



# education

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Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**MATHEMATICAL LITERACY P1  
PREPARATORY EXAMINATION 2008**

**MARKS: 150**

**TIME: 3 hours**

**This question paper consists of 13 pages and 1 annexure.**

**INSTRUCTIONS AND INFORMATION**

1. This question paper consists of **SIX** questions.
2. Answer **ALL** the questions.
3. **QUESTIONS 3.1.5 and 3.1.6** must be answered on the attached **ANNEXURE A**. Write your name in the space provided on the annexure and hand it in with the **ANSWER BOOK**.
4. Number the answers correctly according to the numbering system used in this question paper.
5. A non-programmable and non-graphical calculator may be used, unless stated otherwise.
6. **ALL** calculations and steps must be shown clearly.
7. **ALL** final answers must be rounded off to **TWO** decimal places, unless stated otherwise.
8. Start **EACH** question on a **NEW** page.
9. Write neatly and legibly.

**QUESTION 1**

1.1 Calculate:

1.1.1  $325 - 36,3 \div 0,3$  (2)

1.1.2 7,5% of R499 (2)

1.1.3  $\frac{4}{5}$  of 250 learners (1)

1.2 Do the following:

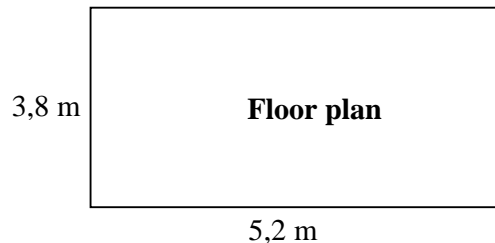
1.2.1 Write  $\frac{11}{20}$  as a percentage. (2)

1.2.2 Convert 2,5 km to metres. (1)

1.2.3 Decrease R128 by 5%. (3)

1.2.4 Write the ratio 2kg: 0,4 kg in its simplest form. (2)

1.3 The diagram below shows the floor plan of the living room of a house.



1.3.1 Calculate the perimeter of the living room.

**Perimeter of rectangle =  $2 \times (\text{length} + \text{breadth})$**  (2)

1.3.2 Calculate the area of the floor. (2)

**Area of rectangle =  $\text{length} \times \text{breadth}$**

1.3.3 If a concrete floor which is 5 cm thick is to be laid, how many cubic metres of concrete will be needed? Give your answer rounded off to the nearest whole number.

