KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

PREPARATORY EXAMINATION

SEPTEMBER 2021

MARKS: 150

TIME: 3 hours

This question paper consists of 12 pages and an Addendum with 4 annexures.

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INSTRUCTIONS AND INFORMATION

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

2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

   - ANNEXURE A for QUESTION 1.2.1 – 1.2.4
   - ANNEXURE B for QUESTION 2.1.1 – 2.1.5
   - ANNEXURE C for QUESTION 2.2.1, 2.2.3 – 2.2.5
   - ANNEXURE D for QUESTION 4.2.1 and 4.2.2

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

4. Start EACH question on a NEW page.

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

6. Show ALL calculations clearly.

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

8. Indicate units of measurement, where applicable.

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

10. Write neatly and legibly.

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QUESTION 1

1.1 The data shown in TABLE 1 below shows the data that was collected to investigate whether the pandemic (Covid 19) had an impact on the 2020 matric results of government schools. 2019 and 2020 columns show provincial pass rates.

TABLE 1: COVID 19 EFFECT ON MATRIC PASS RATE

	Number of:		Provincial Pass rate			
Province	**Infections**	**Deaths**	**2019**	**2020**	**Difference**	**Impact**
Free State	79 049	3 039	88,4	85,1	-3,2	**Significant**
Gauteng	400 636	9 392	87,2	83,8	-3,5	**Significant**
North West	59 948	1 057	86,8	76,2	-10,6	**Enormous**
Western Cape	273 433	10 984	82,2	79,9	-2,4	**Slight**
KwaZulu Natal	326 031	9 400	81,3	77,6	-3,7	**Significant**
Mpumalanga	69 613	1 213	80,3	73,7	-6,6	**Great**
Northern Cape	33 337	650	76,5	66,0	-10,5	**Enormous**
Eastern Cape	193 549	11 189	76,5	68,1	-8,3	**Great**
Limpopo	61 170	1 784	73,0	68,2	-5,0	**Significant**

Source: [www.dailymaverick.co.za]

Use the information in TABLE 1 above to answer the questions that follow.

1.1.1 What type of statistical graph can be used to compare the pass rates for 2019 and 2020? (2)

1.1.2 Write down the modal pass rate for the 2019 data. (2)

1.1.3 Name TWO provinces that had the greatest drop in the pass rate from 2019 to 2020. (2)

1.1.4 Arrange the number of deaths in descending order. (2)

1.1.5 Is there any relationship between the number of deaths and the provincial pass rates for 2020? (2)

1.2 Mr Eddie Scott's telephone bill is given in ANNEXURE A.

Use the Annexure to answer the questions that follow.

