Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2023

MATHEMATICAL LITERACY P2

MARKS: **100**

TIME: **2 hours**

This question paper consists of 11 pages, including an addendum with 2 annexures.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Use the ANNEXURE in the ADDENDUM to answer the following questions.
   - ANNEXURE A for QUESTION 2.1
   - ANNEXURE B for QUESTION 4.1
3. Answer ALL the questions.
4. Number the questions correctly according to the numbering system used in this question paper.
5. Diagrams are NOT necessarily drawn to scale.
6. Round off ALL the final answers appropriately according to the context used, unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Start EACH question on a NEW page.
9. Show ALL calculations clearly.
10. Write neatly and legibly.

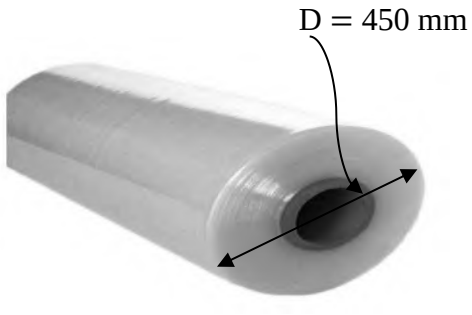
QUESTION 1

1.1 A young entrepreneur stocks sheet rolls for securing products on pallets. These rolls are suitable for wrapping goods. They are sold in 200 m and 300 m rolls.

Option A:
300 m sheet roll cost R390,00

Option B:
200 m sheet roll cost R290,00

Diameter of roll (D) = 450 mm



[Source: www.supplywise.co.za]

Use the information above to answer the questions that follow.

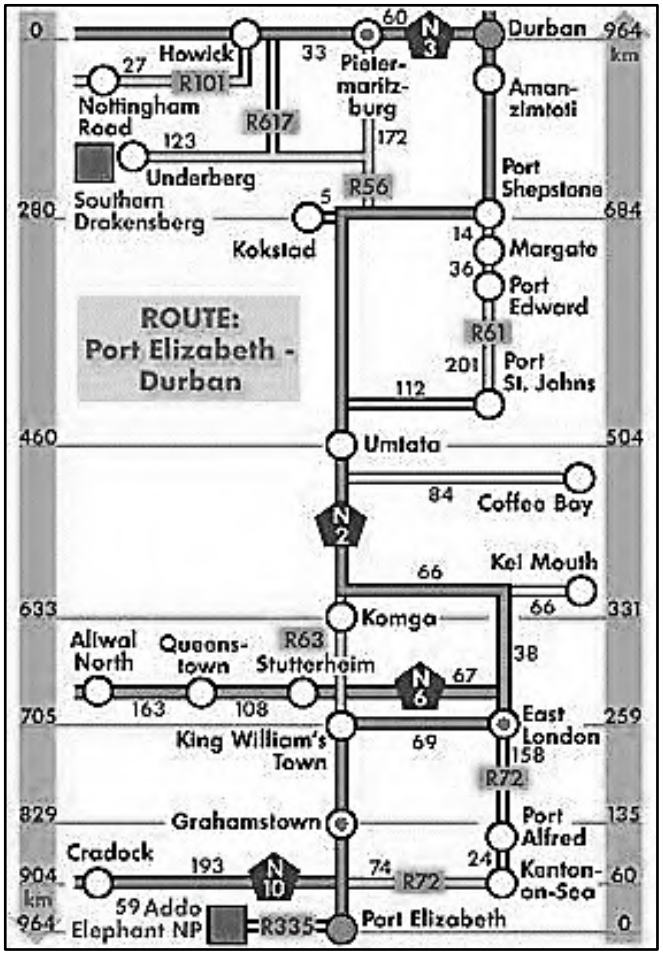
1.1.1 The circumference is 3,142 times more than the diameter. Calculate the circumference of the roll in mm. (2)

1.1.2 Calculate the cost of the pallet sheet roll per meter for Option **B**. (2)

1.1.3 Write the cost for Option **B** to Option **A** in simplified ratio format. (2)

1.1.4 Determine the radius in cm. (3)

1.2 David and his family travelled from Port-Elizabeth (now Gqeberha) to Durban for the school holidays. The map below shows the journey the family undertook.



