Education and Sport Development

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NORTH WEST PROVINCE

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2
JUNE 2018

MARKS: 100

TIME: 2 hours

This question paper consists of 12 pages including 1 answer sheet and 3 annexures

INSTRUCTIONS AND INFORMATION

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

2. 2.1 Use the ANNEXURES below to answer the following questions:

   ANNEXURE A for QUESTION 1.1
   ANNEXURE B for QUESTION 1.2
   ANNEXURE C for QUESTION 2.2

   2.2 Answer QUESTION 4.1.3 on the attached ANSWER SHEET.

   2.3 Write your name in the spaces provided on the ANSWER SHEETS and hand them in twith your answer scripts.

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

4. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

5. Show ALL calculations clearly.

6. Round off ALL final answers appropriately according to the given context, unless stated otherwise.

7. Indicate units of measurement, where applicable.

8. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.

9. Write neatly and legibly.

QUESTION 1

1.1 Abe works as an HR manager in a government department. He earns an annual taxable income of R410 530 during the 2018/2019 tax year.. He is a member of a registered medical aid scheme and contributes monthly for himself, his wife Dora and 2 children. He would like to upgrade his medical aid and has two options to choose from.

Use the information above and ANNEXURE A to answer the questions that follow.

1.1.1 Determine the salaryband, to which Abe's monthly salary belongs to, for both options. (3)

1.1.2 Calculate the difference in contributions for the whole family for both options per month. (4)

1.1.3 If he chooses Emerald Value, calculate the employer's contribution (to the nearest whole number), as a percentage of the total contribution. (3)

1.1.4 The medical aid has a fitness programme. What is the significance of such a fitness programme. (2)

1.2 Abe is 48 years old. Use the tax table and medical aid credits in ANNEXURE B to answer the questions that follow.

1.2.1 Calculate the annual medical aid credits that Abe qualifies for. (3)

1.2.2 Abe's monthly tax is R5 461,50. He complains that he is being overtaxed. Verify using calculations whether his complain is valid or not. (7)

1.2.3 Explain the impact of tax rebates and medical aid credits on the tax payable. (2)

1.3 Abe decides to invest R34 210 for two years in a fixed deposit with Mzanzi Bank. The bank offers an interest that is compounded annually at an interest rate of 5,5% p.a. for the first year and 7,1% p.a. for the second year.
Calculate how much money will he receive at the end of the two year period. (4)

1.4

Dora has a height of 6 feet and 4 inches and weighs 200 pounds.

NOTE: 1 foot = 12 inches

Calculate Dora's new BMI (rounded off to ONE decimal place).

You may use the formula:

$$\textbf{BMI (kg/m}^2\textbf{)} = \frac{\textbf{weight in pounds}}{(\textbf{height in inches})^2} \times \textbf{703}$$ (4)

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QUESTION 2

2.1

Abe is renting a flat nearby. He would like to buy a house nearer to his work place valued at R950 000. He approached Mzanzi bank for a loan. He decides to repay the loan over a 30 year period at an interest rate of 12% p.a. compounded monthly.

The bank provided him with a loan factor table as shown in the table below to use in calculating his monthly repayments.

TABLE 2: HOMELOAN REPAYMENT FACTOR TABLE

	Interest Rates						
TERM	7%	8%	9%	10%	11%	12%	13%
20 years	7,75	8,36	9,00	9,65	10,32	11,01	11,72
25 years	7,07	7,72	8,39	9,09	9,80	10,53	11,28
30 years	6,65	7,34	8,05	8,78	9,52	10,29	11,05

2.1.1 Determine:

(a) his monthly repayment.
You may use the following formula:

$$\textbf{Monthly repayment} = \frac{\textbf{Bond amount}}{\textbf{1 000}} \times \textbf{Factor}$$ (2)

(b) the total loan repayment. (2)

(c) Calculate the amount of interest paid as a percentage of the total loan repayment. (4)

2.1.2 Determine what the price of this house was in 2017 if the inflation rate was 6,2%. (2)

2.2

The floor plan of the house that Abe wishes to buy is shown on ANNEXURE C. Dora intends renovating her house by replacing tiles in the main bedroom i.e. bedroom 1, living room and passage with laminated flooring.

Use ANNEXURE C to answer the questions that follow.

2.2.1 Give ONE possible reason why Bedroom 2 and 3 will most probably be the warmest rooms during the day. (2)

2.2.2 Calculate the total area (rounded off to the nearest m^2) that needs to be covered with laminated flooring if the passage is 12,5% of the combined areas of the living room and bedroom 1.

You may use the formula:

Area of a rectangle = length × breadth (7)

2.2.3 Dora obtained a quotation from **CTM** for the installation of the laminated flooring in the living room, passage and bedroom 1. An insulation sheet (underlayer) has to be placed on the floor before the laminated flooring is placed on top. A sealant (glue) as well as skirting must also be bought. A summary of the labour and materials quotation is given below:

Labour:

- R1 200 for removing existing tiles and preparation of the floor.
- R120,00 per box for installation of laminated flooring.

