



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2013

MATHEMATICAL LITERACY P2

MARKS: 100

TIME: 2 hours

This question paper consists of 8 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. Number your answers correctly according to the numbering system used in the question paper.
4. An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
5. ALL calculations and steps must be shown clearly.
6. ALL final answers must be rounded off to TWO decimal places, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1

- 1.1 Harry worked for 3 years (from 2009–2011) for a company that makes pencil cases. He was retrenched after this period, but he could claim from the UIF, because he contributed to this fund for the years he worked there. He will only be able to claim for a maximum of six months. On retrenchment, Harry's salary was R6 240 per month.

UIF = Unemployment Insurance Fund, where an employee pays 1% of his or her earnings together with the employer's 1% every month to the Unemployment Insurance Fund.

- 1.1.1 Calculate how much money was paid to the UIF per month. (3)

- 1.1.2 On retrenchment Harry will only be paid a percentage of the salary he earned in the last six months. This percentage is known as the Income Replacement Rate (IRR) and is calculated as follows:

$$\text{IRR} = 29,2 + \frac{99\,779,68}{3\,239,6 + \text{monthly salary}}$$

What percentage of his monthly salary will be paid to Harry? Give your final answer to 1 decimal place. (3)

- 1.1.3 Calculate the amount that Harry will receive per month from the UIF. (2)

- 1.1.4 For how many (full) days will Harry be paid if workers are only entitled to claim for 1 day's pay for every six days they have worked? (3)

- 1.1.5 Based on your answer in QUESTION 1.1.4, calculate how much Harry will be paid per day. (3)

- 1.1.6 How much money in total will Harry receive from the UIF for the six month period? (2)

- 1.1.7 The UIF employee informed Harry that the last payment of the UIF he will receive will be less than the monthly payment that they have calculated. Show by means of calculations that this is TRUE. (3)

- 1.2 The following are pencil cases manufactured by the company Harry worked for. (Not drawn to scale.)



Cylindrical Pencil Case	Rectangular Pencil Case
Height = 178 mm Diameter = 95 mm <i>Surface Area = 2 x Area of Base + Perimeter of Base x Height of Pencil Case</i>	Length = 187 mm Breadth = 72 mm Height = 38 mm <i>Surface Area = 2 x Area of Base + Perimeter of Base x Height of Pencil Case</i>

- 1.2.1 Calculate the surface area of the cylindrical pencil case in cm^2 . Use the given formula.

Use $\pi = 3,142$ (4)

- 1.2.2 Calculate the surface area of the rectangular pencil case in cm^2 . Use the given formula. (4)

- 1.2.3 A school approached the company to make 600 cylindrical pencil cases. The pencil cases must be of the same colour. A roll of material with dimensions 25 m long and 150 cm wide is given to the workers to make the pencil cases. Show by means of calculation whether the roll will be enough to make all the pencil cases. The following formula will be useful: ***Area = Length x Breadth*** (6)

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QUESTION 2

2.1 The following is a profile of the Half Marathon of the Two Oceans Marathon race which is held in Cape Town annually. Use the profile to answer the questions below.



- 2.1.1 What is the distance to be completed for the half marathon? (1)
 - 2.1.2 At what height (altitude), do the runners start this marathon? (2)
 - 2.1.3 What is the difference between the highest and lowest point on the profile? (2)
 - 2.1.4 With reference to the profile, mention any section that will be the most challenging to the runners. Give a reason for your answer. (3)
- 2.2 Elena Nurgalieva (the winner of the women’s section) from Russia ran this marathon from 2004 to 2012. The statistics below shows the time it took her to finish the marathon from 2004 to 2012.

2004	2005	2006	2007	
03:37:51	03:38:12	03:36:29	03:35:34	
2008	2009	2010	2011	2012
03:35:25	03:40:43	03:42:19	03:37:54	03:41:56

- 2.2.1 In which year did Elena record the best time? Write the time down in words. (2)
- 2.2.2 In which year did Elena record the worst time? Write down her worst time. (2)
- 2.2.3 Describe the trend of Elena’s finishing times for this period. (2)
- 2.2.4 Calculate the total time that Elena spent competing in the marathon for the above period. (4)
- 2.2.5 What is Elena’s median time for this period? (2)
- 2.2.6 Calculate the difference between Elena’s best and worst finishing times. (3)

- 2.3 Your friend made a statement that in 2013 Elena has a 90% chance of winning the Two Oceans Marathon again.
- 2.3.1 Explain what is meant with this statement. (2)
- 2.3.2 Express this probability as a fraction and as a decimal. (3)
- [28]**

QUESTION 3

- 3.1 The following is the water and sewage account for Mr Zee. Some of the information is omitted. Study the account and answer the questions below.