**Volume of rectangular prism =  $\text{length} \times \text{breadth} \times \text{height}$**  (3)

1.4 A circular flower bed has a radius of 1,5 metres.

1.4.1 Write down the diameter of the flower bed. (1)

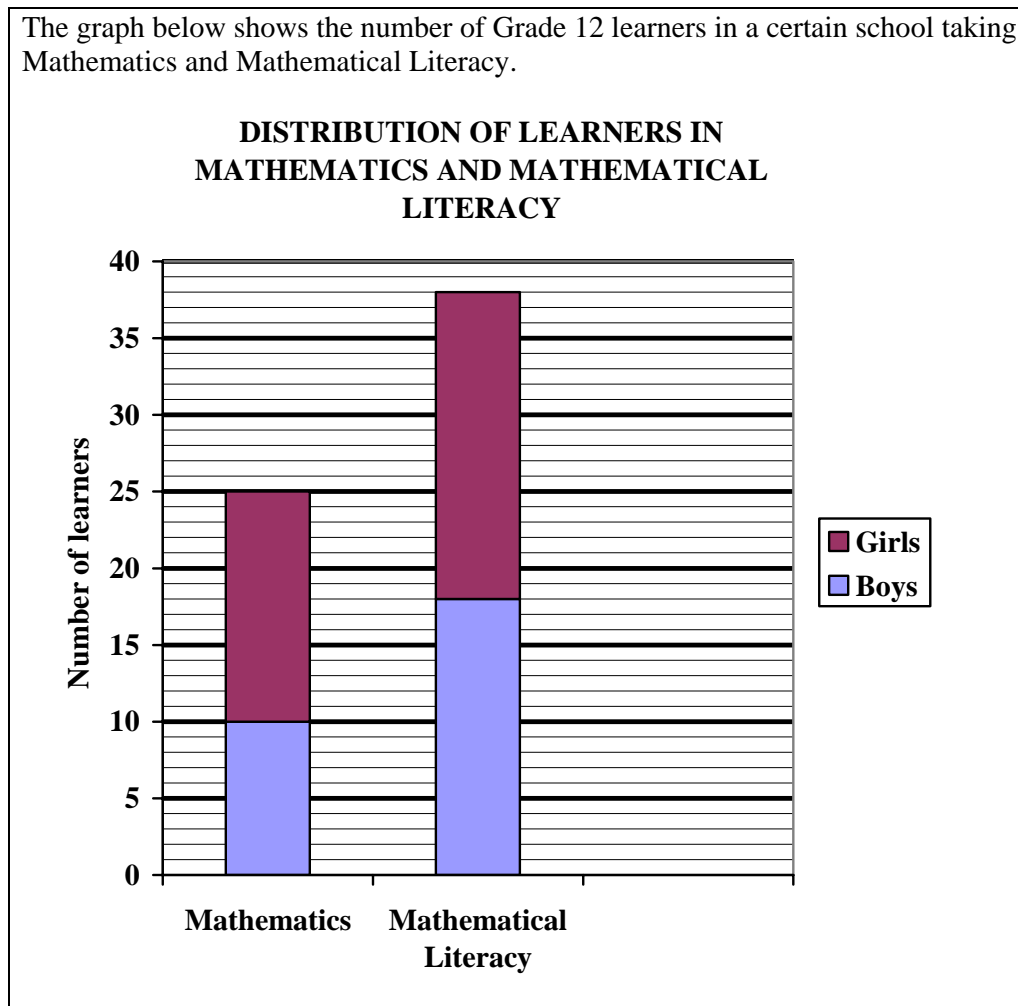
1.4.2 Calculate the area of the flower bed.

**Area of circle** =  $\pi \times r^2$ . Use  $\pi = 3,14$ . (3)

1.4.3 Calculate the circumference of the flower bed.

**Circumference of circle** =  $2 \times \pi \times r$ . Use  $\pi = 3,14$ . (3)

1.5 The graph below shows the number of Grade 12 learners in a certain school taking Mathematics and Mathematical Literacy.



1.5.1 How many Grade 12 boys take Mathematics? (1)

1.5.2 How many Grade 12 learners take Mathematical Literacy? (1)

1.5.3 How many Grade 12 girls take Mathematical Literacy? (3)

1.5.4 Another school has 48 boys and 36 girls in Grade 12. If a Grade 12 learner from this school is chosen at random, what is the probability that the learner will be a boy? Express your answer as a fraction in its simplest form. (3)

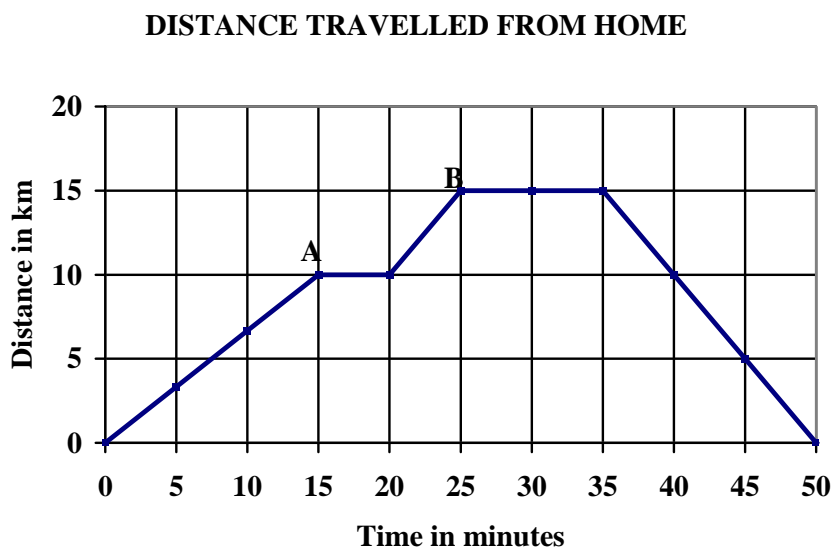
[35]