1.2.1 What is Eddie Scott's Telkom account number? (2)

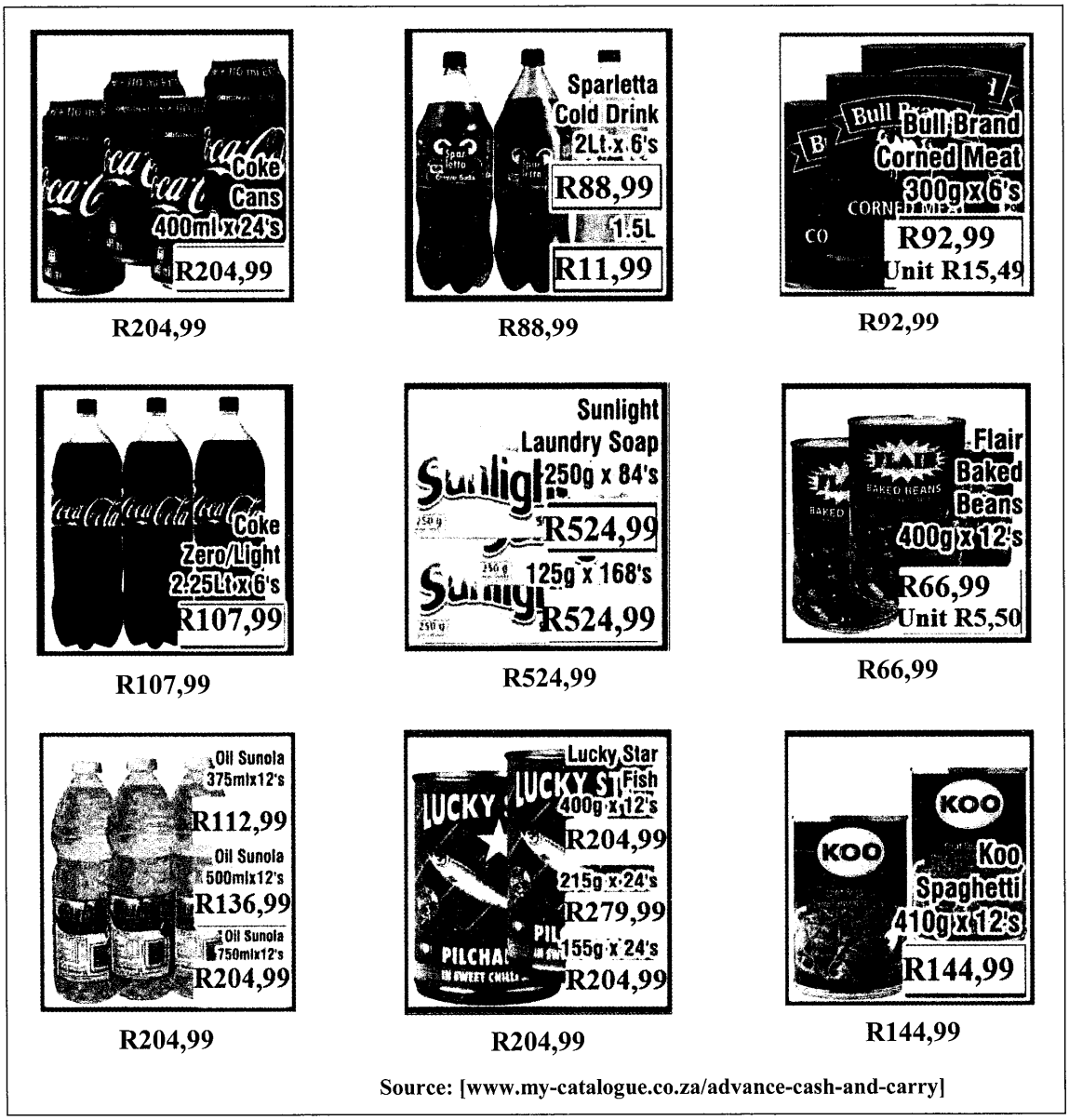
1.2.2 When is the payment due? (2)

1.2.3 What does VAT stand for? (2)

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1.2.4 What is the total VAT on this bill? (2)

1.3 Xolani operates a Spaza Shop and orders his stock, in cartons, from Cash-and-Carry wholesalers. Given below is an extract from a Cash-and-Carry wholesale catalogue and all prices include 15% VAT. The price of each carton is written below each item.



1.3.1 Explain the meaning of the word "*selling price*" in the context of Xolani's shop. (2)

1.3.2 What is the cost price for a 1,5 litre bottle of Sparletta cold drink? (2)

1.3.3 Which items cost the same amount per carton? (3)

1.3.4 Calculate the number of tins of Corned Meat in a carton if the unit price is R15,49. (2)

1.3.5 Calculate the total cost price of the 9 cartons above. (3)

[30]

QUESTION 2

2.1 Mr. D Ntuli has an account at Fashion Express which is part of TFG group. At Fashion Express a customer can have both a 6-month or a 12-month revolving credit repayment option.

ANNEXURE B shows Mr. Ntuli's statement for the period 14 January 2021 to 12 February 2021.

Use the information in ANNEXURE B to answer the following questions.

2.1.1 What was the opening balance for the 6-month revolving payment option? (2)

2.1.2 By the time the statement was released:

(a) Write down how much Mr. Ntuli could spend on his account? (2)

(b) Calculate the percentage decrease from the credit allocation of R8 481 to the amount that he can spend. (3)

2.1.3 Show how the closing balance of R1 321,07 for the 12-month revolving credit was determined. (3)

2.1.4 How much interest was charged on 12 February 2021? (2)

2.2 Mr Naidoo, aged 46, earns a basic salary of R32 800 per month and receives a monthly car allowance of R7 100. On his birthday (January 2021) he got a bonus equivalent to his basic salary.
The following deductions indicated on from his January 2021 payslip.

UIF (R148,72).
Pension Fund (7,5% of his basic salary).
Income Tax.
Medical Aid covering 5 members, Mr Naidoo included.

N.B: The tax on his bonus is deducted in the month that he receives the bonus.
ANNEXURE C shows the 2021 Income Tax tables used to determine the taxpayer's tax liability.

Use ANNEXURE C and the information above to answer the following questions.