Account Details as at 07/01/2013	Account No: 555 444 333
Water (Period 05/12/2012 to 04/01/2013 – 31 days) Actual Reading	
At 72 Nowhere Street, Mountain View / ERF 9876543	
Previous Reading:	_____
Current Reading:	185 523
Consumption:	30,3 kℓ
Consumption Charge	_____
Sewage (Period 05/12/2012 to 04/01/2013 – 31 days) Actual Reading	
At 72 Nowhere Street, Mountain View / ERF 9876543	
Disposal Charge for _____ kℓ:	R103,32
VAT at 14%	R _____
Latest account total due:	R _____

WATER	
Domestic 1: Tariffs	
Volume	Tariff per kℓ
< 6 kℓ	Free
6,1 – 15 kℓ	R7,90
15,1 – 25 kℓ	R8,90
> 25 kℓ	R9,90

SEWAGE	
Disposal Charges	
Volume	Tariff per kℓ
< 4 kℓ	Free
4,1 – 7 kℓ	R3,54
7,1 – 15 kℓ	R8,52
> 15 kℓ	R12,27

- 3.1.1 Calculate the previous reading. (2)
- 3.1.2 Use the water tariff table to calculate how much Mr Zee will be charged for his water consumption. (3)
- 3.1.3 Calculate how many kilolitres were used if the disposal charge is R103,32. (3)
- 3.1.4 Calculate the VAT amount for this account. (2)
- 3.1.5 What is the total amount that Mr Zee has to pay to the municipality for this account? (2)

- 3.2 A survey regarding the water consumption was conducted in the area where Mr. Zee lives. Twelve households took part in this survey. The following was recorded:

20,8 kl ; 44,2 kl ; 22,5 kl ; 21,6 kl ; 15,4 kl ; 22,7 kl ; 20,4 kl ; 25,1 kl ; 23,6 kl ; 24,9 kl ; 21,5 kl ; 30,3 kl
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- 3.2.1 Calculate the mean (average) of water consumption. (3)
- 3.2.2 Find the median of the data. (3)
- 3.2.3 Give a reason why you think that the water consumption for one of the households is so low in comparison to the rest. (2)
- 3.2.4 Give a reason why you think that the water consumption for one of the households is so high in comparison to the rest. (2)
- 3.2.5 Which of the central tendencies (mean or median) will best describe the data? Give a reason for your answer. (2)

[24]**QUESTION 4**

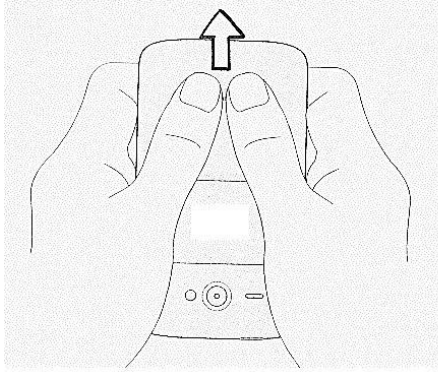
- 4.1 Zoleka received an unexpected gift in the form of money from a cousin in New York, United States of America. The amount she received is \$100 (US dollars). On the day that Zoleka received the money, she saw that the exchange rate was R9,04.

- 4.1.1 Which of the two currencies is the strongest? Give a reason for your answer. (2)
- 4.1.2 On the day that the exchange rate was R9,04, Zoleka went to the bank to convert her \$100. Calculate the value of her dollars in rand. (2)
- 4.1.3 After Zoleka received her money, she discovered that what she calculated to receive is not the same. She only walked away with R858,80. Why do you think this is the case? (2)
- 4.1.4 Calculate what percentage of her money she lost. (3)

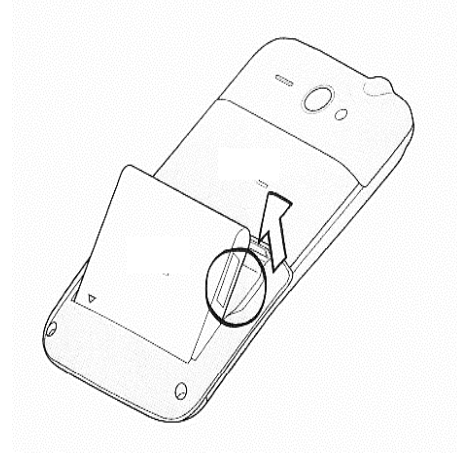
- 4.2 With the money she changed and other money she saved, Zoleka bought herself a brand new cellphone.

Zoleka wants to insert her SIM card into the phone and have to follow the instructions as shown in the illustrations below.

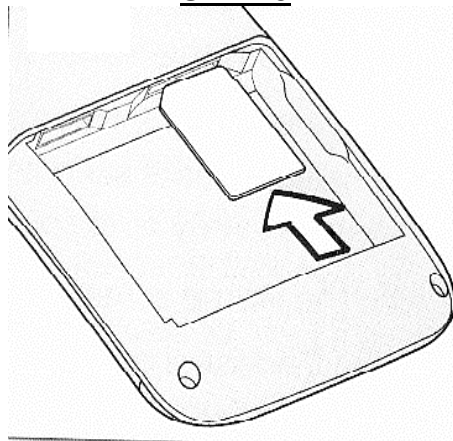
STEP 1



STEP 2



STEP 3



Briefly explain the steps that Zoleka needs to take to insert the SIM card.

(6)
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TOTAL: 100