Use the information above to answer the questions that follow.

1.2.1 Name TWO national roads indicated on the map. (2)

1.2.2 Identify the type of map shown. (2)

1.2.3 Determine the actual distance between Port-Elizabeth and Durban in metres. (3)

1.2.4 David quickly visited his cousin in Margate. Just after Umtata he entered the R61 to Margate.

(a) Write down the name of ONE town he passed between Umtata and Margate. (2)

(b) Calculate the total distance, in km that he travelled from Port St. Johns to Margate. (3)

1.2.5 Name TWO provincial roads on the map. (2)

[23]

QUESTION 2

2.1 A group of four university friends plan to watch the rugby game between the Springboks and All Blacks in Durban. They plan to travel by car and share the cost of the trip.

On ANNEXURE A is a map of South Africa.

Use ANNEXURE A of the addendum to answer the questions that follow.

2.1.1 Identify the type of scale on the map. (2)

2.1.2 What is the general direction from Umtata to Cape Town? (2)

2.1.3 Durban and Upington are 9,6 cm apart on the map. Mr Antonie claims that the distance between Durban and Upington is 972 km.

Verify if his statement is correct by using the bar scale method. (4)

2.2 Amos and his friends took exactly 17,25 hours to drive 1 635 km from Cape Town to Durban for the rugby game between the Springboks and the All Blacks.

2.2.1 Determine Amos's average speed for the trip in km/h.

You may use the following formula: **Speed = Distance ÷ Time** (3)

2.2.2 The petrol consumption of the car is 1 litre per 12,5 km.

(a) Amos claimed that if the petrol consumption was 0,80 litre per 10 km, the car would use less petrol. Verify with the necessary calculation if his statement is valid. (5)

(b) Calculate the cost of petrol to drive from Cape Town to Durban. The petrol price is R24,75 per litre. (2)

[18]

QUESTION 3

3.1 Uyathanda Home Industry specialises in baking and selling cakes of all types. The recipe of a cake is shown below. Study the recipe and answer the questions that follow.

INGREDIENTS	SOUR CREAM CHOCOLATE CAKE
• $\frac{3}{4}$ cups (250 g) flour • $1\frac{3}{4}$ cups (360 g) sugar • $\frac{3}{4}$ cup (90 g) unsweetened cocoa powder • 2 teaspoons baking powder • 1 teaspoon kosher salt • 2 large eggs • 1 cup sour cream • $\frac{3}{4}$ cup canola oil • 2 teaspoons vanilla extract • 1 cup strong piping hot coffee • 1 mixture ($1\frac{1}{2}$ cups) chocolate or cream cheese frosting	• Preparation time: 20 minutes • Baking time: 55 minutes • Total time: 75 minutes

Other information:
- Preheat the oven to 320 °F

NOTE:
- An order was received for 90 people who will be attending an event.
- Each person must get one slice of cake.
- 12 slices can be cut from one cake.
- One cake weighs 900 g.
- The amount of energy in 100 g of cake is 400 calories.

3.1.1 Write down the mass of one cake in kilograms. (2)

3.1.2 Determine the mass of one slice of cake in grams. (2)

3.1.3 Calculate the number of calories in one slice of cake. (3)

3.1.4 Convert total time in minutes to hours. (2)

3.1.5 Determine the number of cakes that should be baked for the number of guests at the event. (4)

3.2 3.2.1 How many cups of flour is required if eight cakes must be baked? (2)

3.2.2 The cost of 240 g of unsweetened cocoa powder is R62,75. Determine how much money will be needed for unsweetened cocoa powder for 8 cakes. (4)

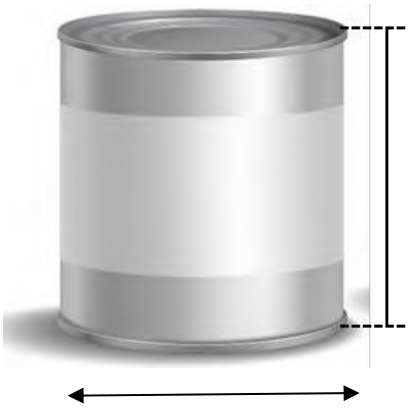
3.2.3 Calculate the temperature of 320 °F in degrees Celsius.

