



# education

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Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**MATHEMATICAL LITERACY P1**

**EXEMPLAR 2008**

**MARKS: 150**

**TIME: 3 hours**

**This question paper consists of 13 pages and 2 annexures.**

**INSTRUCTIONS AND INFORMATION**

1. This question paper consists of SEVEN questions. Answer ALL the questions.
2. QUESTIONS 7.3.1 and 7.3.2 must be answered on ANNEXURES A and B which are attached. Write your name/examination number in the spaces provided and hand in the ANNEXURES with the ANSWER BOOK.
3. Number the answers correctly 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 the calculations and steps must be shown clearly.
6. ALL the final answers must be rounded off to TWO decimal places, unless stated otherwise.
7. Start EACH question on a NEW page.
8. Write neatly and legibly.

**QUESTION 1**

1.1 Calculate the following:

1.1.1  $370 + 24,8 \times 20$  (2)

1.1.2  $\frac{1}{2}(23 + 11) - 11$  (2)

1.1.3  $\frac{2}{3}$  of 120 km (1)

1.1.4 23% of 200 sheep (2)

1.2 Do the following:

1.2.1 Write 0,15 as a percentage. (1)

1.2.2 Write  $\frac{1}{25}$  as a decimal. (1)

1.2.3 Simplify: 60% : 12%. (2)

1.2.4 Increase R400 by 10%. (2)

1.3 Tandeka baked 48 scones to sell at a school bazaar. She used her grandmother's recipe, which was not in metric units.

Tandeka sold the scones for R1,20 each.

<p><b>Scones</b> (makes 12)</p> <p>INGREDIENTS</p> <p><b>8 oz flour</b></p> <p><b>1 <math>\frac{1}{2}</math> oz butter</b></p> <p><b><math>\frac{1}{4}</math> pint milk</b></p> <p><b>1 <math>\frac{1}{2}</math> tablespoons sugar</b></p> <p><b>pinch of salt</b></p>
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1.3.1 Convert 8 oz to grams. (1 oz = 30 g) (2)

1.3.2 Estimate how many ml of salt is equivalent to a pinch of salt. (1)

1.3.3 Convert  $\frac{1}{4}$  pint to millilitres (1 pint = 560 ml). (2)

1.3.4 Convert 430 °F to degrees centigrade (°C) using the following formula:

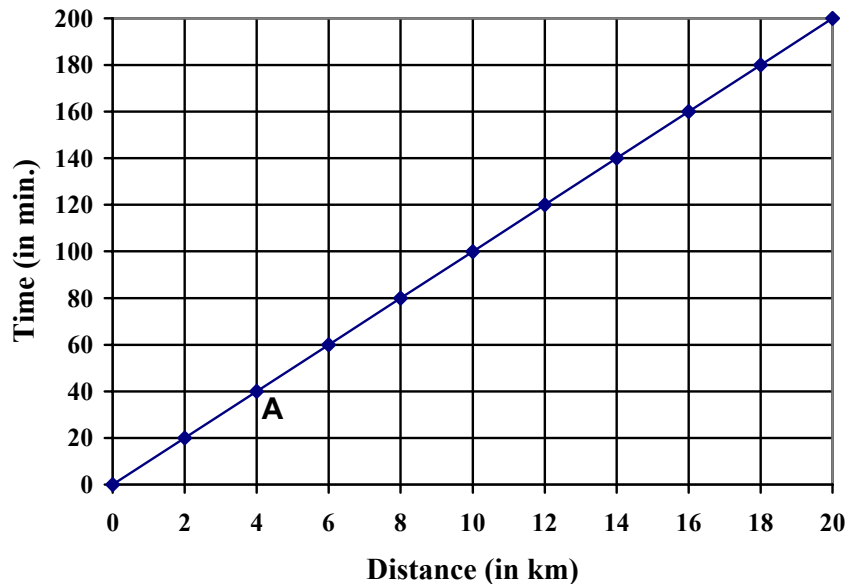
$$\text{Temperature in } ^\circ\text{C} = (\text{Temperature in } ^\circ\text{F} - 32^\circ) \times \frac{5}{9}$$

