Education and Sport Development

Department of Education and Sport Development
Departement van Onderwys en Sport Ontwikkeling
Lefapha la Thuto le Tlhabololo ya Metshameko
NORTH WEST PROVINCE

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY PAPER 1

JUNE EXAM 2018

MARKS: 100

TIME: 2 HOURS

This question paper consists of 11 pages including 2 annexures.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. Use ANNEXURES to answer the following questions:
    - ANNEXURE A for QUESTION 2.1
    - ANNEXURE C for QUESTION 5.1
3. Number the answers correctly according to the numbering system used in this question paper.
4. ALL the calculations must be clearly shown.
5. An approved calculator may be used, unless stated otherwise.
6. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Map and diagrams are NOT necessary drawn to scale, unless stated otherwise.
9. Write neatly and legibly.

QUESTION 1

1.1

Mr Tau earns an annual taxable income of R185 000,00.

TABLE 1 below is a tax table that shows how much personal income tax he needs to pay.

TABLE 1: INCOME TAX RATES FOR INDIVIDUALS 2018 TAX YEAR (1 MARCH 2017 – 28 FEBRUARY 2018)

Tax Bracket	Taxable Income (R)	Tax Rates (R)
1	R 0 - R 189,880	18% of taxable income
2	R 189,881 - R 296,540	R 34,178 + 26% of taxable income above R 189,880
3	R 296,541 - R 410,460	R 61,910 + 31% of taxable income above R 296,540
4	R 410,461 - R 555,600	R 97,225 + 36% of taxable income above R 410,460
5	R 555,601 - R 708,310	R 149,475 + 39% of taxable income above R 555,600
6	R 708,311 - R 1,500,000	R 209,032 + 41% of taxable income above R 708,310
7	Above R 1,500,001	R 533,625 + 45% of taxable income above R 1,500,000

Adapted from www.SARS.gov.za]

Use Table 1 and the information above to answer the questions that follow.

1.1.1 Identify the tax bracket applicable to Mr Tau`s taxable income. (2)

1.1.2 Calculate Mr Tau`s annual tax. (2)

1.1.3 Hence, calculate Mr Tau`s monthly tax. (2)

1.2

The teacher at Nkwe high school recorded the Mathematical Literacy test marks of 15 learners in her classroom.

36; 25; 29; 30; 42; 35; 15; 36; 28; 36; 34; 23; 47; 40; 19

Use the marks given above to answer the questions that follow:

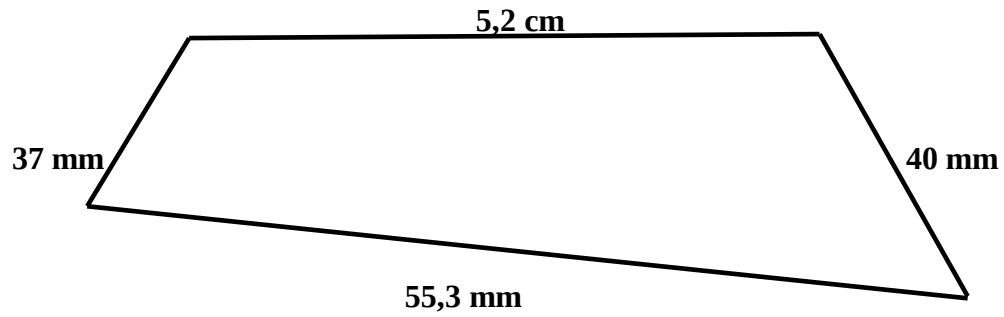
1.2.1 Arrange the marks in ascending order. (2)

1.2.2 Identify the minimum and the maximum mark of the test (2)

1.2.3 Determine the modal mark. (2)

1.3

The plan of a concrete floor that needs to be constructed with a scale of 1 : 500 is given below.



Use the floor plan above to answer the questions that follow.

1.3.1 Explain the meaning of this scale. (2)

1.3.2 Calculate the perimeter (in millimetres) of the concrete floor. (3)

1.4

South Africa is divided into nine Provinces of different sizes.