2.2.1 Write down the type and the amount of rebate Mr. Naidoo is entitled to. (2)

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2.2.2 Calculate Mr. Naidoo's monthly pension fund deduction. (2)

2.2.3 Calculate Mr. Naidoo's taxable income for January 2021.
You may use the formula:
January taxable income = January Gross Income – Pension Fund Deduction (3)

2.2.4 Calculate his annual medical tax credits (MTC). (3)

2.2.5 Use the income tax tables in ANNEXURE C to calculate Mr. Naidoo's monthly tax excluding bonus. (7)

2.2.6 Calculate the tax deducted from Naidoo's January 2021 salary if **tax on his bonus** was R11 808.
You may use the formula:
January Tax = Monthly tax excluding bonus + bonus tax. (2)

2.3 Mrs. Reddy lives in a 5 roomed house in Durban excluding the bathroom and a toilet. The house uses 1 lightbulb for each of the 5 rooms, 1 lightbulb for the bathroom and 1 lightbulb for the toilet. TABLE 2 below shows the typical cost of using some appliances.

TABLE 2 – TYPICAL COSTS OF USING SOME APPLIANCES

ITEM	Electrical Rating In Watts	Hours Used Per Day	Days Used Per Month	kWh Used Per Month	Monthly Cost at 209,40 Cents/kWh (VAT Incl.)
Cellphone Charger	28	5	7	0,98	R 2,05
Lighting: Single 100W	100	5	30	15,00	R 31,41
Geyser	2 000	5	30	300,00	R628,20
4 Plate Stove					
Stove: Back Large Plate	1 500	1,5	30	67,50	R141,35
Stove: Back Small Plate	1 000	1	25	25,00	R 52,35
Stove: Front Large Plate	1 500	2	30	90,00	R188,46
Stove: Front Small Plate	1 000	1	15	15,00	R 31,41

Source: [www.durban.gov.za]

Use TABLE 2 above to answer the questions that follow.

2.3.1 Calculate the total monthly cost for lighting Mrs. Reddy's house. (3)

2.3.2 The total cost for Mrs. Reddy for all the appliances excluding 7 lightbulbs, stove and 3 cellphones is **R1 126,77**.
She has been told that the total cost including 7 lightbulbs, stove and 3 cellphones will be more than **R1 800**. Use calculations to verify if the claim is correct. (6)

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2.3.3 Mrs. Reddy claims that if the family uses the geyser for 2 hours a day for 30 days and use the back large plate and the front small plate of the stove, the electricity bill will decrease by R400. Verify her claim with calculations.

You may use the formula:
Total Cost = kWh (Rating) × Hours × Per unit charge. (5)

[45]

QUESTION 3

3.1 Musa is building a 4-roomed house for his parents.
The house has reached roof level, he needs to buy tiles.
Build-it has a special on roof tiles.



He needs a loan of R5 000 to buy the tiles. Two options are available to him.

Option 1: ABC Bank can offer him a loan of R5 000 at 7,8% per annum, interest compounded yearly to be repaid over 24 months.

Option 2: His friend can offer him a loan of R5 000 at 9,5% per annum simple interest to be paid back in full at the end of 2 years

3.1.1 **Manually** calculate the total amount he will pay back to the bank at the end of 24 months for Option 1. (6)

3.1.2 Use your answer for **3.1.1** and total amount for Option 2 to help Musa choose the best option. (5)

3.1.3 The projected inflation rate for 2022 is 4,3%. Calculate what Musa should expect to pay for 1 700 double roman roof tiles in 2022 if one tile currently costs R6,29. (4)

3.2 The Khumalo family is relocating from Durban to Richards Bay. Mr. Khumalo saw an advert for a house on sale in Aquadene on the internet.



R 780 000

3 Bedroom House

TYSON PROPERTIES

Aquadene

EXCLUSIVE MANDATE Well priced, perfect address, and spacious is this lovely property. This home consists of three bedrooms, two ...

3 2 1 287 m²

Source: [www.property24.com]

Banks use factor tables to calculate what the monthly repayment will be on the house loan. TABLE 3 given below is an extract of the loan factor table.

TABLE 3 – LOAN FACTOR TABLE FOR MORTAGE BONDS

	Years financed			
Annual Interest Rate	**10 Years**	**20 Years**	**25 Years**	**30 Years**
7,0%	11,61	7,75	7,07	6,65
7,5%	11,87	8,06	7,39	6,99
8,0%	12,13	8,36	7,72	7,34
8,5%	12,40	8,68	8,05	7,69
9,0%	12,67	9,00	8,39	8,05
9,5%	12,94	9,32	8,74	8,41
10,0%	13,22	9,65	9,09	8,78

Source: [www.sars.gov.za]

Use the information above to answer the questions that follow.

