**MLIT**



# ISEBE LEMFUNDO LEMPUMA KOLONI

EASTERN CAPE EDUCATION DEPARTMENT

OOS-KAAP ONDERWYSDEPARTEMENT

IIMVIWO ZEBANGA LOKUGQIBELA

NATIONAL SENIOR CERTIFICATE EXAMINATIONS

NASIONALE SENIOR SERTIFIKAAT-EKSAMEN

**SEPTEMBER 2009**

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| **MATHEMATICAL LITERACY – FIRST PAPER** |

##### IXESHA: 3 iiyure TIME: 3 hours TYD: 3 uur

**AMANQAKU: 150 MARKS: 150 PUNTE: 150**

*Write on the cover of your answer book, after the word “Subject” –*

**MATHEMATICAL LITERACY – FIRST PAPER**

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This question paper consists of 14 pages + 2-page annexure.

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## INSTRUCTIONS AND INFORMATION

|  |  |
| --- | --- |
| 1. | This question paper consists of SEVEN questions. Answer ALL the questions. |
|  |  |
| 2. | Number the answers correctly according to the numbering system used in this question paper. |
|  |  |
| 3. | QUESTION 2.3 must be answered on ANNEXURE A. |
|  |  |
| 4. | QUESTIONS 5.1.1 and 5.1.2 must be answered on ANNEXURES B and C respectively which are attached at the end of this question paper. Write your name/examination number in the spaces provided and hand in the annexure with the ANSWER BOOK. |
|  |  |
| 5. | An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise. |
|  |  |
| 6. | ALL the calculations and steps must be shown clearly. |
|  |  |
| 7. | ALL the final answers must be rounded off to TWO decimal places, unless stated otherwise. Do NOT round off until you get to the final answer. |
|  |  |
| 8. | Start EACH question on a NEW page. |
|  |  |
| 9. | Write neatly and legibly. |

