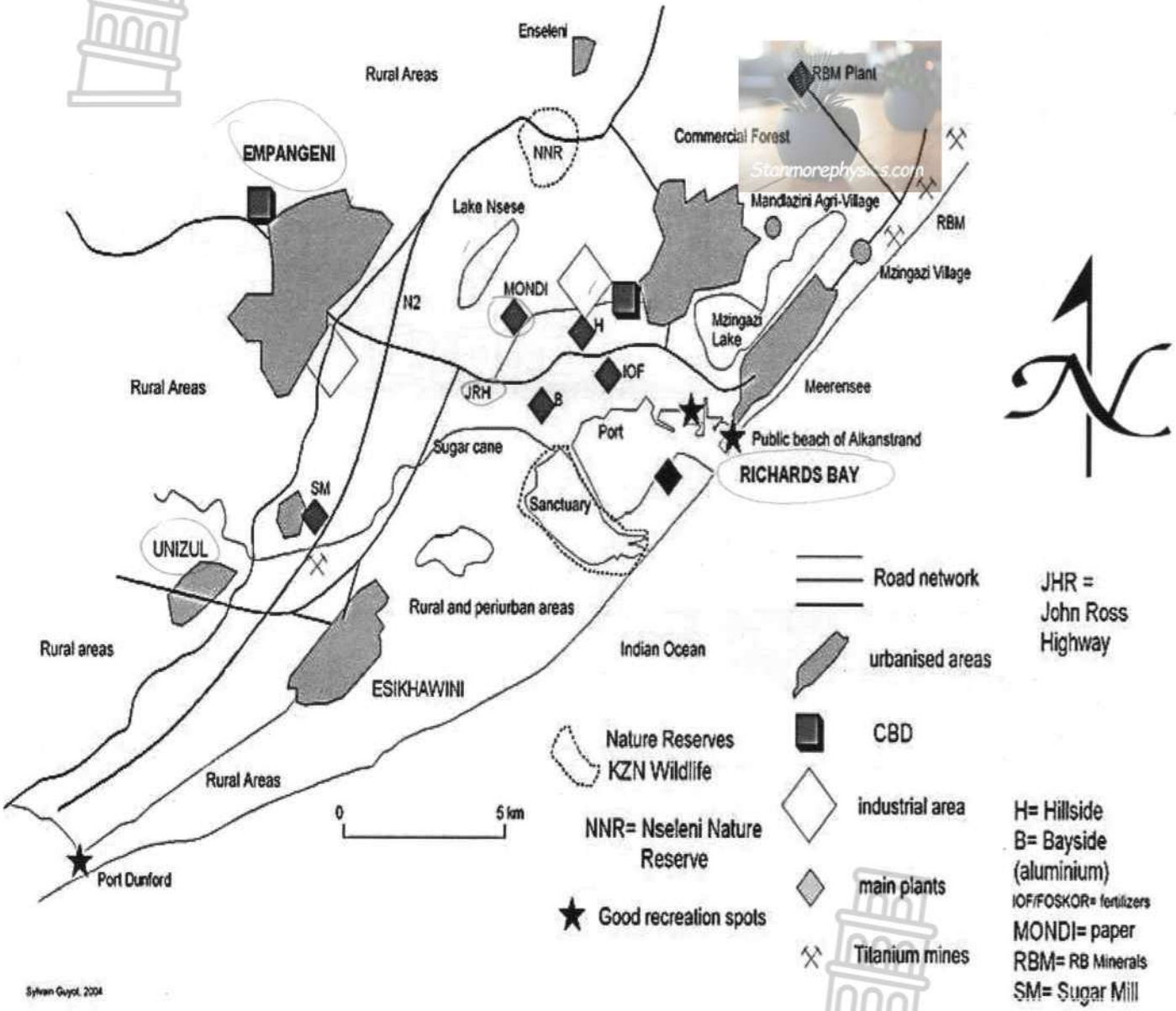


[Adapted from https://www.gautrain.co.za/]

ANNEXURE B

QUESTION 2.1

EMPANGENI AND SURROUNDINGS STREET MAP



[adapted from https://www.sa-venues.com/maps/kwazulunatal/richards-bay.php]

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

MATHEMATICAL LITERACY P2

COMMON TEST

JUNE 2023

MARKING GUIDELINE

MARKS: 75

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy (Answer)
C	Conversion
S	Simplification
RT/RG/RD	Reading from a table/ graph/ diagram
NPR	No penalty for units/rounding
SF	Correct substitution in a formula
O	Opinion/ reason/deduction/example
J	Justification
R	Rounding off/
F	deriving a formula
E	Explanation
U	Units
AO	Answer only full marks

This marking guideline consists of 5 pages.

QUESTION 1 [17 MARKS]		ANSWER ONLY FULL MARKS	
QUE	**SOLUTION**	**EXPLANATION**	**T/L**
1.1.1	3,3inch = 8,4cm 3,3 3,3 ✓M 1 inch = 2,5454…cm ✓CA	1M, Dividing by 3,3 both sides 1CA, Answer of 2, 5454...cm **NPR** (2)	M L1
1.1.2a	4 ounce = 113,4g Weight = 9/4 × 113,4g ✓M = 255,15g ✓CA	1M, Conversion to g 1CA, Answer **NPR** (2)	M L1
1.1.2b	Time = 9/4 × 30 hours ✓M = 67,5hours ✓CA	1M, Conversion to hours 1CA, Answer **NPR** (2)	M L1
1.2.1	Probability is the measure of how likely something is to happen. ✓✓A	2A, Definition (2)	P L1
1.2.2	P (same colour candle) = 4 + 7/14 ✓M ✓M = 11/14 ✓CA	1M, Addition 1M, Denominator 1CA, Answer **Max 2 marks if numerator= 4 or 7** (3)	P L1
1.3.1	Marlboro ✓✓A	2A, Marlboro **Accept Sandton** (2)	MP L1
1.3.2	4 stations ✓✓A	2A, Number of Metro rails (2)	MP L1
1.3.3	Distance = 80km ×1 000 ✓MA = 80 000m ✓A	1MA, Multiplying by 1000 1A, Answer (2)	M L1
		[17]	