Use the formula: **℃ = (°F − 32) ÷ 1,8** (3)

3.2.4 If a sour cream chocolate cake is placed in the oven at 09h03, at what time will the cake be ready? (2)

3.3 Mr Sihle owns a company which focus primarily on producing cylindrical metal cans for the unsweetened cocoa powder. The volume of the can is 546,10 cm^3. The height of the can's label is 80% of the height of the can.

Refer to the diagram below and answer the questions that follows.



NOTE:
You may use the formula below.
Volume = 3,142 × r^2 × height

3.3.1 Determine the height of the can in cm. (4)

3.3.2 Mr Sihle stated that the height of the can is 1,5 cm more than the height of the label. Verify by means of a calculation whether his statement is valid. (4)
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QUESTION 4

4.1 Mrs Aretha Smith has a floor plan for the new house she wants to build. Refer to ANNEXURE B which shows an image of the floor plan of this house.

Use ANNEXURE B to answer the questions that follow.

4.1.1 Explain the term '*floor plan*'. (2)

4.1.2 How many windows are there on the east wall of the house? (2)

4.1.3 Use the number scale given and determine the actual total length of all the outside walls of the house on the Northern and Eastern sides. Give your final answer in metres. (7)

4.1.4 The area of the porch is 19,38 m^2, and the length is 10,2 m. Mrs Smith stated that the width is six times less than the length.
Verify with the necessary calculations if her statement is valid. (4)

You may use the formula: **Area = length × breadth**

4.2 Mr Smith surprises his wife and gives her a rare lucky coin on her birthday. The coin has a square cut out of the middle as shown in the photo below.

NOTE:
Length of one side of the square = 0,9 cm
Diameter of circle = 3,3 cm
Volume of the coin = 1,47 cm^3

FORMULAE:
Area of circle $= \pi \times r^2$; where $\pi = 3{,}142$
Area of square = side × side

Density $= \frac{Mass}{Volume}$

[Source: www.walmart.com]

Use the information above to answer the questions that follow.

4.2.1 Calculate the area of the coin in cm^2. Round your answer off to ONE decimal place. (5)

4.2.2 The density of gold is 19,30 g / cm^3, calculate the mass of the coin in grams. (2)
Round your answer off to ONE decimal place.

4.3 A box contains 12 gold coins, 2 silver coins and 2 bronze coins.

4.3.1 Determine the probability of selecting a gold coin in decimal format. (3)

4.3.2 Refer to your answer in QUESTION 4.3.1. Explain the probability of the event in words. (2)

[27]