**SECTION A**

**QUESTION 1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1.1 | Calculate the following. | | |  |
|  |  | | |  |
|  | 1.1.1 | 28,2 + 2,3 x 4 – 4 | | (2) |
|  |  |  | |  |
|  | 1.1.2 | 2,1(5,2 + 0,01) | | (2) |
|  |  |  | |  |
|  | 1.1.3 | 28% of 560 m | | (2) |
|  |  |  | |  |
|  | 1.1.4 | + | | (2) |
|  |  |  | |  |
| 1.2 | 1.2.1 | Write 36% as common fraction in its simplest form. | | (2) |
|  |  |  | |  |
|  | 1.2.2 | Write as a percentage | | (2) |
|  |  |  | |  |
|  | 1.2.3 | Increase R490,00 by 32% | | (3) |
|  |  |  | |  |
|  | 1.2.4 | Simplify 14 : 126 (Leave your answer in the smallest integer) | | (1) |
|  |  |  | |  |
| 1.3 | An administration worker earns R24 323,04 per year. He works 21 days per month. | | |  |
|  |  | |  |  |
|  | 1.3.1 | | How much does he earn a month? | (2) |
|  |  | |  |  |
|  | 1.3.2 | | What is his wage per day? | (2) |
|  |  | |  |  |
| 1.4 | Sunhill High School receives a cash donation of £5 200 from the United Kingdom. If 1 UK£ = R12,96 how much will the school receive from the bank when exchanging the donation for rands? | | | (2) |
|  |  |  | |  |
| 1.5 | Thabo needs a piece of wood that is 1,2 m long. | | |  |
|  |  |  | |  |
|  | 1.5.1 | The hardware shop shows the length in mm. How long must the board be in mm? (**1 m = 1 000 mm**) | | (2) |
|  |  |  | |  |
|  | 1.5.2 | He paid R102,60 for the wood. What is the cost per metre for the wood? | | (2) |
|  |  |  | | **[26]** |
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| **QUESTION 2** | | | |  |
|  |  | |  |  |
| 2.1 | The graph below shows the distance travelled by two trains, travelling in opposite directions. The train drivers for both trains come on duty at  06:30 am and use one minute to warm up the diesel engine of their trains. They both leave at 06:31 am.   * Train 1 travels from Cambridge to East London * Train 2 travels from East London to Mdantsane | | |  |
|  |  | |  |  |
| |  | | --- | | **Distance in kilometers**  **Train 2**  Cambridge  East-London  Frere  Dawn  Mdantsane  6  **Train 1**  6,8    **Time (minutes)** | | | | | |
|  | |  | |  |
|  | | 2.1.1 | What distance does train 1 travel between Cambridge and East London? | (1) |
|  | |  |  |  |
|  | | 2.1.2 | What distance does train 2 travel between Dawn and Frere? | (2) |
|  | |  |  |  |
|  | | 2.1.3 | If both trains leave at 06:31 in the morning, at what time will they pass each other? Write the exact time by giving the hour, minutes and seconds. | (3) |
|  | |  |  |  |
|  | | 2.1.4 | Why do you think train 2 stop at Frere and Dawn? | (1) |
|  | |  |  |  |
|  | | 2.1.5 | How far does train 2 travel in total? | (1) |
|  | |  |  |  |
|  | | 2.1.6 | How many minutes does it take for train 2 to travel from East London to Dawn? | (2) |
|  | |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2.1.7 | Calculate the average speed of train 2, in km/h (km.h-1). Leave your answer as a whole number.  Use the following formula: **Average speed =** | | (3) |
|  |  |  | |  |
| 2.2 | In the 2002 Commonwealth Games the first six countries won a total of 219 gold medals. The following pie chart depicts the gold medals won by each of the first six countries. Three are indicated by angles and three are given as percentages. | | |  |
|  |  | |  |  |
|  | Pie Chart indicating gold medals won at the 2002 Commonwealth Games | | |  |
|  |  |  | |  |
|  | 2.2.1 | How many gold medals did Australia win? | | (3) |
|  |  |  | |  |
|  | 2.2.2 | Calculate the percentage of gold medals that was won by South Africa. | | (3) |
|  |  |  | |  |
|  | 2.2.3 | Calculate the angle for England. | | (3) |
|  |  |  | |  |
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| 2.3 | The table give below indicates the gold, silver and bronze medals won by the first six countries during the Commonwealth Games in 1998. | | |  |
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|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **COUNTRY** | **GOLD** | **SILVER** | **BRONZE** | **TOTAL** | | Australia | 82 | 62 | 62 |  | | England | 54 | 52 |  | 165 | | India |  | 21 | 19 | 72 | | Canada | 31 | 41 | 42 |  | | New Zealand | 11 | 13 | 21 | 45 | | South Africa | 9 |  | 17 | 46 | | | |  |
|  |  | | |  |
|  | Complete the above table on **ANNEXURE A** at the back of the question paper. | | | (5) |
|  |  |  | | **[27]** |
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| **QUESTION 3** | | | |  |
|  | | | |  |
| Mrs Bobby went to a shop and bought the items as shown in the till slip below. Use the slip to answer the questions that follow. | | | |  |
|  |  | |  |  |
|  | MCTEK Shop  You snooze, you lose  Your cashier today is**: Lerato**  Butternut carry bag# R19,99  Baked beans in tomato sauce 410 g R5,49  Nestle ricoffy tin 250 g R21,69  Milk nestlĖ full cream UHT 1ℓ# R7,99  Rooibos teabags 80’s R14,49  Loose banana’s 0,332 kg @ R6,99\kg# R2,35  Brown [onions 0,170 kg@R12,99\kg#](mailto:onions0.170kg@R12.99\kg) R2,21  Items 7 total --------  #non-taxable indicator  bank cards  card number 0774  #2431 2804/004/019 02.05.09 09:39 ac-00 | | |  |
|  |  |  | |  |
|  | 3.1.1 | Give THREE items from the list that is not taxable. | | (3) |
|  |  |  | |  |
|  | 3.1.2 | Calculate the total amount including VAT that Mrs Bobby has to pay. | | (2) |
|  |  |  | |  |
|  | 3.1.3 | Calculate the monetary value Mrs Bobby paid for the  non-taxable items on the till slip. | | (2) |
|  |  |  | |  |
|  | 3.1.4 | How does she pay for these items? | | (1) |
|  |  |  | |  |
|  | 3.1.5 | Is this purchase in the morning, evening or at night? | | (1) |
|  |  |  | |  |