Materials:

- R169,90 per box of 10 laminated flooring, where each box covers 2,48 m^2
- R54,90 per m^2 of underlayer insulation
- R129,80 for 1ℓ sealant
- R679,60 for skirting

(a) Calculate the labour cost. (4)

(b) Dora budgeted R10 000,00 for the entire project. Verify with calculations, whether her budget will be enough. (6)

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QUESTION 3

Tumi is interested in the composition of the South African population. She found information from the internet about the population distribution of South Africa during 2011 and 2016.

TABLE 2 below shows the population distribution of South Africa during 2011 and 2016, according to race.

NOTE: In South Africa citizens are classified as black, coloured, white or Indian

TABLE 2: Population distribution of South Africa during 2011 and 2016, according to race.

	PERCENTAGE OF DIFFERENT RACE GROUPS				**TOTAL POPULATION**
	Black	**Coloured**	**White**	**Indian**	
2011	79,6	…..	8,9	2,5	51 770 560
2016	**Q**	8,8	8,1	2,5	55 653 654

Use TABLE 2 above to answer the questions that follow.

3.1 Determine, using the value of **Q**, the number of black people in South Africa in 2016. (4)

3.2 51,64% of white people in South Africa were female, in 2011.
Tumi calculated that the actual number of white females in South Africa in 2011 was 2 479 354
Verify whether Tumi's calculation is correct. (5)

3.3 If a person is randomly chosen, determine the probability that a person will be from a coloured population in 2011. (3)

3.4 Tumi stated that the actual number of Indians in South Africa was the same in 2011 and 2016.
Determine, showing ALL calculations, whether her statement is valid. (4)

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QUESTION 4

4.1 Abe decided to investigate the temperature changes in Cape Town by using the data for the recorded temperatures. The data for the average maximum and minimum temperatures as well as the highest maximum and minimum temperatures (in degrees Celsius) are given in TABLE 3 below.

TABLE 3: RECORDED TEMPERATURES IN ^{O}C OF CAPE TOWN.

MONTH	AVERAGE TEMPERATURES		HIGHEST TEMPERATURES	
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
January	28	16	41	5
February	29	16	37	8
March	27	14	38	6
April	23	12	37	0
May	21	10	34	0
June	18	7	31	0
July	18	7	28	−5
August	18	8	31	0
September	19	9	37	1
October	21	11	36	0
November	23	13	39	3
December	25	15	36	8

[Source: myweather2.com/Local Weather Forecast/ South Africa/Cape Town]

Use TABLE 3 and the ANSWER SHEET to answer the questions that follow.

4.1.1 Determine the difference between the highest maximum and highest minimum for July. (3)

4.1.2 Determine, showing ALL calculations, in which month was the range of the highest temperatures in Cape Town the lowest (4)

4.1.3 The graphs showing the highest maximum, average maximum and average minimum temperatures are drawn on the ANSWER SHEET.

Draw another line graph representing the highest minimum temperatures for Cape Town on the grid provided on the ANSWER SHEET. (7)

4.1.4 According to research the highest temperature in Cape Town was recorded on 07 December 2017, when the temperature reached 111,2 °F.

Convert this temperature to °C (rounded off to ONE decimal place).
You may use the following formula:

$$°F = °C \times \frac{9}{5} + 32$$ (4)

4.2

Tumi wants to buy the latest model of a Samzung S8 smart cell phone.
A scale drawing of the screen of a Samzung S8 is given below. The cellphone screen is rectangular in shape.

Scale 2:5

Use accurate measurements and the given scale to determine the actual measurements of the screen of a Samzung S8 in millimetres. (5)

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TOTAL: 100

ANNEXURE A

QUESTION 1.1

Table showing how much to pay for two different medical aid options in 2018

EMERALD 2018 BENEFITS

Salary Band in (R)	Member	Adult	Child
0 – 12 760	2 483	1 845	916
12 760,01 – 22 037	2 749	2 073	1 027
22 037,01 and above	3 081	2 305	1 145

EMERALD VALUE 2018 BENEFITS

Salary Band in (R)	Member	Adult	Child
0 – 12 760	2 194	1 631	809
12 760,01 – 22 037	2 428	1 832	908
22 037,01 and above	2 721	2 036	1 011

EMPLOYER AND EMPLOYEE CONTRIBUTIONS TABLE

Option	Total Contribution	Employer	Employee
Emerald	R7 676	R3 861	R3 815
Emerald value	R6 779	R3 861	R2 918

[Source: www.gems.gov.za]

NOTE:

- Salary band refers to the monthly salary before tax and other deductions
- Member column shows how much the main member (employee) has to pay
- Child column shows how much does the main member pay for child dependants.