TABLE 2: AREA OF THE NINE PROVINCES IN SOUTH AFRICA

Province	**Area (km^2)**
Eastern Cape (EC)	169 580
Free State (FS)	129 480
Gauteng (GP)	17 010
KwaZulu – Natal (KZN)	92 100
Limpopo (LP)	123 910
Mpumalanga (MP)	79 490
Northern Cape (NC)	361 830
North West (NW)	116 320
Western Cape (WC)	129 370
Total (SA)	**……**
Source: Statistics South Africa Census 2001;(Department of land affairs)	

Use TABLE 2 above to answer the questions that follow.

1.4.1 Identify the Province in South Africa with the largest area. (2)

1.4.2 Calculate the total area of South Africa. (2)

1.4.3 Convert the total area of Gauteng to m^2. **HINT: 1 km = 1 000 m** (2)

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QUESTION 2

2.1 ANNEXURE A shows the payslip of Mr Nel during the month of November 2017.

Use ANNEXURE A to answer the questions that follow.

2.1.1 Mr Nel contributes 6,43% of his gross salary towards pension fund every month. Calculate his monthly contribution. (2)

2.1.2 Calculate the net pay of Mr Nel. (3)

2.1.3 Employers are responsible for deducting a *UIF* contribution from an employee`s income every month. The employee contributes 1% of his/her salary and the employer contributes a further 1% as well.

(a) What does the abbreviation *UIF* stand for? (2)

(b) How much does Mr Nel pay towards *UIF*? (2)

2.2 Mr Nel is concerned about the impact that the projected *inflation* rate and increase in municipal rates and fees will have on his disposable income.

Table 3 below shows the increased projected tariffs.

TABLE 3: INCREASE IN TARIFFS FOR 2018

Rates and services charged	**2017**	**% increase**	**2018**
Refuse removal	R254,08	**A**	R285,84
Sanitation	R191,26	13%	R216,12
Water consumption	R387,58	10,5%	R428,28
Electricity consumption (non-prepaid)	R850,00	14,3%	R971,55
Property rates	R683,75	15%	**C**
Subtotal excluding VAT	**B**		R2 688,10
VAT on services	R331,33		R376,33
Total	**R2 698,00**		**R3 064,43**

NOTE: Use VAT = 14%

Use the information above to answer the questions that follow:

2.2.1 Define the term *inflation*. (2)

2.2.2 Determine the missing value of **A,** the percentage increase for the refuse removal. You may use the following formula:

$$\textbf{Percentage increase} = \frac{\textit{New amount} - \textit{Old amount}}{\textit{old amount}} \times 100\% \quad (3)$$

2.2.3 Determine the missing value of **B**. (2)

2.2.4 Calculate the missing value of **C**, the property rates. (2)

2.2.5 Calculate the additional amount per month for which Mr Nel will have to budget on his municipal account for 2018. (2)

[20]

QUESTION 3

3.1

Mary is preparing a dessert for the women`s club that she will be hosting on Saturday. The club consists of 30 members including her. She decides to bake pudding. She needs to bake at 180^0C for 25 – 30 minutes until its golden brown.

To make the pudding she will also need	**For sauce**
1 extra large egg	50 g butter
200 ml milk	250 ml milk
80 ml cooking oil	
100 g apricot jam	

NOTE: 1 000 ml = 1 litre
The recipe can feed only 10 people

Use the information above to answer the questions that follow.

3.1.1 Express the ratio (in the simplified form) of the cooking oil to the milk of the recipe. (3)

3.1.2 Calculate (in litres) the amount of milk needed. (4)

3.1.3 Convert the baking temperature of 180°C to °F.
You may use the following formula**:**
°F = (1,8 × °C) + 32 (2)

3.1.4 Mary baked the pudding for 45 minutes, if she puts the pan in the oven at 10:35, at what time must she take it out of the oven. (2)

3.2

Mary uses a pan with the diameter of 25 cm and the height of 10 cm to bake pudding,

Use the information given above to answer the questions that follow.