**QUESTION 2**

2.1 Mrs Khumalo has two children, Mpho and Tumi. They attend two different schools. The following information describes Mrs Khumalo's routine on a particular morning:

- She drives Mpho (7 years) and Tumi (17 years) to their respective schools.
- First she drops off Mpho at point A.
- Then she takes Tumi to her school at point B.
- Then she returns home.

Use the graph below to answer the questions that follow.



- 2.1.1 How long was Mrs Khumalo away from home? (1)
- 2.1.2 How far is it from the Khumalo home to Mpho's school at point A? (1)
- 2.1.3 How long did it take Mrs Khumalo to reach Mpho's school? (1)
- 2.1.4 How far is Tumi's school at point B from home? (1)
- 2.1.5 How much time did Mrs Khumalo spend at Tumi's school? (2)
- 2.1.6 It took Mrs Khumalo 15 minutes to drive the 10 km from home to Mpho's school.
- (a) Express 15 minutes as a fraction of an hour in decimal form. (2)
- (b) Calculate Mrs Khumalo's average speed in km per hour during the trip from home to Mpho's school.

$$\text{Average speed} = \frac{\text{Distance}}{\text{Time}} \quad (3)$$

- 2.2 Tumi baked 60 pancakes to sell at a sports event. The recipe she used was not in metric units. She sold the pancakes for R2,50 each.

**PANCAKE RECIPE**

(Makes 10)

4 oz flour

 $\frac{1}{2}$  pint milk

2 eggs

1 teaspoon baking powder

 $\frac{1}{4}$  teaspoon salt

- 2.2.1 Convert 4 oz to grams. (1 oz = 30 g) (2)
- 2.2.2 Convert  $\frac{1}{2}$  pint to millilitres (1 pint = 560 ml). (2)
- 2.2.3 To make a good pancake, the temperature of the pan must be 440 °F.  
Convert 440 °F to degrees Celsius, using the following formula:
- $$\text{Temperature in } ^\circ\text{C} = (\text{Temperature in } ^\circ\text{F} - 32^\circ) \times \frac{5}{9}$$
- Round off the answer to the nearest 10°. (3)
- 2.2.4 Calculate Tumi's income if she sold all 60 pancakes. (2)
- 2.2.5 How many pancakes must she sell to recover her costs of R90? (2)

**[22]**

**QUESTION 3**

3.1

Tumi and her friend Jo work at two different restaurants during the evenings. They are paid per day as follows:

- Tumi is paid an average of R12 per hour.

**TABLE 1: Tumi's pay for hours worked**

<b>Hours worked</b>	0	1	2	3	4	5	<b>B</b>
<b>Pay in rand</b>	0	12	24	36	<b>A</b>	60	84

- Jo's pay is calculated using the following formula:

$$\text{Pay} = \text{R24} + (\text{hours worked} \times \text{R6})$$

**TABLE 2: Jo's pay for hours worked**

<b>Hours worked</b>	0	1	2	3	4	5	6
<b>Pay in rand</b>	24	30	36	42	<b>C</b>	54	60

3.1.1 Use TABLE 1 to calculate the value of the following:

(a) A (2)

(b) B (2)

3.1.2 Calculate the value of C in TABLE 2. (2)

3.1.3 Calculate how many hours Jo has to work to earn R78. (3)

3.1.4 Which girl will earn the most if they both work 3 hours on a particular day? (2)

3.1.5 Use the grid provided on ANNEXURE A to draw a line graph of the information in TABLE 1. Label the graph clearly. (4)

3.1.6 On the SAME grid as in QUESTION 3.1.6, draw a line graph of the information in TABLE 2. Label the graph clearly. (4)