TOTAL: 100

ANNEXURE A

QUESTION 2.1

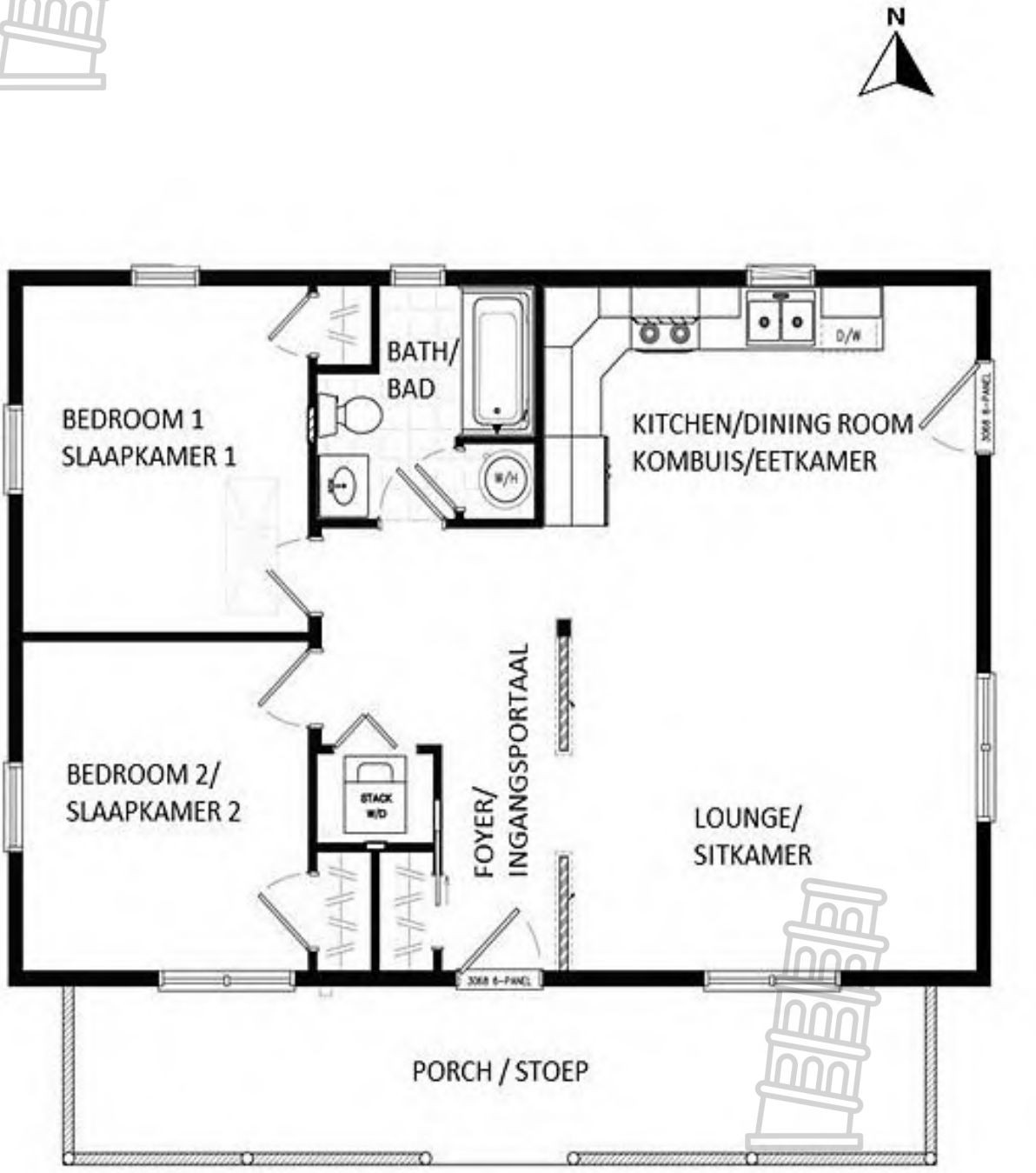
Below is a map of South Africa.

[Source: http://www.lonelyplanet.com/maps/Africa/south-africa/map of south-africa.jpg]

ANNEXURE B

QUESTION 4.1

Floor plan of Mrs Smith's house:



Scale 1 : 100

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MATHEMATICAL LITERACY P2 MARKING GUIDELINE

MARKS: 100

Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
RCA	Rounding consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
SF	Correct substitution in a formula
J	Justification
O	Opinion/Example/Definition/Explanation/Justification/Verification
RT/RG/RM	Reading from a table/graph/map
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding off
NPR	No penalty rounding or omitting units
AO	Answer only, full marks

This marking guideline consists of 9 pages.

MARKING GUIDELINES

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 incorrect item presented.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE keer beantwoord merk slegs die EERSTE poging.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, merk die doodgetrekte (gekanselleerde) poging.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyn toegepas, maar dit hou by die tweede berekeningsfout op.*
- *Wanneer 'n kandidaat aflees van 'n grafiek, tabel, uitlegplan en kaart en ekstra antwoorde gee, penaliseer vir elke ekstra item.*

KEY TO TOPIC SYMBOL:
F = Finance; M = Measurement; MP = Maps, plans and other representations; P= Probability

QUESTION 1 [23]