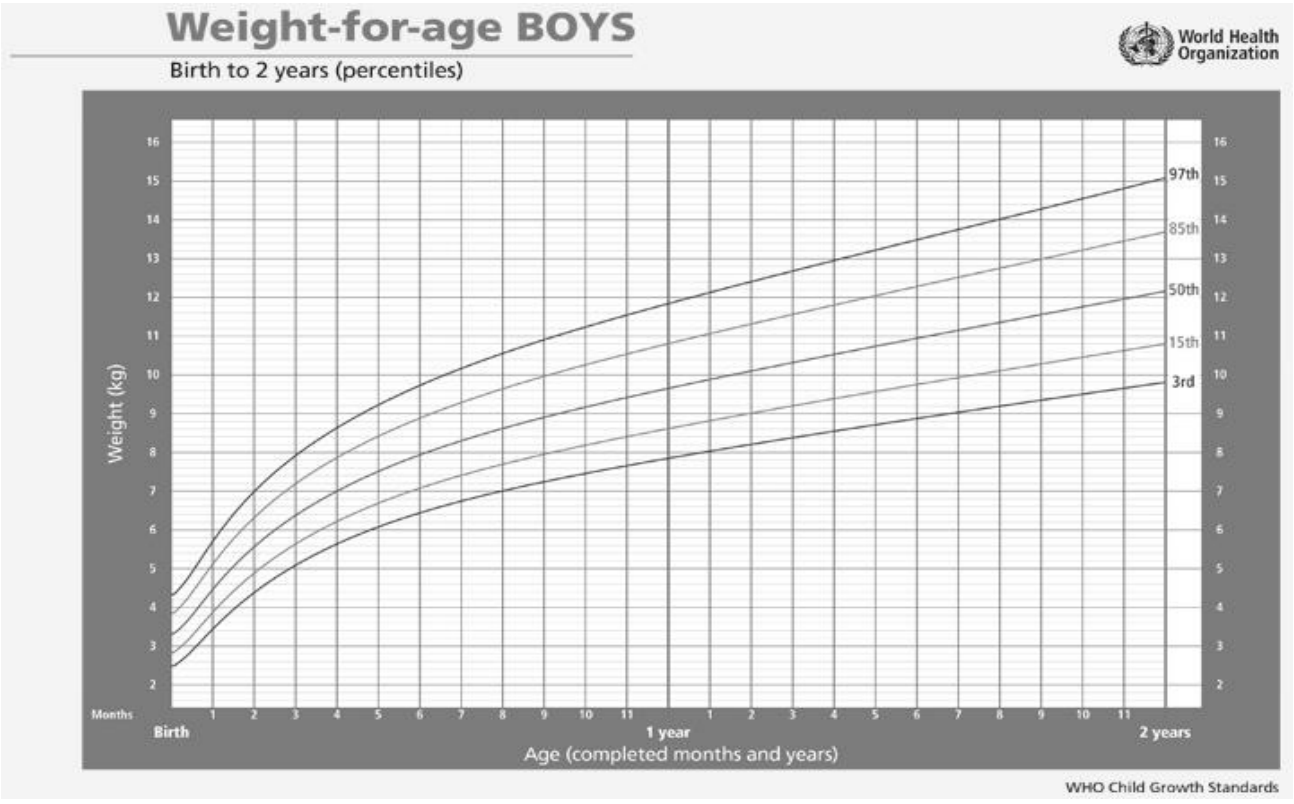
3.2.1 Calculate the volume of the pan in cm^3.
You may use the following formula:

Volume = π × radius^2 × height, use π = 3,142 (3)

3.2.2 Calculate the volume of the pudding in cm^3 if 89% of the pan is filled with pudding. (2) **[16]**

QUESTION 4

The weight-for-age health chart for boys from birth to 2 years is given below.



Use the health chart above to answer the questions that follow.

4.1 What does it mean if the baby`s weight-for-age relationship is on the 75th percentile curve. (2)

4.2 Determine the weight of a one year eight months old baby whose weight-to-age relationship is on the 97th percentile curve. (2)

4.3 Consider a one year one month old baby with a weight of 8 kg:

4.3.1 On which percentile curve is this baby`s weight-to-age relationship? (2)

4.3.2 Calculate the BMI for this baby if he is 60 centimetres tall.
You may use the following formula:

$$\textbf{BMI} = \frac{Weight\ (in\ kilograms)}{(Height\ in\ metres)^2} \quad (4) \quad \textbf{[10]}$$

QUESTION 5

Mr Smith and his family live in Bloemhof. ANNEXURE B shows the map of North West.