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| **THE BUDGET FOR STENWELL HIGH SCHOOL IS SHOWN BELOW.** | | |  |
|  | | |  |
| 3.2 | **Sources of income**  **Total income** **R846 937,00**   * Transfers from government R668 220,00 * Fundraising activities R54 000,00 * Tuck-shop rental R400,00   Balance brought forward from 2008 ---------------  **Less expenditure ------------**  Sports, arts, culture and HOS R30 000,00  STAFFING(SGB POST) R55 000,00  SECURITY R42 000,00  ***LEARNER DEVELOPMENT***  (farewell function, motivational speaker and awards) R10 000,00  ***STAFF DEVELOPMENT***  (including attending workshops) R5 000,00  AGRICULTURAL, HOSPITALITY, TOURISM R10 000,00  SCHOOL STATIONERY R80 186,40  LEARNING AND TEACHING MATERIAL (LTSM) R300 699,00  ***CASH PAYMENTS***  FOR QUINTILE 1,2,3 SCHOOLS R66 822,00  EDUCATION CONSUMABLES R66 822,00  NON-CONSUMABLES R33 411,00  MAINTENANCE R53 457,60  MUNICIPAL SERVICES (Eskom) R66 822,00  **NET INCOME** **R26 717,00** | |  |
|  | Use the above budget to answer the following questions. | |  |
|  |  |  |  |
|  | 3.2.1 | What was the balance brought forward from 2008? | (2) |
|  |  |  |  |
|  | 3.2.2 | Give TWO examples of school fundraising activities. | (2) |
|  |  |  |  |
|  | 3.2.3 | What is the total expenses in the above budget? | (2) |
|  |  |  |  |
|  | 3.2.4 | Express the maintenance amount as a percentage of the  total income. | (3) |
|  |  |  |  |
|  | 3.2.5 | How much money does this school receive from the Department of Education? | (1) |
|  |  |  |  |
|  | 3.2.6 | This school wants to put white boards in each of its fifteen classrooms. Each board costs R4 500. This school takes a loan of R75 000 from BBV bank. They must pay back the loan in 2 years. How much will they pay back if the interest rate is 11% per annum, compounded annually?  Use the formula **A= P(1+i)n** | (3) |
|  |  |  | **[22]** |

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| **QUESTION 4** | | | | |  |
|  | |  | |  |  |
| A windmill consists of circular blades mounted on a tower as shown in the drawing below, and is used for pumping water from underground. A farmer installs a windmill to pump out water for his cattle. The water drawn is collected in a tank connected to the windmill by a pipe as shown in the figure. | | | | |  |
|  | | | | |  |
| C:\Documents and Settings\Exams\My Documents\My Pictures\Mathslit1.jpg  TANK | | | | |  |
|  |
|  |
|  |  | | |  |  |
| 4.1 | The blades of the windmill is 1,8 m long. What is the circular area that is covered by the windmill when it is turning?  [**Use *π*  = 3,14 and the formula: Surface =*π* r2**] | | | | (3) |
|  |  | | |  |  |
| 4.2 | What is the maximum height of the windmill from the ground? | | | | (2) |
|  |  | | |  |  |
| 4.3 | Five workers took 7 days to build the windmill tower. If the daily wage of  a worker is R85,00 what is the total labour cost to build the windmill? | | | | (2) |
|  |  | | |  |  |
| 4.4 | The total surface area of the tower is 59,5 m2. | | | |  |
|  |  | |  | |  |
|  | 4.4.1 | | A worker can paint 32 m2 in one day. How many workers are needed to complete the painting of the tower in one day? | | (2) |
|  |  | |  | |  |
|  | 4.4.2 | | One litre paint is needed to paint 9 m2. How many litres of paint are needed to paint the tower?  (**Give your answer to the nearest whole number**) | | (3) |
|  |  | |  | |  |
|  | 4.4.3 | | The total cost of paint used is R507,50. What is the cost of 1 litre of paint? | | (2) |
|  |  | |  | |  |
|  |  | |  | |  |

