education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

MLIT.1

MATHEMATICAL LITERACY P1

NOVEMBER 2009

MARKS: 150

TIME: 3 hours

This question paper consists of 14 pages and 4 annexures.

MORNING SESSION

INSTRUCTIONS AND INFORMATION

1.   This question paper consists of SEVEN questions. Answer ALL the questions.

2.   Parts of QUESTIONS 3, 4 and 6 must be answered on the attached ANNEXURES. Write your examination number and centre number in the spaces provided on the annexures and hand in the annexures with your ANSWER BOOK.

3.   Number the answers correctly according to the numbering system used in this question paper.

4.   Start EACH question on a NEW page.

5.   An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.

6.   ALL the calculations must be clearly shown.

7.   ALL the final answers must be rounded off to TWO decimal places, unless stated otherwise.

8.   Units of measurement must be indicated where applicable.

9.   Write neatly and legibly.

QUESTION 1

1.1   1.1.1   Simplify the ratio of 464 **:** 128   (1)

         1.1.2   Write $\dfrac{379}{250}$ as a decimal fraction.   (2)

         1.1.3   Simplify (show ALL calculations): $\sqrt{49}\ +\ \dfrac{1}{3}(71-14)$ (3)

         1.1.4   Convert 1,25 ℓ to mℓ if 1 ℓ = 1 000 mℓ.   (2)

         1.1.5   Increase 1 255 kg by 16%.   (3)

         1.1.6   Convert $1 215,00 to rand. Use the exchange rate $1 = R10,52.   (2)

1.2   1.2.1   Calculate the price of one 500 g brick of margarine if a box containing
                    thirty 500 g bricks of margarine costs R399,00.   (2)

         1.2.2   If 18 May 2009 is on a Monday, what is the probability that 19 May 2009
                    is on a Tuesday?   (2)

         1.2.3   Convert 225 °C to °F using the following formula:

                    $$\textbf{Temperature in °F} = \dfrac{\textbf{9}}{\textbf{5}} \times \textbf{(Temperature in °C)} + \textbf{32°}$$

                    Round the answer off to the nearest 5°.   (3)

1.3 | Naledi intends selling oranges at her school market day. She buys one dozen oranges for R9,00. She decides to sell the oranges in packets of six at R6,00 per packet. |

         Calculate:

         1.3.1   The cost price of ONE orange   (2)

         1.3.2   The profit she will make per dozen oranges sold   (2)

         1.3.3   How much it would cost Naledi to buy 108 oranges   (2)

                                                                                                            [26]

QUESTION 2

2.1   Ms James, an educator at Achievers' High, is responsible for preparing the prize-giving certificates for the annual academic awards day.

The certificate is rectangular in shape with a uniform 2,5 cm shaded border, as shown in the diagram below.
The outside measurement of the certificate is 21 cm by 29,5 cm.

A gold or silver circle with a radius of 5 cm indicating the performance level of the learner is placed on the certificate.

2.1.1   Write down the length of the diameter of the circle.   (1)

2.1.2   Write down the length of the unshaded part of the certificate.   (2)

2.1.3   Calculate the area of the circle.
Use the formula: **Area = πr^2,** where π = 3,14 and r = radius.   (3)

2.1.4   Calculate the perimeter of the outside of the certificate.
Use the formula: **Perimeter = 2 (l + b),** where l = length and b = breadth.   (2)

2.1.5   Determine the area of the certificate.
Use the formula: **Area = length × breadth**   (2)

2.2   315 guests and 1 050 learners attended a school function. The guests were served tea, while the learners received fruit juice.

    2.2.1   Write down the ratio of the number of guests who attended the function to the number of learners. Give the ratio in the simplest form.   (2)

    2.2.2   The school has found that for every 2 guests that drank rooibos tea, there were 5 guests that drank regular tea.

        Calculate the number of guests at the function who drank rooibos tea.   (2)

    2.2.3   The concentrated fruit juice that was bought for the function comes in 5 ℓ bottles and is diluted in the ratio of 1 part juice to 4 parts water.

        How many litres of diluted fruit juice can be made from one 5 ℓ bottle of concentrated fruit juice?   (2)

2.3 | According to a report published by StatsSA:
88 144 motor vehicles were stolen in South Africa during the period 2004/2005.
80 226 motor vehicles were stolen in South Africa during the period 2007/2008.

