



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 11**

**NOVEMBER 2016**

**MATHEMATICAL LITERACY P2**

**MARKS: 100**

**TIME: 2 hours**



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This question paper consists of 10 pages including 3 annexures.

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**INSTRUCTIONS AND INFORMATION**

Read the following instructions carefully before answering the questions.

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. Use the ADDENDUM with ANNEXURES for the following questions:  
  
ANNEXURE A for QUESTION 2.2  
ANNEXURE B for QUESTION 3.1.1 and  
ANNEXURE C for QUESTION 3.1.2
3. Number the questions according to the numbering system used in this question paper.
4. An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
5. ALL calculations must be shown clearly.
6. Round off ALL final answers appropriately accordingly to the given context, unless stated otherwise.
7. Start EACH question on a NEW page.
8. Write neatly and legibly.

## QUESTION 1

- 1.1 Anna has a small business for baking and selling muffins. She has the following recipe that makes 12 muffins as well as the costs for making the muffins:

500 g muffin mix at R12,00 per kg  
 1 large egg at R10,50 for  $\frac{1}{2}$  dozen  
 $\frac{1}{2}$  cup oil (125 ml) at R12,50 per 750 ml  
 1  $\frac{1}{2}$  cups of milk (375 ml) at R11,50 per litre

Preheat oven to 180 °C then bake for 25 minutes.

Anna uses pans that bake 12 muffins and an oven that allows two pans at a time. She sells her muffins at R30 per dozen.

- 1.1.1 Mention ONE other expense in addition to cost of ingredients that Anna will have when making these muffins. (2)
- 1.1.2 How much will she spend on ingredients for 24 muffins? (5)
- 1.1.3 Anna tells a friend that if she would get an order for 1 200 muffins, she would make a profit of more than R1 000. Verify using calculations to prove whether her statement is true or false. (Costs considered are those for the ingredients only.) (5)
- 1.1.4 Anna has an order for 240 muffins which need to be baked and delivered 50 km from her home where she bakes. She starts baking at 9:00, allows 10 minutes for cleaning pans after each batch of muffins. If she leaves after the last cleaning and drives at 100 kilometres per hour, will she be able to deliver the muffins for tea to be served at 16:00?

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

- 1.2 After being in business for a year Anna managed to get a small business loan from the government to expand her business. She had to employ staff to help her, and she manages to employ people for 5 hours a day as follows:

- A cleaner at R50 per hour
- A driver at 75% more than the cleaner per hour
- An assistant (baking) at R25 more than the cleaner
- They work 20 days per month

Calculate the total salaries of all the workers for one month.

(5)  
**[23]**

**QUESTION 2**

2.1 A Mathematical Literacy teacher has the following test results for a test out of 50. His class has 14 learners and the results are as follows:

- 4 learners scored 42 which was the maximum mark obtained by the learners
- 3 learners scored 7 marks less than the maximum mark
- 2 learners scored 34 marks,
- 1 learner scored 20 marks less than the maximum mark
- 2 learners scored 16 marks
- 1 learner scored 5 marks
- The last learner scored  $\frac{1}{2}$  of the maximum mark

2.1.1 If the percentage pass for the test was 30%, what can you conclude about the performance of the learners in the test? Use calculations on which you base your conclusion. (4)

2.1.2 What is the mean score of the marks? (3)

2.1.3 Calculate the numerical value of the difference between the median and the mode. (4)

2.1.4 What is the probability of a learner scoring below 50% in this test? Give your answer as a percentage. (3)

2.2 In a school there are equal number of Mathematics and Mathematical Literacy students and they are all seated in the hall as shown in ANNEXURE A.

- The Mathematics students are seated in the odd numbered rows and the Mathematical Literacy students are in the even numbered rows.
- Students are seated one behind the other and their student numbers are in ascending order from ML – 1 for the Mathematical Literacy students and MAT – 1 for the Mathematics students.
- When a row has been filled i.e. row A1 – I1, the students starts to fill the next row starting at A2 to I2 and then fill the next row starting at A3 and so on.
- Occupation of seats starts from row one.