5.1 Use the map of North West on ANNEXURE B to answer the questions that follow.

5.1.1 Name two national roads on the map. (2)

5.1.2 Identify two towns that the family will pass on their way to Mafikeng. (2)

5.1.3 Give the general direction of Bloemhof from Mafikeng. (2)

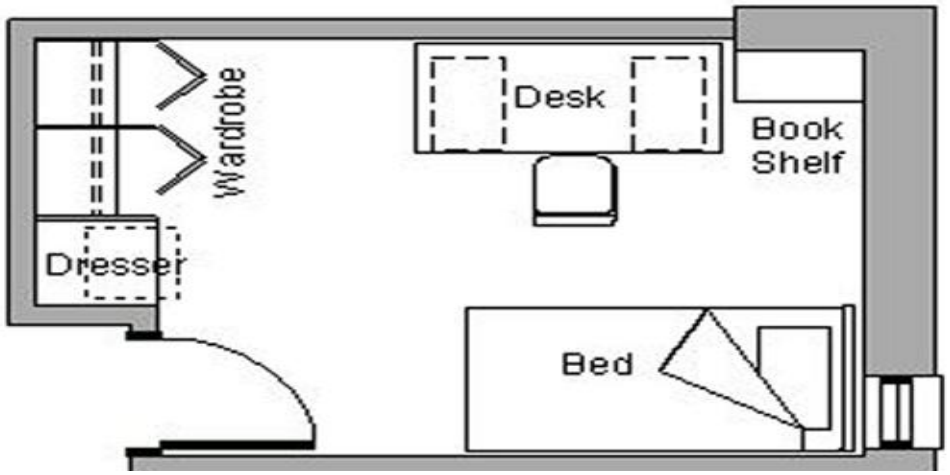
5.1.4 Express the scale of the map as a ratio. (2)

5.1.5 Use the bar scale to measure (in km) the actual distance between Taung and Mafikeng (4)

5.1.6 The distance between Bloemhof and Mafikeng is 255 km. Mr Smith was driving at an average speed of 100 km/h from Bloemhof to Mafikeng. Calculate the time spent on the road in hours and minutes. You may use the following formula: **Time** = $\frac{Distance}{speed}$ (3)

5.2

Below is the layout of the bedroom of Mr Smith`s son.



Use the layout of his bedroom to answer the questions that follow.

5.2.1 How many window(s) are there in the layout? (2)

5.2.2 The bed in the layout is 4,5cm long and the actual length is 1,8 m.
Write the scale in the form 1 : …… (3)

5.2.3 Calculate the actual width of the bed in metres. (4)

5.2.4 Hence, calculate the area occupied by the bed.
You may use the formula:
Area = length × breadth (2)

5.2.5 Mr Smith`s son wants to paint the interior walls of his room with two coats of paint. The total area of the walls is 22,6 m^2. If one litre of paint covers 5,5 m^2, how many 5 litre tins of paint does he need? (5)

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TOTAL: 100

ANNEXURE A

QUESTION 2.1

COPY OF MR NEL'S PAYSLIP FOR NOVEMBER 2017.

EMPLOYEE CODE	S12001	EMPLOYEE NAME	Joseph Nel		
DESIGNATION	SALESMAN		COST CENTRE	sales	
COMPANY NAME	AIF COMPANY			Period	08
				Date	30/11/2017
				Rate	250.00

INCOME

DESCRIPTION	QUANTITY	RATE	AMOUNT
Gross Salary			35 000
Commission	20	250	5000

GROSS PAY

BENEFITS	**COMPANY CONTRIBUTIONS**
……	……..