The four provinces with the largest number of motor vehicle thefts were the Eastern Cape, Gauteng, KwaZulu-Natal and the Western Cape. This information is illustrated in the pie charts below:

MOTOR VEHICLES STOLEN IN SOUTH AFRICA DURING 2004/2005

E 14%
A 6%
D 15%
B 47%
C 18%
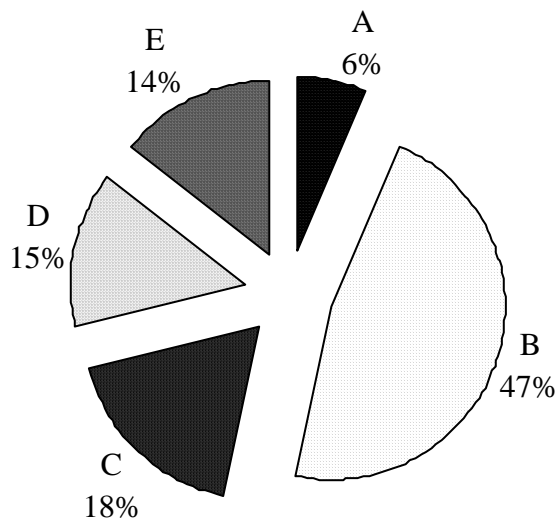
MOTOR VEHICLES STOLEN IN SOUTH AFRICA DURING 2007/2008

E 13%
A 6%
D
B 50%
C 15%
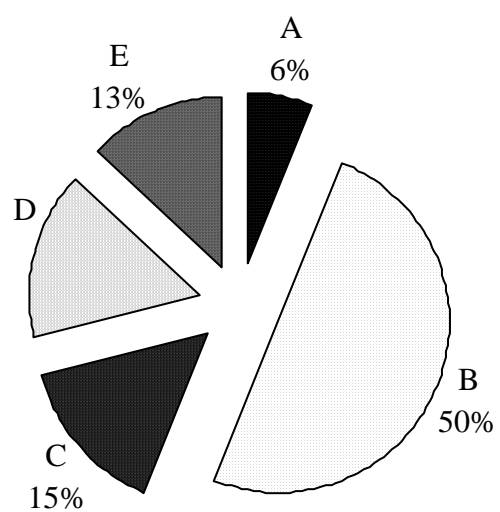
| **KEY**	
A	Eastern Cape
B	Gauteng
C	KwaZulu-Natal
D	Western Cape
E	Other provinces

[Source: www.statssa.gov.za]

Use the pie charts to answer the following questions:

2.3.1   In which province was the same percentage of motor vehicles stolen during both periods?   (1)

2.3.2   Determine the percentage of motor vehicles stolen in the Western Cape during the period 2007/2008.   (2)

2.3.3   Which province showed the largest percentage increase in motor vehicles stolen from 2004/2005 to 2007/2008?   (1)

2.3.4   Calculate the total number of vehicles that were stolen in KwaZulu-Natal during the period 2004/2005. Give the answer rounded off to the nearest whole number.   (4)