QUESTION 2[23 MARKS]			
QUE	**SOLUTION**	**EXPLANATION**	**T/L**
2.1.1	Bar scale ✓✓A **OR** line-scale ✓✓A	2A, Answer (2)	MP L1
2.1.2	Distance = 17,5km – 6km ✓ MA = 11,5km✓A	1MA, Subtracting correct values 1A, Answer **AO** (2)	MP L2
2.1.3	North East✓✓A **OR** NE ✓✓A	2A, Correct General direction (2)	MP L2
2.1.4	7 main plants. ✓✓A	2A, Correct Number of main plants (2)	MP L2
2.1.5	2,5cm: 5km ✓M 1,8cm: Distance Distance = 1,8cm × 5km ✓MA 2,5cm = 3,6km ✓CA	1M, Correct measurement 1MA, Using the scale 1CA, Actual distance in km **Measurement allow ± 0,2cm** (3)	MP L3
2.2.1	Ratio: 99,4194 miles = 160km ✓CA 99,4194 99,4194 ✓M 1 mile = 1,609…km	1A, Ratio concept 1M, Dividing by 99,4194 on both sides (2)	M L2
2.2.2	Area = 1495 × 1 100 ✓M = 14,95m^2 ✓A	1M, Dividing by 100 1A, Answer (2)	M L2
2.2.3	Decades = 2023 – 1976✓MA = 47 years 10 ✓MA = 4,7 years ✓A ≈ 4 decades ✓R	1MA, Subtracting correct years 1MA, Dividing by 10 1A, Number of decades 1R, Rounding (4)	M L3
2.2.4	Time in hours = 13hrs +(50÷60)=13,83333..hrs ✓1M Speed = 9532km ✓SF 13,8333..hrs = 688,9079 ✓CA ≈ 700km/h✓R	1M, Converting 50min to hours 1SF, Substitution and simplification 1CA, Answer 1R, Rounding (4)	M L3
		[23]	

QUESTION 3 [20 MARKS]			
QUE	**SOLUTION**	**EXPLANATION**	**T/L**
3.1.1	Perimeter is the total length around the fence of Ngwelezane clinic. ✓✓E	2E, Definition **1 Mark for general definition** (2)	M L1
3.1.2	✓SF P = 2×120m + 2×70m✓S = 380m ✓A	1SF, Correct substitution 1S, Simplification 1A, Answer (3)	M L2
3.1.3	Width of the gate = $\frac{5,7}{100}$ ×70m✓M =3,99 ✓CA =4m ✓R	1M, Multiplying percentage by 70m 1CA, Answer 1R, Rounding (3)	M L3
3.1.4	B ✓✓A	2A, Answer (2)	M L1
3.1.5	• To have one access point to the clinic✓✓O **OR** • For safety reasons✓✓O **OR** • To protect medicine/employees✓✓O	2O, Reason (2)	M L4
3.2.1	✓SF °F= 25×1,8 +32 ✓S = 77°F ✓A	1SF, Correct substitution 1S, Simplification 1A, Answer (3)	M L3
3.2.2	Number of days = $\frac{200ml}{5ml}$ ✓M = $\frac{40}{4}$ ✓MCA = 10 ✓A	1M, Dividing by 5ml 1MCA, correct no of hours 1A, Correct number of days (3)	M L3
3.2.3	To avoid vomiting ✓✓O **OR** Overdosing can create side effects✓✓O **OR** Addiction ✓✓O **OR** Accept any other valid reason	2O, Opinion (2)	M L4
		[20]	

QUESTION 4 [15 MARKS]			
QUE	**SOLUTION**	**EXPLANATION**	**T/L**
4.1	One unit on the seating plan of the bus will represent forty units in reality. ✓✓E	2E, Explanation (2)	MP L1
4.2	• Move from seat 11 and turn **south** towards the isle, ✓A • Turn **west** and move toward the front, ✓A • Turn **north** on seat four seat three will be next to the window. ✓A **OR** • Move from seat 11 and turn **left** towards the isle, ✓A • Turn **right** and move toward the front, ✓A • turn **right** on seat four seat three will be next to the window. ✓A	1A, South 1A, West 1A, North **OR** 1A, Left 1A, Right 1A, Second Right (3)	MP L4
4.3	Actual length = $\frac{15,7cm}{100}$ ×40 ✓RT ✓MCA = 6,28✓CA = 6,3m ✓R	1RT, Correct measured length 1MCA, Dividing by 100 1CA, Answer 1R, Rounding (4)	MP L3
4.4	✓M P (Odd seat) = $\frac{6}{17}$ × 100% ✓MA = 35,29% ✓CA	1M, Number of odd seats 1MA, Percentage concept 1CA, Answer as % (3)	MP L4
4.5	Area = length x breadth ✓F = 6,3m × 2,6m ✓SF = 16,38m^2✓CA	**CA from 4.3** 1F, Correct Formula 1SF, Correct substitution 1CA, Answer (3)	M L2
		[15]	
		TOTAL MARKS: 75	