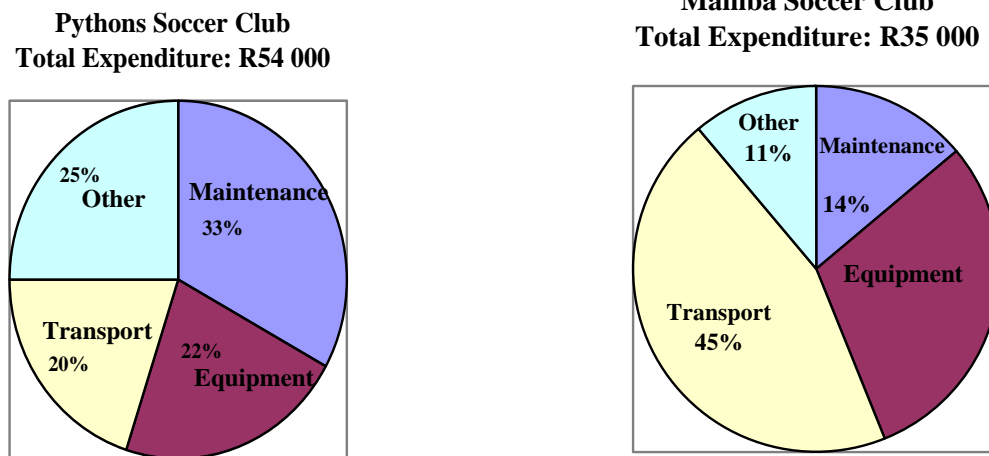
3.2 Tumi received a five euro bill (€5) as a tip from a European tourist. Calculate the value in rand of Tumi's tip. Round off your answer to the nearest rand. Use the exchange rate €1 = R9,93. (2)

**[21]**

**QUESTION 4**

4.1

The pie charts below show the yearly expenditure of the Pythons Soccer Club and the Mamba Soccer Club for 2007.



- 4.1.1 What was the total expenditure of Pythons Soccer Club for 2007? (1)
- 4.1.2 What percentage was spent by the Mamba Club on transport? (1)
- 4.1.3 What percentage was spent by the Mamba Club on equipment. (2)
- 4.1.4 Calculate the actual amount spent by the Pythons Club on maintenance. (2)
- 4.1.5 The Pythons Club receives its income from membership fees. The club had 100 members in 2007, each paying R450 membership fee for the year. All the members paid in full for 2007. What was the club's income from membership fees in 2007? (2)
- 4.1.6 The Pythons Club increased its membership fees by 6% for 2008. Calculate the new membership fee for ONE member. (3)
- 4.1.7 The total income of the Mamba Club for 2007 was R42 000. Calculate the club's surplus (profit) for 2007. (2)
- (Profit = Income – Expenditure)** (2)

- 4.2 One of the Pythons soccer players wants to borrow money from a micro lender. The table below shows the monthly repayments on loans over different periods.

LOAN	12 MONTHS	24 MONTHS	36 MONTHS	To qualify, you must earn at least R2 200 per month.
R 3 000	R 355	R219	R175	
R 5 000	R 584	R356	R283	
R 8 000	R 927	R562	R446	
R10 000	R1 156	R700	R553	

Use the table to answer the following questions:

- 4.2.1 What is the loan amount if a person is paying off R446 per month over 36 months? (1)
- 4.2.2 What is the monthly payment for a loan of R5 000 taken over a period of 2 years? (2)
- 4.2.3 Will a person earning R1 500 per month be able to secure a loan from this micro lender? (2)
- 4.2.4 Calculate the total amount to be paid back on a loan of R3 000 taken over a 12-month-period. (3)
- 4.3 If the soccer player takes a loan of R3 000 from a bank at a simple interest rate of 18% per annum, calculate the amount of interest that he would have to pay if he repays the loan over 1 year, using the formula:

$$\text{Simple interest} = \frac{P \times n \times r}{100} \quad \text{OR} \quad \text{Simple interest} = P \times n \times i$$

where **P** = the initial amount  
**n** = time period  
**r** = interest rate and

$$i = \frac{r}{100}$$

(3)  
[24]