2.4   The graphs showing the income and expenses of Thembi's toy-making business is given below:

THEMBI'S INCOME AND EXPENSES
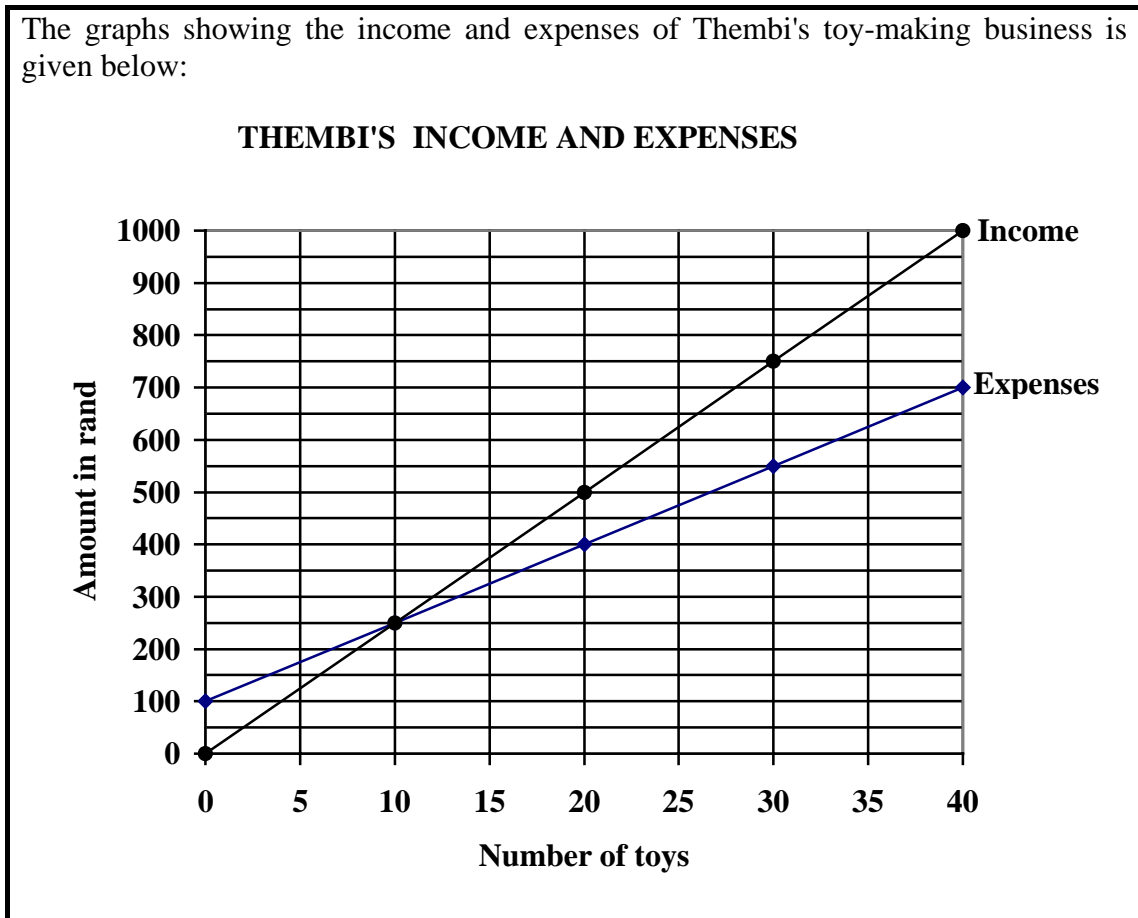
2.4.1   Use the graph to answer the following questions:

   (a)   What is Thembi's income if she sells thirty toys?   (1)

   (b)   Will Thembi make a profit or a loss if she only makes five toys and sells all of them?   (1)

   (c)   How many toys must Thembi make and sell to break even?   (2)

2.4.2   Thembi makes 50 toys. Her expenses are R850 and she makes a profit of R400 when she sells all of them.

   Calculate her percentage profit using the formula:

   $$\textbf{Percentage profit} = \frac{\textbf{profit}}{\textbf{expenses}} \times \textbf{100\%}$$

   Give the answer rounded off to ONE decimal place.   (3)

   [31]

QUESTION 3

3.1 | 52 learners wrote the Grade 11 Geography examination. The ages (in years) of a sample of 15 of these learners are as follows:

   16   16   16   17   17   17   17   17   18   18   19   19   19   20   22

3.1.1 What age in the sample is the **mode**? (1)

3.1.2 Determine the **median** age of the sample of learners. (1)

3.1.3 Calculate the **mean** age of the sample of learners. (4)

3.2 | The Geography examination marks, expressed as a percentage, of the 52 learners were recorded as follows:

   54   67   83   34   49   56   78   89   90   79   20   49   50
   70   89   57   27   48   56   65   70   22   98   89   29   56
   47   95   49   67   89   48   46   89   63   75   45   50   58
   73   67   45   76   70   38   46   37   47   36   38   99   100

3.2.1 Determine the:

(a) Lowest percentage mark (1)

(b) Highest percentage mark (1)

3.2.2 The NCS (National Curriculum Statement) requires that results be expressed in terms of seven performance levels rather than percentages. As a result, the Geography teacher needs to work out the number of learners per performance level.

Complete the frequency table on ANNEXURE A (attached) to work out the number of learners per performance level. (7)

3.3 | Examination rules specify that each learner is to be given a seating area in the examination venue of at least 1,6 m^2.