Round off the answer to the nearest 10°. (3)

- 1.3.5 Calculate Tandeka's income if she sold all 48 scones. (2)
- 1.3.6 Calculate how many scones Tandeka must sell in order to recover her costs of R36,00. (2)
- 1.4 James works at a car-wash. He earns a basic salary of R30,00 per day plus an additional R5,00 for every car that he washes.
- On Monday he washed three white, one blue and two red cars.
- 1.4.1 Calculate how much he earned on Monday. (3)
- 1.4.2 Determine the probability that the car he washed first on Monday was a blue car. (2)
- [30]**

**QUESTION 2**

2.1 The graph below shows Nabeelah's progress during a sponsored walk.

**Sponsored Walk**

Use the graph to answer the following questions.

2.1.1 What was the total distance of the sponsored walk? (1)

2.1.2 How many minutes did it take Nabeelah to do the following?

(a) Reach point A (1)

(b) Cover 10 km (2)

(c) Cover 15 km (2)

2.1.3 Calculate the time (in hours) that Nabeelah took to complete the race. Round off the answer to ONE decimal place. (3)

2.1.4 Determine Nabeelah's average walking speed in km/min.

Use the formula:  $\text{Average speed} = \frac{\text{distance}}{\text{time}}$  (3)

2.1.5 Nabeelah completed the walk in 200 minutes. The winner completed the walk in 80% of Nabeelah's time.

Calculate the time taken by the winner to complete the walk. (2)

2.2 Calculate:

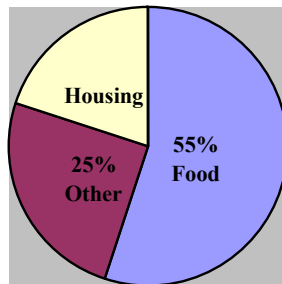
2.2.1 The circumference of a circular flower bed having a radius of 12 m.  
Use the formula:  $C = 2\pi r$ , where  $\pi = 3,14$  (2)

2.2.2 The area of a circular flower bed having a radius of 10 m.  
Use the formula:  $A = \pi r^2$ , where  $\pi = 3,14$  (3)

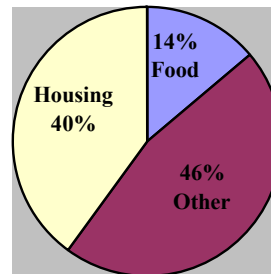
2.2.3 The mass (in kg) of fertiliser needed for a circular flower bed having an area of  $252 \text{ m}^2$  if  $6,3 \text{ m}^2$  of the garden can be covered by 1 kg of fertiliser. (3)

2.3 The percentages of the monthly income of households in two income groups that were spent on food, housing and other expenses are represented in the two pie charts below.

**Spending by Group 1**  
Average monthly income of R3 000



**Spending by Group 2**  
Average monthly income of R20 000



2.3.1 Write down the average monthly income of each group. (2)

2.3.2 Calculate the percentage that was spent on housing by Group 1. (2)

2.3.3 Calculate the actual amount spent monthly on housing by those in Group 2, based on the average monthly income. (2)

2.3.4 Give examples of TWO types of expenses that could be considered as 'other' expenses. (2)

**[30]**

**QUESTION 3**

In order to earn pocket money, Andile helps her father in his computer business every Saturday for six hours. She starts work at 07:30 and her father agreed to pay her R8,50 per hour.

Andile saves some of her earnings each Saturday for an outing to the movies with four friends.

Her budget for this outing is listed below:

5 return bus tickets to the movies cost R55,00.

5 movie tickets cost R150,00.

4 small snack packs and 1 large snack pack cost R138,00.