Quest	Solution	Explanation	Level
1.1.1	3,142 × 450 ✓ M = 1 413,9 mm ✓ A	1M multiply by 450 1A correct answer (2)	M L1
1.1.2	Option B: 290 ÷ 200 m ✓ M = R1,45 per metre ✓ MA	1M divide by 200 m 1MA answer (2)	M L1
1.1.3	R290 : R390 ✓M 29 : 39 ✓ A	1M correct order 1A correct simplified values (2)	M L1
1.1.4	Radius = 450 mm ÷ 10 ✓ C = 45 cm ÷ 2 ✓ M = 22,5 cm ✓ A	1C divide by 10 1M finding the radius 1A correct answer (3)	M L1
1.2.1	N2; N3; N6; N10 ✓ ✓A **(Any TWO)**	2A correct national roads (2)	MP L1
1.2.2	Strip Chart / Map ✓ ✓ A	2A name (2)	MP L1
1.2.3	✓ RT ✓ C Distance = 964 km × 1000 = 964 000 m ✓ A	1RT correct values 1C conversion 1A 964 000 m (3)	MP L1

1.2.4 (a)	Port St. Johns **OR** Port Edward ✓ ✓A	2 A town (2)	MP L1
1.2.4 (b)	✓A Distance = 201 + 36 ✓ M = 237 km ✓ A	1A correct distances 1M Addition 1A 237 km (3)	MP L1
1.2.5	R617; R101; R56 ; R61 ✓ ✓RM **(Accept any two answers)**	2RM correct provincial roads (2)	MP L1
		[23]	

QUESTION 2 [18]			
Quest.	**Solution**	**Explanation**	**Level**
2.1.1	Bar Scale ✓✓ RM	2RM correct answer (2)	MP L1
2.1.2	South West ✓✓ RM	2RM correct direction (2)	MP L2
2.1.3	✓M 2 cm : 250 km ✓M 9,6 cm : $\frac{9,6 \times 250}{2}$ ≈ 1 200 km ✓ CA Mr. Antonie is incorrect ✓ J	1M measured value 1M multiply by 250 and divide by 2 1CA correct answer 1J correct justification (4)	MP L3
2.2.1	Average Speed = $\frac{1\,635}{17,25}$ ✓ MA = 94,782 ✓A = 94,78 km / hr ✓R	1MA divide by17,25 1A correct answer 1R correct rounding (3)	M L2
2.2.2 (a)	1 litre = 12,5 km No. of litres = $\frac{1\,635}{12,5} \times 1$ ✓MA = 130,8 ✓A 0,80 litre = 10 km No of litres = $\frac{1\,635}{10} \times 0,80$ ✓MA = 130,8 ✓A Mr Amos statement is incorrect. ✓J	1MA dividing by 12,5 1A correct answer 1MA dividing by 10 1A correct answer 1J correct deduction (5)	MP L4
2.2.2 (b)	Cost = 130,8 × R24,75 ✓M = R3 237,30 ✓A	1M multiply by 130,8 1A correct answer (2)	M L2
		[18]	

QUESTION 3 [32]			
Quest	**Solution**	**Explanation**	**Level**
3.1.1	Mass of cake = 900 ÷ 1 000 ✓M = 0,9 kg ✓A	1M divide by 1000 1A correct answer (2)	M L1
3.1.2	Mass of one slice = $\frac{900}{12}$ ✓ M = 75 g ✓ A	1M divide by 12 1A correct answer (2)	M L2
3.1.3	Calories of one slice of cake = $\frac{75}{100} \times 400$ ✓✓ M = 300 calories ✓A	1M multiply by 75 1M divide by 100 1A correct answer (3)	M L2
3.1.4	Convert min to hrs ✓M 75 min ÷ 60 = 1,25 hrs ✓ A	1M conversion ratio 1A correct answer (2)	M L1
3.1.5	90 guests = 90 slices ✓M Number of Cakes = 90 ÷ 12 ✓M = 7,5 cakes ✓CA ≈ 8 cakes ✓R	1M number of slices 1M divide by 12 1CA number of cakes 1A correct rounding (4)	M L1
3.2.1	Cups = $8 \times \frac{3}{4}$ ✓M = 6 cups ✓A	1M multiplication 1A correct answer (2)	M L2
3.2.2	Cocoa = 8 × 90 g ✓M Required Amount = 720 g ÷ 240 g = 3 ✓M ✓M Cost = 3 × R 62,75 = R188,25 ✓A	1M total grams 1M amount 1M multiplication 1A correct cost (4)	M L3