3.3.1 What is the minimum total area that is required for 52 learners sitting for an examination? (2)

3.3.2 Calculate the maximum number of learners that can be accommodated in an examination venue having an area of 96 m^2 if the examination rules are adhered to. (2)

[19]

QUESTION 4

4.1 | Mr Lebelo and his neighbour Mr Goldman live 120 km from the town in which they both work. Every working day they travel separately, on the same road, to the town where Mr Lebelo teaches at the University of Technology and Mr Goldman works for the municipality. Every morning Mr Lebelo leaves home 15 minutes after Mr Goldman leaves home. The two of them are considering forming a lift club.

TABLE 1: Distance travelled against time

Time	07:00	07:15	07:30	07:45	08:00	08:15	08:30	08:45	09:00
Distance in km travelled by Mr Goldman	0	15	30	45	60	75	90	105	120
Distance in km travelled by Mr Lebelo	0	0	20	40	60	80	100	120	120

4.1.1 How far had Mr Goldman travelled after $1\frac{1}{2}$ hours? (2)

4.1.2 At what time does Mr Lebelo arrive at work every day? (2)

4.1.3 Use the formula: **Average speed = $\dfrac{\textbf{distance}}{\textbf{time}}$** to answer the following:

(a) Mr Goldman travels 120 km in two hours. What is his average speed? (2)

(b) Mr Lebelo travels at an average speed of 80 km/h. Calculate the distance he covers in 72 minutes. (3)

4.1.4 The graph showing Mr Goldman's distance travelled against time is shown on the grid provided on ANNEXURE B. On the same grid, draw a graph showing Mr Lebelo's distance travelled against time. Label the graph "Mr Lebelo". (4)

4.1.5 Mr Lebelo eventually catches up with Mr Goldman on the road.
Use the table or the graph to answer the following questions:

(a) After how many hours does Mr Lebelo catch up with Mr Goldman? (1)

(b) What distance has Mr Goldman travelled when Mr Lebelo catches up with him? (2)

(c) What is the distance between Mr Lebelo and Mr Goldman after Mr Goldman has travelled exactly 90 minutes? (4)

4.2 Mr Goldman travels the 120 km distance ten times per week. Suppose petrol costs R8,23 a litre and his car uses 8 ℓ of petrol to cover 120 km. What is the total cost of the petrol used by Mr Goldman to travel by car to and from work each week? (3)

[23]

QUESTION 5

5.1 Mrs Gumede is the long jump coach at her school. She has two good long jump athletes, Siyabonga and Charles. She wants to determine which one of the two is better. The following table shows a record of their longest jumps over the last eight practice sessions:

TABLE 2: Practice jumps in metres

Charles's distances	7,81	7,51	8,22	7,71	8,05	7,64	7,51	7,91
Siyabonga's distances	7,23	7,51	7,54	7,64	7,82	7,93	7,95	8,02

5.1.1 Arrange the lengths of Charles's practice jumps in **ascending** order. (2)

5.1.2 Write down the **mode** of distances jumped by Charles. (1)

5.1.3 Calculate the **range** of the distances jumped by Siyabonga. (2)

5.1.4 Express the length of Siyabonga's shortest jump in centimetres. (3)
(1 m = 100 cm)

5.1.5 Calculate the **median** length of Siyabonga's distances. (2)

5.1.6 Which of the two long jump athletes had more practice jumps that were further than 7,55 m? (2)

5.2   The rectangular long jump pit at the school is 2,75 m wide and 9 m long and is filled
        with sand.
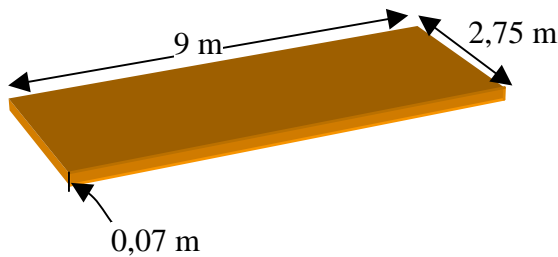
        Calculate the volume of sand needed to fill the long jump pit to a depth of 0,07 m.
        Give the answer rounded off to THREE decimal places.
        Use the formula: **Volume = length × breadth × height**   (3)

5.3   On 18 October 1968, Bob Beamon set the world long jump record when he jumped a
        distance of 8,90 m. This record was only broken on 30 August 1991. After how many
        years (rounded off to the nearest year) was Bob Beamon's record broken?   (3)
                                                                                        [18]