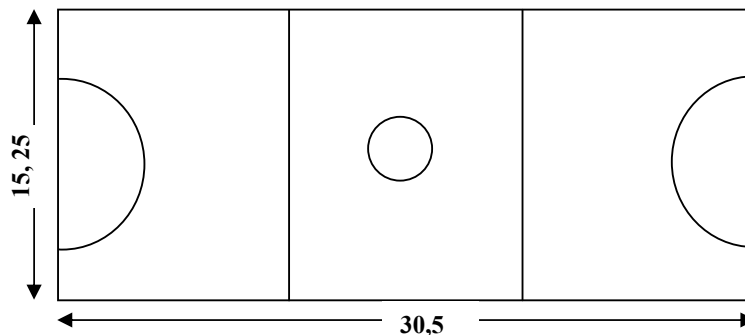
- 3.1 At what time does she finish work? (2)
- 3.2 Calculate how much she earns each Saturday? (2)
- 3.3 Calculate her total budgeted cost for the outing. (2)
- 3.4 What is the cost per person of a return bus ticket? (2)
- 3.5 One of Andile's friends has a movie membership card which allows her to receive a 10 % discount per ticket.
- What amount will Andile save on the cost of the 5 movie tickets if she uses this card to buy the tickets? (2)
- 3.6 What amount will she save on transport costs if her father offers to drive them back home after the movies? (2)
- 3.7 The cost of one small snack pack is R27,00. Calculate the cost of a large snack pack. (3)
- 3.8 A large snack pack consists of a choice of sweets (either Tumbles or Whispers or Smarties), 1 large box of popcorn and a choice of soft drink (either Fanta or Coke).
- What is the probability of Andile choosing the following?
- 3.8.1 Smarties as one of the sweets (2)
- 3.8.2 A milkshake as a drink (2)

**[19]**

**QUESTION 4**

Netball is a game played between two teams with seven players on each team. The rectangular netball court is divided into three equal sections with a centre starting circle and two semi-circles at each end marking out the goal-shooting areas, as shown in the layout plan below.

The measurements on the diagram (not drawn to scale) are given in metres.



Star High School decides to build a grass netball court at their school and contracts Netball Incorporated to build the court.

- 4.1 Calculate the area of the netball court in  $\text{m}^2$ .  
Use the formula: **Area of rectangle = Length  $\times$  Breadth** (2)
- 4.2 The cost per goal net is R24,80. Calculate the cost of TWO goal nets. (2)
- 4.3 Lines will be painted on the netball court using grass paint.  
A 1  $\ell$  tin of grass paint covers a surface area of  $1,5 \text{ m}^2$  and a 2  $\ell$  tin of grass paint covers a surface area of  $3\text{m}^2$ .  
Calculate the surface area that a 5  $\ell$  tin of grass paint can cover. (2)
- 4.4 If it takes two workers one hour to paint the lines on the netball court, how many workers would be needed to complete the task in half the time? (2)
- 4.5 An amount of R11 000 was needed to build the netball court. The school had to take a loan from the local bank at a simple interest rate of 17% per annum that would be repaid over a period of five years.  
Calculate the amount of interest that the school would have to pay on the loan, using the following formula:  **$S.I. = P \times n \times i$**  where  **$S.I.$**  = simple interest  
 **$P$**  = the initial amount  
 **$n$**  = time period  
 **$i$**  = interest rate (3)

**[11]**



**QUESTION 5**

Mr Naidoo has been offered a promotion and has to relocate from Cape Town to Johannesburg.

Mr Naidoo obtained the following data on rainfall in Cape Town and Johannesburg to compare the climates.

**TABLE 1: Rainfall in Cape Town and Johannesburg in 2006**


MONTHS	CAPE TOWN			JOHANNESBURG	
	Monthly rainfall (in mm)	Number of rainy days		Monthly rainfall (in mm)	Number of rainy days
January	15	6		125	16
February	17	5		90	11
March	20	5		91	12
April	41	8		54	9
May	69	11		13	3
June	93	13		9	2
July	82	12		4	1
August	77	14		6	2
September	40	10		27	4
October	30	9		72	10
November	14	5		117	15
December	17	6		105	15
<b>TOTAL</b>	<b>515</b>	<b>104</b>		<b>713</b>	<b>100</b>

[Source: <http://www.weathersa.co.za>]