2.2.1 How many Mathematical Literacy and Mathematics students are seated in the middle section of the hall? Use calculations on which you base your conclusion. (3)

2.2.2 Calculate the mean score that was achieved. (3)

2.2.3 Calculate the difference in the number of seats between the seats on the left and the right sections of the hall. (3)

2.2.4 If the Department of Education requires 1 invigilator for every 30 learners, how many invigilators must be appointed? (4)

**[27]**

**QUESTION 3**

- 3.1 Two matric learners managed to get the following set of scores for their Grade 12 examinations:

Subject	Learner A %	Learner B %
IsiXhosa Home Language	75%	67%
English First Additional Language	63%	68%
Mathematics	54%	64%
Life Orientation	72%	76%
Accounting	54%	48%
Economics	45%	60%
Business Studies	74%	69%

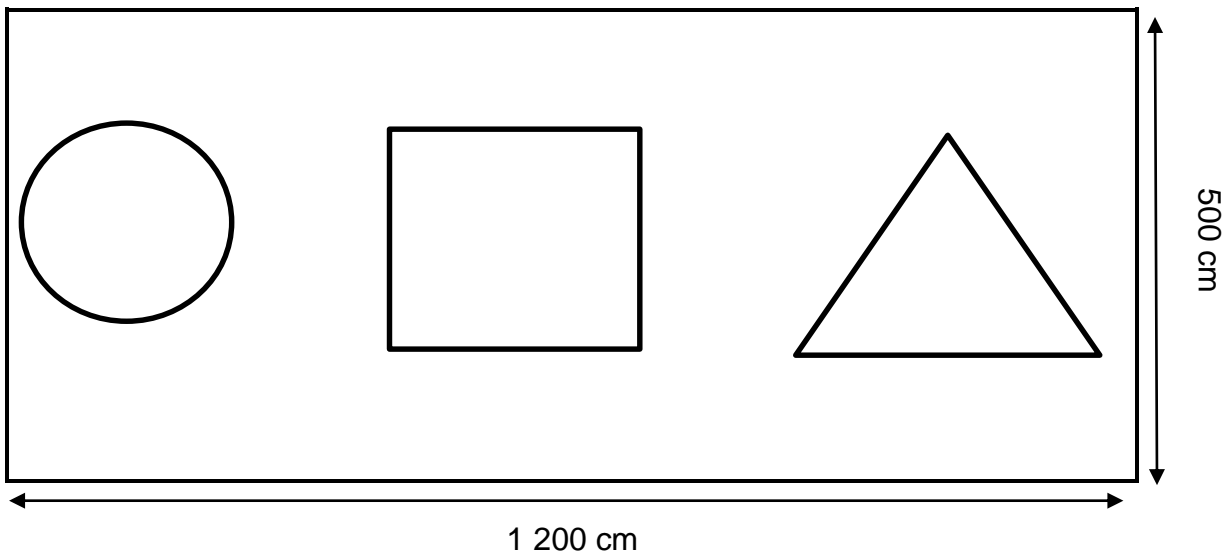
- 3.1.1 By using the information on ANNEXURE B, calculate the APS scores for both learners to show which learner has the highest score. (6)
- 3.1.2 Draw a compound bar graph on ANNEXURE C that represents the scores of the two learners in IsiXhosa Home Language, Mathematics, Accounting, Economics and Business Studies. (5)
- 3.1.3 At a certain university the APS score is the only consideration for admission to a certain faculty and they require an APS score of 30. Which of the two learners has a greater chance of being accepted by that university and faculty? (2)
- 3.2 Mr and Mrs Jones's daughter, a first-year student did not manage to get accommodation on campus and gets private accommodation. The costs are:
- Single room is R2 200 per month
  - Double room is R1 650 per month
  - Rent is payable for 11 months
- She has to cook for herself and her parents send R1 500 per month for food for ten months.
- 3.2.1 Calculate the total amount spent for the year on rent and food if she chooses a double room. (4)
- 3.2.2 Staying in a double room costs less than staying in a single room. Give ONE reason for the difference in costs. (2)

**[19]**

## QUESTION 4

4.1 Learners have a project of painting one side of their block of classes. The block has four classrooms with windows designed as shown below. They only need to paint the sides with these windows and there is only one such side in each classroom. Drawing not drawn to scale.

- Dimensions of the classroom are: length = 1 200 cm and height = 500 cm
- Height of the triangular window is 100 cm and the base is 150 cm.
- Width of the square window is equal to the base of the triangular window.
- Radius of the circular window is  $\frac{1}{2}$  (half) the base of the triangular window.



You may use the following formulae:

- Area of rectangle =  $length \times breadth$
- Area of square =  $side^2$
- Area of triangle =  $\frac{1}{2} base \times height$
- Area of circle =  $\pi \times radius^2$

Use  $\pi = 3,142$

Calculate the total area of the walls that are to be painted in all the classrooms to the nearest square metre ( $m^2$ ).