DEDUCTIONS

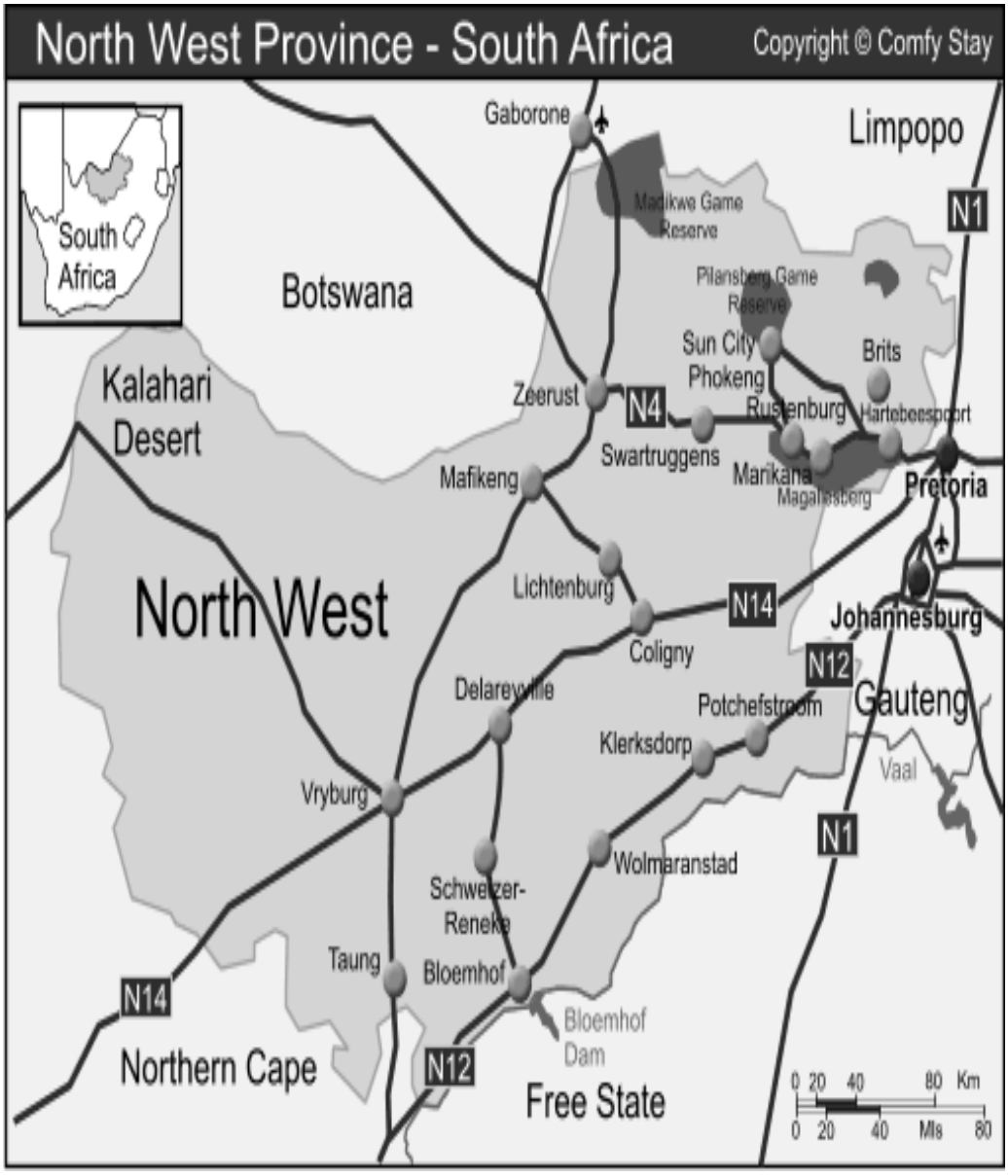
DESCRIPTION	**BALANCE**	**AMOUNT**
Pension	0,00	……..
PAYE Tax	0,00	9 052,00
UIF Contribution	0,00	……..
Medical Aid	0,00	1 200 ,00

TOTAL DEDUCTIONS	**12 902,50**
LEAVE DAYS 6	**NET PAY ……..**

ANNEXURE B

QUESTION 5.1

THE MAP OF NORTH WEST PROVINCE IN SOUTH AFRICA



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