5.1 Answer the following questions:

- 5.1.1 Which city has the higher total rainfall? (1)
- 5.1.2 Calculate the range in the monthly rainfall for Johannesburg. (3)
- 5.1.3 In South Africa the summer months are November, December and January. Which of the two cities has mainly summer rainfall? (1)
- 5.1.4 In which month(s) is the rainfall in Cape Town more than 80 mm? (2)
- 5.1.5 What trend do you see in the monthly rainfall in Johannesburg from January to April? (2)
- 5.1.6 Calculate the average number of rainy days per month in Cape Town. Give the answer correct to the nearest whole number. (3)

- 5.2 The family will travel by car from Cape Town to their new home in Johannesburg. A map of South Africa, given in ANNEXURE A, shows the main routes linking different towns and cities in South Africa.

The numbers on the map indicate the route. Example:  on the map is the N1 route.

The distance table showing the shortest distance between some of the towns in South Africa is also given in ANNEXURE A.

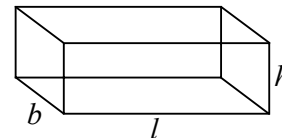
Use the map or the distance table to answer the following questions:

- 5.2.1 Write down the grid reference for Cape Town. (1)
- 5.2.2 Name TWO towns or cities on the N1 route linking Cape Town and Johannesburg. (2)
- 5.2.3 In which general direction would the family be travelling from Cape Town to Johannesburg? (1)
- 5.2.4 The straight line distance between Cape Town and Johannesburg on the map is 80 mm. Use the scale 1:16 000 000 to determine this distance in kilometres. (3)
- 5.2.5 The family has the option of travelling to Johannesburg via Kimberley or Bloemfontein.  
Name the routes they would follow to travel via Kimberley? (2)
- 5.2.6 State the relative position of Kimberley with respect to Bloemfontein on the map. (1)

[22]

**QUESTION 6**

Most people in the Umgeni River catchment area have no direct access to potable (drinking) water. It was decided by the district authorities that every household should be supplied with a rectangular stainless steel tank with a volume of  $2\,000\,000\text{ cm}^3$  in which to catch rain water.



The following table shows the dimensions of four different tanks, each one having a volume of  $2\,000\,000\text{ cm}^3$ .

**TABLE 2: Dimensions of tanks with a volume of  $2\,000\,000\text{ cm}^3$**

Tank type	Length in cm	Breadth in cm	Height in cm	Surface area in $\text{cm}^2$
A	160	100	125	97 000
B	128	125	125	95 250
C	200	100	100	100 000
D	160	156,25	80	

In this question the following could be used:

$$\text{Area of rectangle} = l \times b$$

$$\text{Surface area of a right rectangular prism} = 2 \times [l \times b + l \times h + h \times b]$$

$$\text{Volume of a right rectangular prism} = l \times b \times h$$

where  $l$  = length       $b$  = breadth      and       $h$  = height

- 6.1 Write down the dimensions of the tank with the smallest surface area. (2)
- 6.2 Calculate:
- 6.2.1 The area of the base of tank A in  $\text{cm}^2$  (3)
- 6.2.2 The total surface area of tank D in  $\text{cm}^2$  (4)
- 6.3 A supplier is prepared to construct water tanks at a cost of 1,2 cents per  $\text{cm}^2$ .  
Calculate the cost (in rand) of constructing water tank B. (3)

[12]

**QUESTION 7**

The matriculants of Malendela High are planning a matric farewell function and have a choice between their school hall or the Central Hotel as a venue.

If their school hall is used, the caterers will provide the food and table decorations as well as the music, at a cost of R110 per person.

**TABLE 3: Cost of using the school hall**

Number of tickets sold	0	10	25	40	80	100
Cost in rand	0	1 100	2 750	4 400	8 800	11 000

The Central Hotel quotes a basic cost of R2 400 which covers the cost of the music and decorations. An additional charge of R50 per person for food will be levied.