3.2.3	℃ = (℉ − 32) ÷ 1,8 ✓SF = (320 − 32) ÷ 1,8 ✓M = 288 ÷ 1,8 = 160 ℃ ✓ CA	1SF substitution 1M 268 ÷ 1,8 1CA correct rounding (3)	M L2
3.2.4	Starting time 09h 03 + 55 min ✓M Finishing time = 09h 58 ✓ A	1M adding time 1A correct answer (2)	M L2
3.3.1	Radius = 86 mm ÷ 2 = 43 mm ✓ A Convert: 43 mm ÷ 10 = 4,3 cm ✓ C Volume of one can = 3,142 × 4,3 × 4,3 × height ✓SF 546,10 cm^3 = 58,09558 cm^2 × height Height = 546,10 cm^3 ÷ 58,09558 cm^2 = 9,4 cm ✓CA	1A radius value 1C conversion 1SF correct values 1CA height value (4)	M L3
3.3.2	✓M Height of label = 80% × 9,4 cm = 7,52 cm ✓A Difference = 9,4 − 7,52 = 1,88 cm ✓M His statement is invalid ✓J	**CA value from Q 3.3.1** 1M calculating 80% of 9,4 1A for 7,52 cm 1M difference value of 1,88 cm 1J justification (4)	M L3
			[32]

QUESTION 4 [27]			
Quest	**Solution**	**Explanation**	**Level**
4.1.1	Shows a building's plan as seen from above. It is a 2-dimensional view of the building. ✓✓ A	2A correct explanation (2)	MP L1
4.1.2	One window ✓✓ A	2A correct answer (2)	MP L2
4.1.3	1 mm represents 100 mm Length of wall ✓ M 114 mm = 114 × 100 ✓ M = 11 400 mm ÷ 1 000 ✓ M = 11,4 m ✓ CA Width of Wall ✓ M 77 mm = 77 × 100 = 7 700 ÷ 1 000 ✓ M = 7,7 m ✓ CA	1M for measurement 1MA using conversion factor 1M conversion to m 1CA for 11,4 m 1M for measurement 1M conversion to m 1CA 7,7 m (7)	MP L4
4.1.4	✓ MA Width = 19,38 m^2 ÷ 10,2 m = 1,9 m ✓ A Times lesser = 10,2 ÷ 1,9 m ✓ MA = 5,37 times Mrs Smith's statement is invalid. ✓ J	1MA 19,38 ÷ 10,2 1A correct answer 1MA divide by correct values 1J correct justification (4)	M L4
4.2.1	Area Circle = $\pi \times r^2$ = 3,142 × 1,65 × 1,65 ✓ SF = 8,55 cm^2 ✓ A Area square = side × side = 0,9 × 0,9 = 0,81 cm^2 ✓ A Area of coin = 8,55 – 0,81 ✓ M = 7,74 cm^2 = 7,7 cm^2 ✓ A	1SF correct radius 1A correct answer 1A correct answer 1M subtraction 1A correct rounded off (5)	M L3
4.2.2	Mass of coin = 1,47 × 19,30 ✓ M = 28,371 grams ≈ 28,4 g ✓ A	1M correct values 1A correct answer (2)	M L2

4.3.1	Probability gold coin $= \frac{12}{16}$ ✓ A ✓ A $= 0,75$ ✓ A	1A numerator 1A denominator 1A correct answer (3)	P L2
4.3.2	The probability of selecting a gold coin has a much greater chance of happening than not happening. ✓✓ O **OR** Very likely to select a gold coin. ✓✓ O **(Accept any relevant answer.)**	2O correct reasoning 2O correct reasoning (2)	P L4
		[27]	
		TOTAL: 100	