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| --- | --- | --- | --- |
| 4.5 | The cylindrical tank shown in the figure has a diameter of 8 m. The tank can hold at least 100 kilolitres of water. | |  |
|  |  |  |  |
|  | 4.5.1 | Calculate the volume of the tank in **cubic centimetre (cm3)**  Note: **(1 litre = 1 000 cm3)** | (3) |
|  |  |  |  |
|  | 4.5.2 | Use the formula below to find the height of the walls of the tank all around.  **(Use = 3,14. Give your answer to nearest metre)** | (4) |
|  |  |  | **[21]** |
|  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **QUESTION 5** | | | |  | |
|  | | | |  | |
| 5.1 | The aquarium in Port Elizabeth carefully recorded the number of people that visit the aquarium daily for a period of 50 days. The following numbers were recorded by the ticket office. | | |  | |
|  |  | |  |  | |
| |  |  | | --- | --- | | **NUMBER OF CUSTOMERS** | **NUMBER OF DAYS (FREQUENCY)** | | 0 – 9 | 3 | | 10 – 19 | 5 | | 20 – 29 | 5 | | 30 – 39 | 7 | | 40 – 49 | 11 | | 50 – 59 | 14 | | 60 – 69 | 12 | | 70 – 79 | 7 | | 80 – 89 | 5 | | 90 – 99 | 3 |   http://www.hotelrooms.com/image/activities/2382SD2.jpg | | | | | |
|  |  |  | | |  |
|  | 5.1.1 | On the system of axis on **ANNEXURE B** draw a histogram that will display this data. | | | (5) |
|  |  |  | | |  |
|  | 5.1.2 | Join the midpoints of the top of each ‘bar’ drawn on **ANNEXURE B**, with a broken line graph to clearly show the trends in the data. (Draw a frequency polygon). | | | (3) |
|  |  |  | | |  |
| 5.2 | The aquarium often has to call out an electrician when any of the pool pumps are not working. Buddy’s Electrical charges them a call out fee of R400,00 and R240,00 per hour for labour. No labour is charged for time taken less than 1 hour. The aquarium gets the parts donated to them by a local swimming pool company. | | | |  |
|  |  |  | | |  |
|  | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Number of hours | 0 | 1 | 2 | 3 | 4 | 5 | | Labour cost |  | 640 | 880 |  | 1 360 | 1 600 | | | | |  |
|  |  |  | | |  |
|  | 5.2.1 | Buddy’s Electrical comes out and it takes them 30 minutes to fix a faulty pump. What will the labour costs be? | | | (1) |
|  |  |  | | |  |
|  | 5.2.2 | If it takes 3 hours to repair a pump, how much will Buddy’s Electrical bill the aquarium for labour? | | | (3) |
|  |  |  | | |  |
|  | 5.2.3 | How long did Buddy’s Electrical work on a pump if the bill came to R2 900, 00? | | | (3) |
|  |  |  | | |  |
|  | 5.2.4 | Buddy’s Electrical worked on a pump for 340 minutes. How many hours and minutes did it take to do the repairs? | | | (3) |
|  |  |  | | |  |
|  | 5.2.5 | Complete the table above using answers from QUESTIONS 5.2.1 and 5.2.2 and use the table to draw a graph on the system of axes on **ANNEXURE C**. | | | (4) |
|  |  |  | | | **[22]** |

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| **QUESTION 6** | | | |  |
|  |  |  | |  |
| The 2010 world cup is opening many doors of opportunity for local South Africans to be involved in tourism and promote our country. Mr van Tonder and his son decide to start a tour company that will take tourists on guided tours in and around Stellenbosch. The following map shows the area they want to do business in. | | | |  |
|  |  |  | |  |
| http://www.remhoogte.net/Pics/map1.jpg | | | | |
|  |  |  |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| 6.1 | In which grid will you find Delheim wine estate? | | (1) |
|  | |  |  |
| 6.2 | Which national road can be found in A3 on this map? | | (1) |
|  |  |  |  |
| 6.3 | How many wine estates can be seen in C4? | | (1) |
|  |  |  |  |
| 6.4 | If you are travelling on the N1 from Cape Town to Paarl, which exit must you take if you want to go to Le Bonheur in A3? | | (1) |
|  |  |  |  |
| 6.5 | You stop at Tokara Brandy Distillers in C4. If you want to travel to Zorgvliet in C4, in what general direction will you drive? | | (1) |
|  |  |  |  |
| 6.6 | To which town will you travel if you pass Zorgvliet and follow the R310? | | (1) |
|  |  |  |  |
| 6.7 | This map has a scale of 1:50 000. The actual distance on the map from Tokara to Zorgvliet is 25 mm. What is the actual distance in km that you will travel from Tokara to Zorgvliet? **(1 km = 1 000 000 mm)** | | (4) |
|  |  |  |  |
| 6.8 | Mr van Tonder charges each tourist R2,80 per kilometre. If one trip covers a distance of 45 km, what will the cost per tourist be? | | (2) |
|  |  | |  |
| 6.9 | The bus can seat 16 people including Mr van Tonder and his son. What will be their total income from this trip? | | (3) |
|  |  |  | **[15]** |