**TABLE 4: Cost of using the Central Hotel**

Number of tickets sold	0	10	20	40	50	100
Cost in rand	2 400	2 900	3 400	4 400	4 900	7 400

7.1 Use TABLE 3 and TABLE 4 to answer the following questions:

7.1.1 Determine the total cost if 50 tickets are sold for the function in their school hall. (3)

7.1.2 Write down the following:

(a) The number of tickets sold when the cost for the two venues is the same (2)

(b) The corresponding cost (1)

7.2 The total cost of hiring the Central Hotel is given by the following formula:

$$\text{Total cost} = \text{R } 2\,400 + (\text{number of tickets} \times \text{R}50)$$

Calculate the number of tickets if the cost is R8 400. (3)

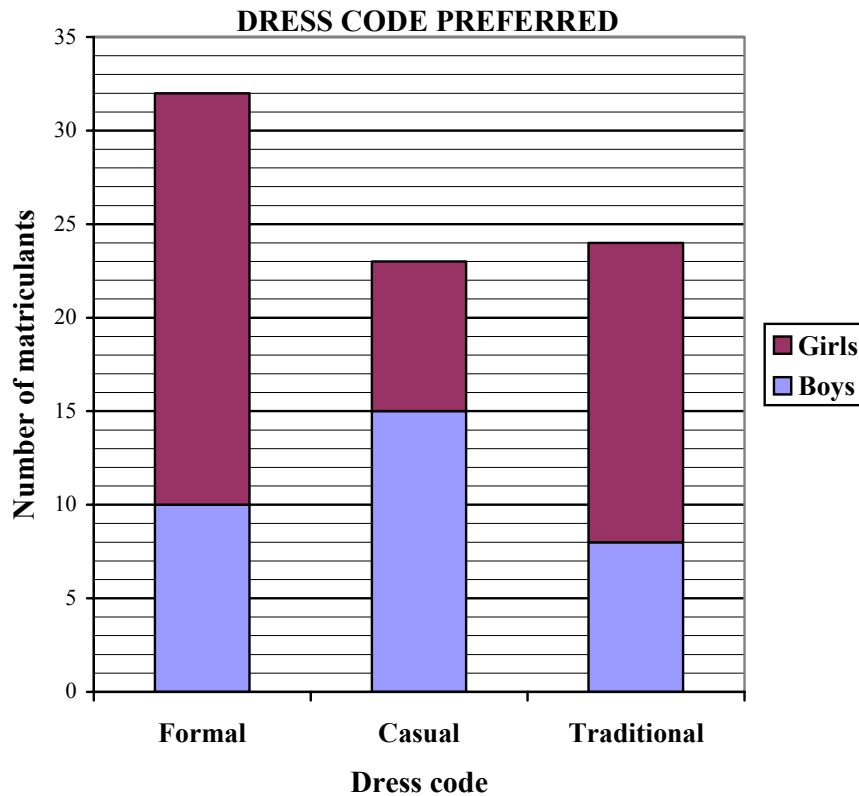
7.3 Use the grid provided on ANNEXURE B to draw the following:

7.3.1 A line graph using the data in TABLE 3. Clearly label the graph. (4)

7.3.2 A line graph using the data in TABLE 4. Clearly label the graph. (4)

- 7.4 The matriculants also need to decide on the dress code for the function. They conducted a survey amongst themselves to find out which is the preferred dress code.

The results of the survey were illustrated on a compound bar graph which is shown below.



- 7.4.1 Which dress code was found to be the least popular:
- (a) amongst the boys? (1)
- (b) overall? (1)
- 7.4.2 Which dress code was most popular amongst the girls? (1)
- 7.4.3 How many boys preferred traditional dress? (1)
- 7.4.4 How many girls preferred casual dress? (2)
- 7.4.5 Calculate how many matriculants responded to the survey. (3)

**[26]**

**TOTAL: 150**



NAME/EXAMINATION NUMBER: .....

**ANNEXURE B**

**QUESTION 7.3.1 AND QUESTION 7.3.2**

**COST OF USING THE SCHOOL HALL AND THE CENTRAL HOTEL**