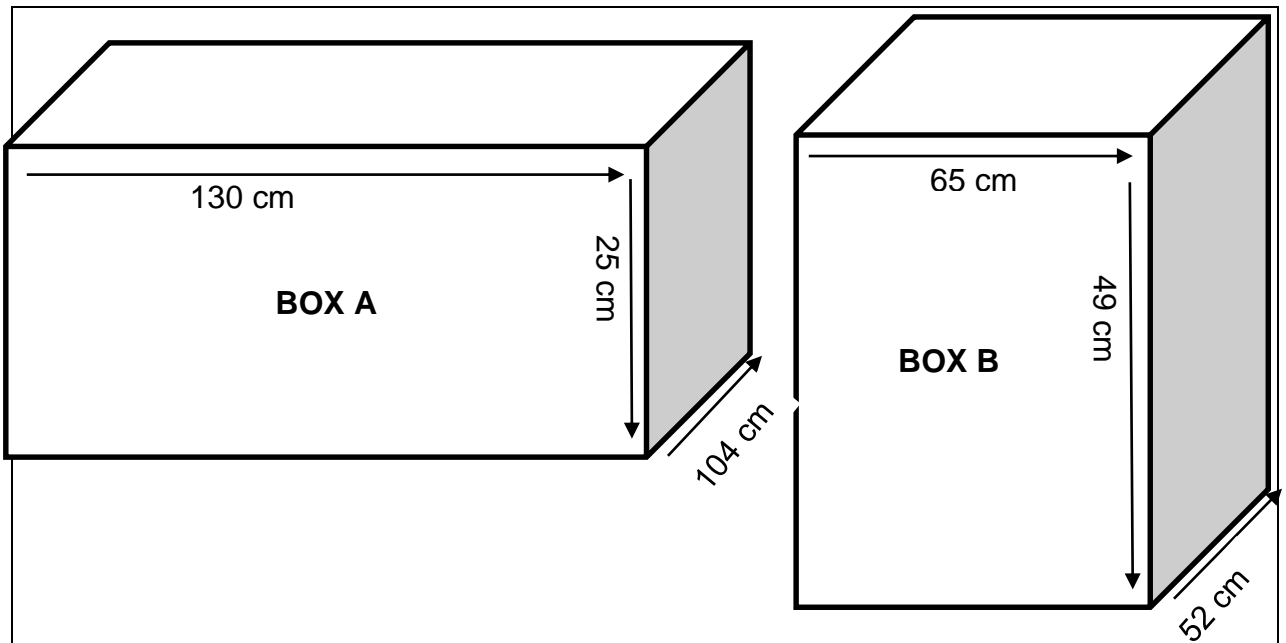
(14)

4.2 Paint is sold in 5 litre and 20 litre tins. The cost is R105 for the 5 litre tin and R405 for the 20 litre tin. Paint covers  $8 m^2$  per litre.

Learners argue that it will be cheaper to buy 5 litre tins. Using calculations, prove whether their argument is valid or not.

(6)

4.3 5 litre paint tins are packed in shops for delivery in big rectangular boxes. An example of these boxes are shown below. The diagrams are not drawn to scale.



There are two rectangular boxes and their dimensions are as follows:

Dimensions of Box A

Length = 130 cm

Width = 104 cm

Height = 25 cm

AND

Dimensions of Box B

Length = 65 cm

Width = 52 cm

Height = 49 cm

Dimensions of 5 litre paint tin:

Radius = 9 cm

Height = 24 cm

4.3.1 The packers argue that if they use Box A for packaging the paint tins, they will be able to pack more than two times the paint tins in Box B. Use calculations to prove if their argument is valid or not. (6)