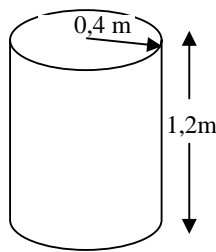
**QUESTION 5**

5.1

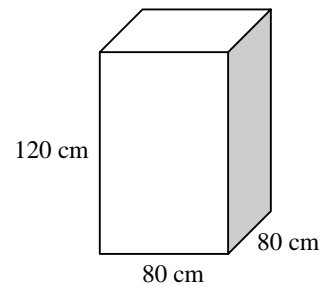
A company manufactures electrical geysers out of steel in the following two shapes:

- Geyser 1: radius = 0,4 metres, height = 1,2 metres
- Geyser 2: length = 80 centimetres  
breadth = 80 centimetres  
height = 120 centimetres

**GEYSER 1**  
(cylindrical)



**GEYSER 2**  
(rectangular)



5.1.1 Calculate the volume of Geyser 1 in  $\text{m}^3$ .

**Volume of cylinder =  $\pi \times (\text{radius})^2 \times \text{height}$ , using  $\pi = 3,14$**  (3)

5.1.2 The volume of Geyser 2 is  $768\,000\text{ cm}^3$ . If  $1\,000\text{ cm}^3 = 1\text{ litre}$ , convert the volume of Geyser 2 to litres. (1)

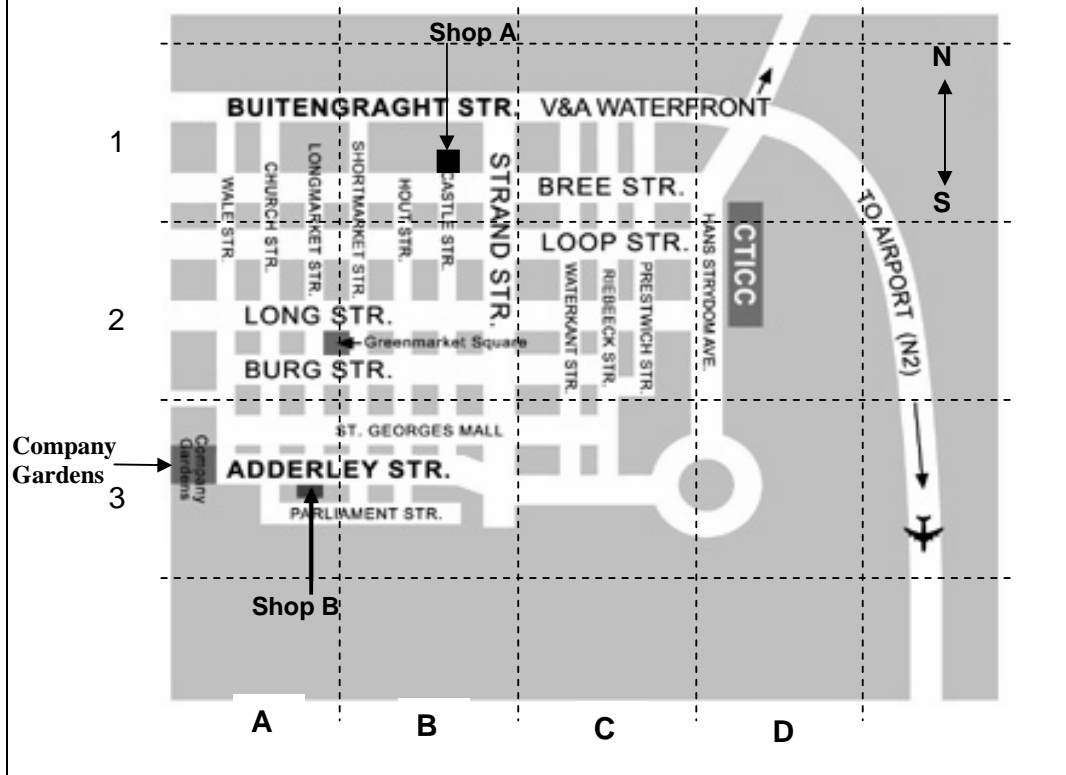
5.1.3 If  $1\,000\text{ cm}^3 = 0,22\text{ gallon}$ , how many gallons can Geyser 2 hold? (2)

5.1.4 To prevent loss of heat, geysers are covered with an insulation material pasted on all the outside surfaces. How many square metres of insulation material will be needed to cover Geyser 1?