ANNEXURE B

QUESTION 1.3

RATES OF TAX FOR INDIVIDUALS

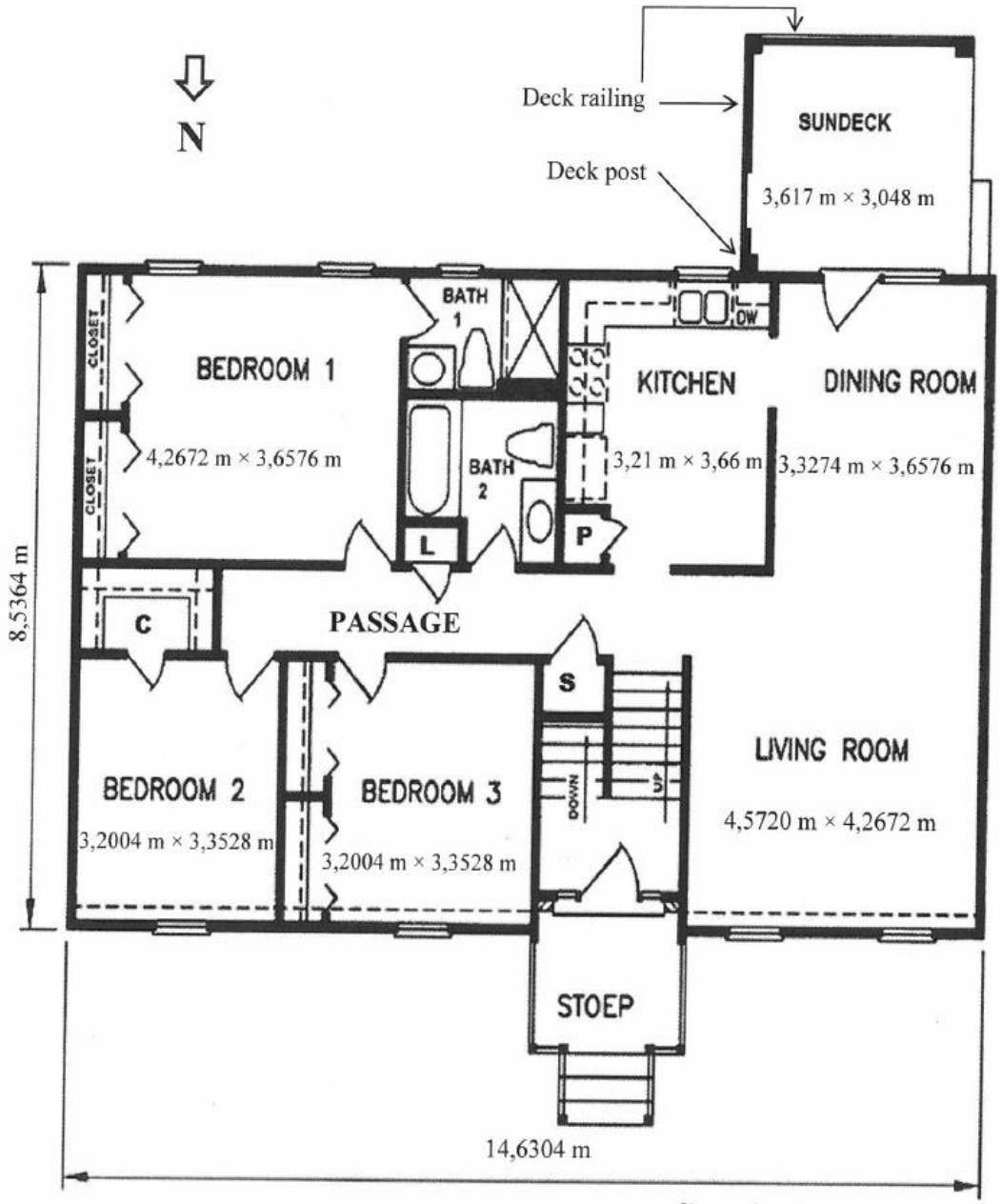
2018 Tax year (1 March 2018 – 28 February 2019)

TAXABLE INCOME (R)	**Rates of tax**
0 – 195 850	18% of taxable income
195 851 – 305 850	35 253 + 26% of the amount above 195 850
305 851 – 423 300	63 853 + 31% of the amount above 305 850
423 301 – 555 600	100 263 + 36% of the amount above 423 300
555 601 – 708 310	147 891 + 39% of the amount above 555 600
708 311 and above	207 448 + 41% of the amount above 708 310
TAX REBATES	
Primary	13 635
Secondary (65 years and older)	7 479
Tertiary (75 years and older)	2 493
TAX THRESHOLDS	
Person under 65	75 750
Person 65 years and older	117 300
Person 75 years and older	131 150
MEDICAL TAX CREDIT RATES	**Cost per month (R)**
For the taxpayer only	303
For the first dependent	303
For each additional dependent(s)	204

ANNEXURE C

QUESTION 2.2

FLOOR PLAN OF ABE'S HOUSE



KEY:
C: Closet
L: Linen
P: Pantry
S: Storage

[Source: http://www.google.com/url]

NOTE: A sundeck is a flat wooden structure attached to a house.

ANSWER SHEET

NAME: ……

CLASS: ……