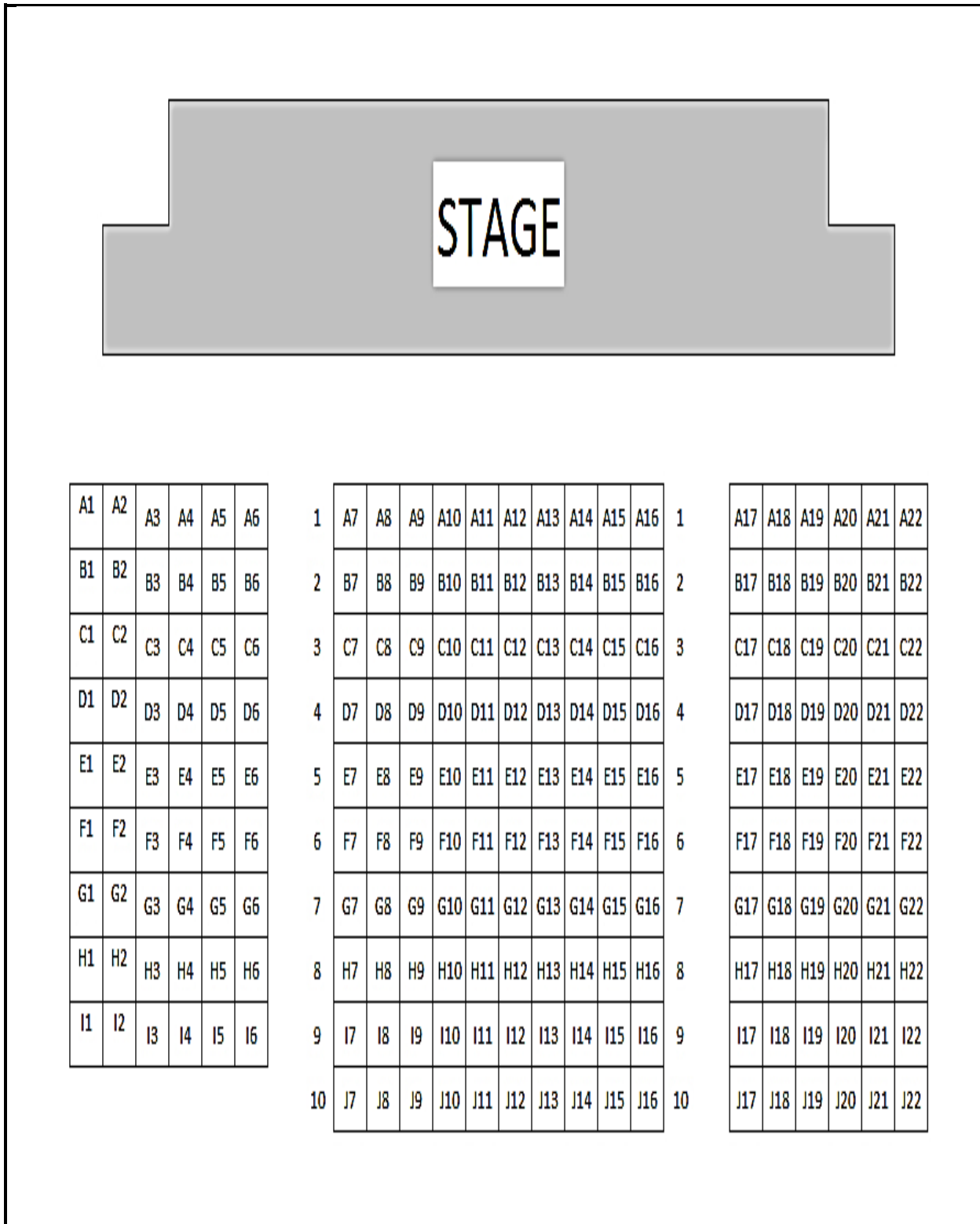
4.3.2 A truck carrying 20 boxes of Box B with 5 litre paint tins has an accident and all the paint is spilt. How much in Rand will be lost? (5)

[31]

TOTAL: 100

## ANNEXURE A: QUESTION 2.2

Seating plan of school hall.





**ANNEXURE B: QUESTION 3.1.1**

Admission requirements for students obtaining the National Senior Certificate (NSC) or Independent Examinations Board (IEB) in 2013 and thereafter:

APS	National	
	NCS	IEB
10		
9		
8		
7	(80–100%)	7
6	(70–79%)	6
5	(60–69%)	5
4	(50–59%)	4
3	(40–49%)	3
2	(30–39%)	2
1	(0–29%)	1

\*Life Orientation must be divided by two and rounded up to the nearest 10% to calculate the **total APS**.

**Additional information:**

- APS stands for Admission Point Score.
- Points are assigned to the percentages obtained in each of the seven NCS subjects
- Overall APS is calculated by giving the sum of all the points obtained.
- Admission to a certain field of study depend on whether the points for that particular field have been achieved.



**ANNEXURE C: QUESTION 3.1.2**

**NAME:** .....

**GRADE 11:** .....