QUESTION 6

6.1 One of the key functions of the Department of Social Development is to provide social assistance to people in need. The following table shows both the number and the percentage of beneficiaries allocated to each type of grant during 2005 and 2007:

TABLE 3: Allocation of grants during 2005 and 2007

TYPE OF GRANT	2005		2007	
	Number of beneficiaries	%	Number of beneficiaries	%
Old-age pensioners	2 097 723	22,3	2 190 686	18,2
Child support	5 662 911	60,2	7 908 138	65,7
Disability	1 307 549	**A**	1 420 335	11,8
Other	338 646	3,6	517 580	4,3
TOTAL	**9 406 829**	**100**	**B**	**100**

6.1.1 What percentage of the grants allocated during 2007 were for old-age pensioners? (1)

6.1.2 Calculate the difference between the number of beneficiaries receiving child support grants during 2005 and 2007. (3)

6.1.3 Calculate the following missing values from the table:

(a) A (2)

(b) B (2)

6.1.4 The percentage of the total number of beneficiaries for each type of grant during 2005 is represented as a bar graph on ANNEXURE C (attached).

Complete the graph on ANNEXURE C by adding in bars to represent the percentage of allocations for the different types of grants during 2007. (4)

6.2 | Mrs Maela Choeu is an old-age pensioner. She receives a social pension of R960,00 per month.

The following are her monthly expenses:

- R15,45 for her pensioner bus ticket for 10 trips
- R24,50 for her hospital visit
- R60,00 for prepaid electricity
- R30,00 for her funeral policy
- R40,00 for her church contribution
- R86,40 for rental of her accommodation
- Balance for food and other living expenses

6.2.1 What fraction (in the simplest form) of her pension amount does Mrs Choeu pay for her funeral policy? (3)

6.2.2 Calculate the balance that Mrs Choeu has left monthly for food and other living expenses. (3)

[18]

QUESTION 7

7.1

Mr Strydom is an educator at Kokstad College. He organised a triangular sports tournament between Kokstad College, St Patrick's College and an out-of-town school, Hans Moore High. The tournament was held at the Kokstad Rugby Club. The tournament consisted of girls' netball and boys' rugby games and each school played the other school twice. Schools were awarded 3 points for a win, 1 point for a draw and 0 points if they lost the game. The following table shows the results at the end of the tournament:

TABLE 4: The results of the netball and rugby tournament

	NETBALL LOG					RUGBY LOG				
	P	W	D	L	TOTAL POINTS	P	W	D	L	TOTAL POINTS
Kokstad College	4	2	1	1	**A**	4	1	2	1	**5**
Hans Moore High	4	1	2	1	**5**	4	0	1	3	**1**
St Patrick's College	4	1	1	2	**4**	4	**B**	1	0	**10**

Key: **P** = number of games played, **W** = number of games won,
D = number of games drawn, **L** = number of games lost

7.1.1 Given the formula:

Total points scored = (number of wins) $\times$ 3 + (number of draws)

Calculate from the table the following missing values:

(a) A   (2)

(b) B   (3)

7.1.2 Which school won the rugby tournament?   (2)

7.2

Mr Strydom used a map to assist out-of-town visitors to find their way to the tournament venue. A copy of the map is given on ANNEXURE D (attached).

7.2.1 Write down the grid reference of St Patrick's College.   (1)

7.2.2 Describe the shortest route from Kokstad College, whose entrance is in Brownlee Street, to Kokstad Rugby Club, whose entrance is in Barclay Road.   (2)

7.2.3 In which general direction does Hope Street run?   (1)

7.2.4 The distance on the map (as the crow flies) between the entrance to Kokstad Rugby Club and St Patrick's College in Hope Street is 5 cm. The scale on the map is 1:20 000. Use the scale to calculate the actual distance (as the crow flies) between Kokstad Rugby Club and St Patrick's College in metres.   (4)

[15]

TOTAL: 150

EXAMINATION NUMBER:

CENTRE NUMBER:

ANNEXURE A

QUESTION 3.2.2

FREQUENCY TABLE: LEARNER PERFORMANCE IN GEOGRAPHY			
PERFORMANCE LEVEL	**PERCENTAGE RANGE**	**TALLY**	**FREQUENCY**
1	0 to 29		
2	30 to 39		
3	40 to 49		
4	50 to 59		
5	60 to 69		
6	70 to 79		
7	80 to 100		

NB.: PLEASE HAND IN TOGETHER WITH YOUR ANSWER BOOK.