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| **QUESTION 7** | | |  |
|  |  |  |  |
| 7.1 | Mr Siwatu gave a Mathematical Literacy test to his Grade 12 class of 24 learners. The marks scored out of 100 by the learners in his class, written in no particular order are: | |  |
|  |  |  |  |
|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 46 | 29 | 42 | 51 | 59 | | 3 | 33 | 36 | 52 | 68 | | 69 | 36 | 77 | 57 | 48 | | 12 | 64 | 50 | 3 | 73 | | 26 | 38 | 51 | 3 |  | | |  |
|  |  |  |  |
|  | 7.1.1 | Calculate the **mean** for this class. | (3) |
|  |  |  |  |
|  | 7.1.2 | Arrange the marks in ascending or descending order and calculate the **median** of the class. | (3) |
|  |  |  |  |
|  | 7.1.3 | Calculate the **mode** for this class. | (1) |
|  |  |  |  |
|  | 7.1.4 | Which of the averages that you have calculated above, is not particularly useful to a learner from this class who wants to know how well they performed on the test compared to the rest of the class? | (1) |
|  |  |  |  |

|  |  |  |  |  |
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| 7.2 | The table given below shows the prices of houses that were sold in two areas during the first six months of a certain year. | | |  |
|  |  |  | |  |
|  | |  |  | | --- | --- | | **Area: NU4** | **Area: Berea** | | House 1: R30 000 | House 1: R600 000 | | House 2: R40 000 | House 2: R1 188 000 | | House 3: R43 000 | House 3: R630 000 | | House 4: R75 000 | House 4: R850 000 | | House 5: R60 000 | House 5: R620 000 | | House 6: R22 000 | House 6: R580 000 | | House 7: R25 000 | House 7: R450 000 | | House 8: R50 000 | House 8: R1 150 000 | | House 9: R78 000 | House 9: R880 000 | | House 10: R80 000 | House 10: R590 000 | | House 11: R43 000 | House 11: R780 000 | | House 12: R50 000 | House 12: R1 050 000 | | House 13: R62 000 | House 13: R920 000 | | House 14: R68 000 | House 14: R855 000 | | House 15: R36 000 | House 15: R1 165 000 | | | |  |
|  |  | |  |  |
|  | 7.2.1 | | Find the range of the house prices for the NU4 area. | (2) |
|  |  | |  |  |
|  | 7.2.2 | | How many houses were sold in the Berea area worth **over a million** rands? | (1) |
|  |  | |  |  |
|  | 7.2.3 | | Compare the prices and state which area is **affluent**? Give a **reason** for your answer. | (2) |
|  |  | |  |  |
|  | 7.2.4 | | How many **lowest** **priced** houses of NU4 can be bought with the amount of the **highest** **priced** house in the Berea area? | (2) |
|  |  | |  |  |
|  | 7.2.5 | | What is the probability of buying a house worth **less** **than**  R500 000 in the Berea area? | (2) |
|  |  | |  | **[17]** |
|  |  | |  |  |
|  |  | | **TOTAL:** | **150** |

**NAME / EXAM NO:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.3 ANNEXURE A**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **COUNTRY** | **GOLD** | **SILVER** | **BRONZE** | **TOTAL** |
| Australia | 82 | 62 | 62 |  |
| England | 54 | 52 |  | 165 |
| India |  | 21 | 19 | 72 |
| Canada | 31 | 41 | 42 |  |
| New Zealand | 11 | 13 | 21 | 45 |
| South Africa | 9 |  | 17 | 46 |

**5.1.1 ANNEXURE B**

Frequency for number of daily visitors to the aquarium

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 – 9  10 – 19  20 – 29  30 – 39  40 – 49  60 – 69  80 – 89  50 – 59  70 – 79  90 – 99  0  2  4  6  8  10  12  14  16  18 |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| Number of days |  |  |  |  |  |  |  |  |  |
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Number of visitors

**5.2.5 ANNEXURE C**