**Surface area of cylinder =  $2\pi rh + 2\pi r^2$ , using  $\pi = 3,14$**  (4)

5.1.5 A 1 litre tin of glue used to paste the insulation material can cover a surface area of  $1,25\text{ m}^2$ . Calculate the surface area that a 5 litre tin of glue can cover. (2)

- 5.2 The street map below shows a section of Cape Town. The company supplies geysers to both Shop A and Shop B.



- 5.2.1 The grid reference of Shop A is B1. Write down the grid reference for Shop B. (1)
- 5.2.2 If a truck drives from Shop B in a northerly direction in Longmarket Street, in which street should the truck turn east in order to reach Shop A? (1)
- 5.2.3 The scale of the map is 1:16 000. The distance between Shop A and Shop B on the map is 5 cm. Calculate the actual distance between the two shops in metres. (3)
- 5.2.4 In which direction should one travel from Shop B in order to reach the Company Gardens (grid reference A3)? (1)
- 5.3 The company's monthly cost for manufacturing geysers is given by the formula **Cost = R250 × n + R15 000**, where n is the number of geysers produced. (The material to make one geyser costs R250 and their monthly overhead costs are R15 000.)
- 5.3.1 Calculate the cost if they manufacture 80 geysers per month. (3)
- 5.3.2 How many geysers did they manufacture if the cost was R31 000? (3)

[24]

**QUESTION 6**

6.1

The ages (in years) of patients treated for malaria at two different clinics during a certain month were recorded as follows:

Clinic A (Set 1): 5 7 18 24 24 32 46 52 63

Clinic B (Set 2): 37 28 17 56 43 55 39 40 26 35

- 6.1.1 What is the median of Set 1? (1)
- 6.1.2 What is the mode of Set 1? (1)
- 6.1.3 Arrange the ages of Set 2 in ascending order. (2)
- 6.1.4 Calculate the range of Set 2. (2)
- 6.1.5 Calculate the mean age of Set 2. (3)

## 6.2

The table below shows the malaria cases and deaths reported in the Limpopo Province during 2004. [Source: Department of Health]

Use the table to answer the questions that follow.

Month	Jan.	Feb.	Mar	Apr.	May	June	July	Aug	Sep.	Oct.	Nov	Dec.	TOTAL
<b>Cases</b>	272	696	523	634	531	121	49	35	562	558	560	358	4 899
<b>Deaths</b>	7	6	6	9	5	0	0	0	4	2	5	6	<b>F</b>

- 6.2.1 How many cases of malaria were reported in April 2004? (1)
- 6.2.2 Calculate the total number of deaths (**F**) as a result of malaria in 2004. (2)
- 6.2.3 What is the range of the cases reported over the twelve months? (2)
- 6.2.4 From 2004 to 2005 the total number of cases in Limpopo as a result of malaria, decreased by 11,5%. Calculate the total number of cases in Limpopo during 2005, rounded off to the nearest whole number. (3)
- 6.2.5 Calculate the Case Fatality Rate in January 2004, using the following formula.

$$\text{Case Fatality Rate} = \frac{\text{number of deaths}}{\text{number of cases}} \quad (3)$$

- 6.2.6 Write the ratio Cases : Deaths for November 2004 in its simplest form. (2)
- 6.2.7 Calculate the mean (average) number of cases reported per month over the twelve-month period. Round off your answer to the nearest whole number. (2)

[24]

**TOTAL: 150**

NAME: .....

**ANNEXURE A**

**QUESTIONS 3.1.5 and 3.1.6**

**PAYMENT OF HOURS WORKED**