WESTERN CAPE

EXAMINATION NUMBER:

CENTRE NUMBER:

ANNEXURE B

QUESTION 4.1.4

DISTANCE TRAVELLED AGAINST TIME

Mr Goldman
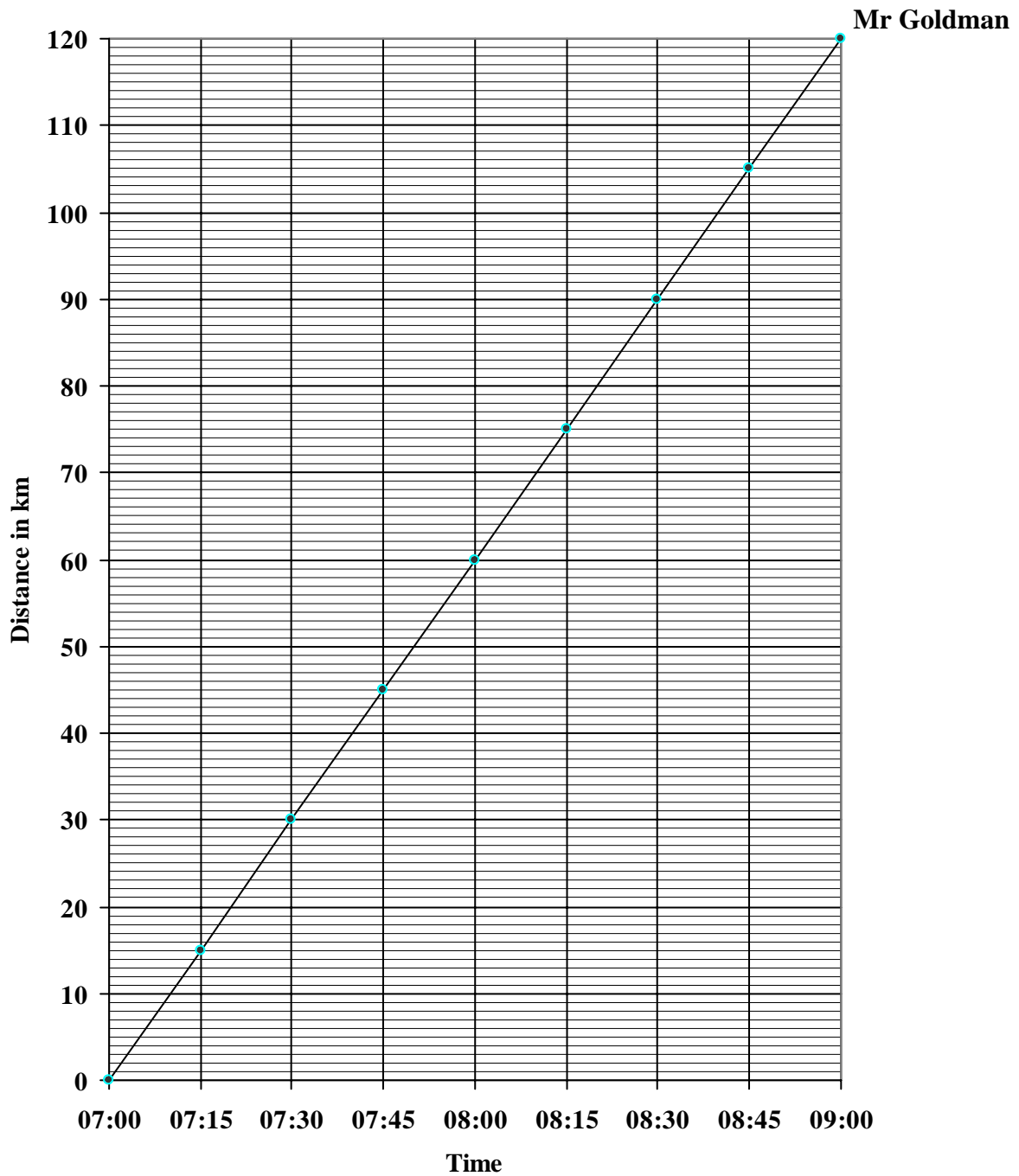
EXAMINATION NUMBER:

CENTRE NUMBER:

ANNEXURE C

QUESTION 6.1.4

TYPE OF GRANT AS A PERCENTAGE OF TOTAL GRANTS
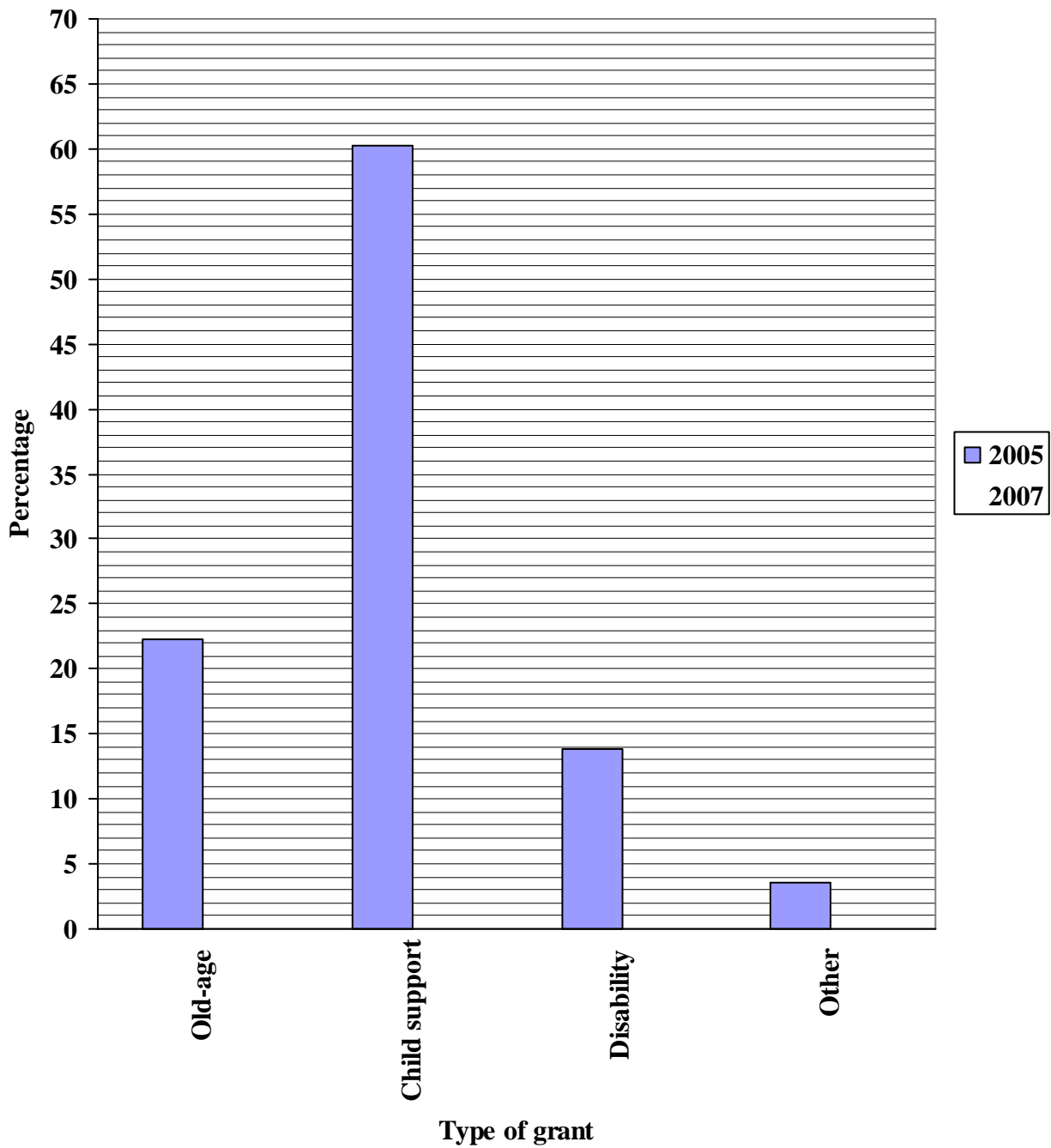
ANNEXURE D

QUESTION 7.2

MAP OF PART OF KOKSTAD IN THE EASTERN CAPE