3.2.1 Mr. Khumalo's bank is willing to give him a loan of 110% of the value of the property at 9,5% interest over a period of 25 years. Use TABLE 3 to calculate the monthly repayment of the loan.

You may use the formula:

$$\textbf{Monthly Repayment} = \frac{\textbf{Loan Amount} \times \textbf{Loan Factor}}{\textbf{1 000}}.$$

(4)

3.2.2 Calculate the real cost of the loan.

You may use the formula:

Real Cost of Loan = Monthly repayment × Loan period in months.

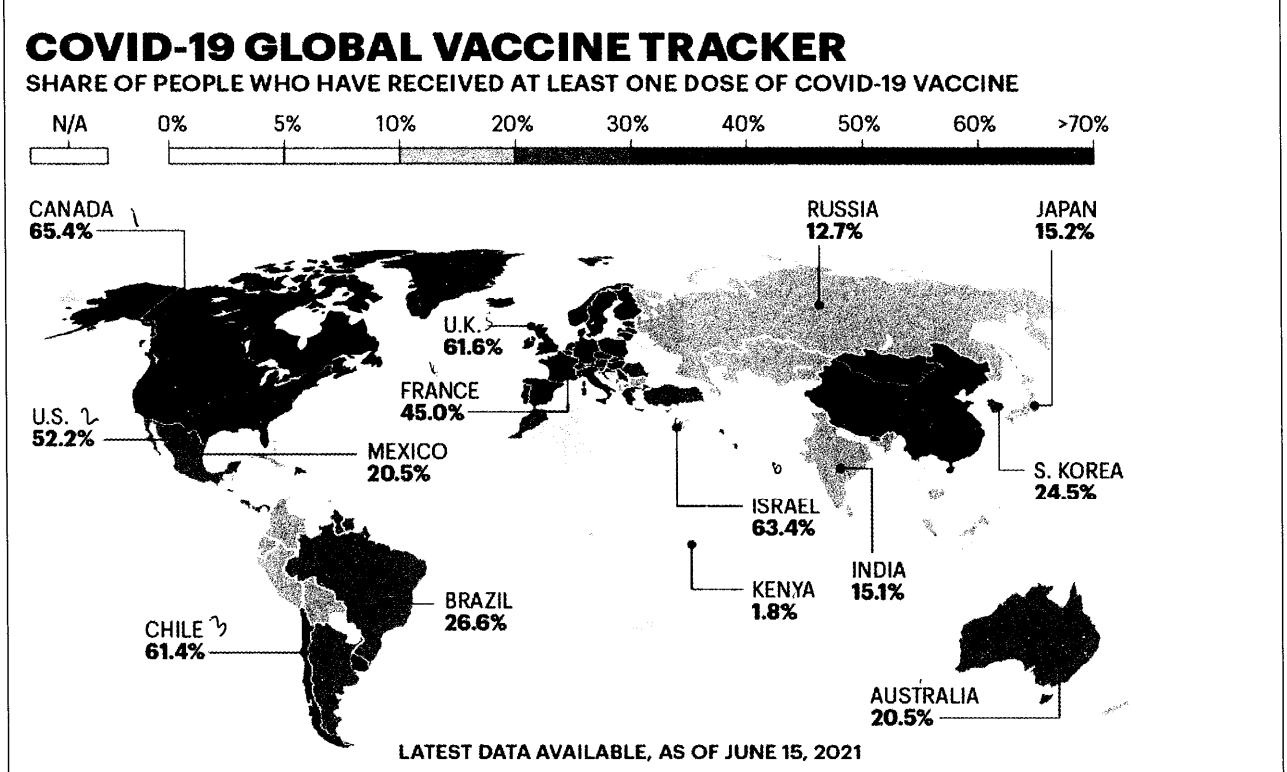
(3)

3.2.3 Calculate the total interest on the loan. (2)

[24]

QUESTION 4

4.1 The graph below shows the global percentage number of people who have received at least one dose of Covid-19 vaccine as of 15 June 2021.



Source:[www.fortune.com]

Use the information above to answer the questions that follow.

4.1.1 Is the data above discrete or continuous? Give a reason for your answer. (2)

4.1.2 Write down the percentage of people in Kenya who have received one dose of vaccine. (2)

4.1.3 Japan has a population of **126 058 811**. Calculate the number of Japanese who have received the vaccine. (2)

4.1.4 What is the range of the percentage global vaccinations? (2)

4.1.5 Calculate the mean percentage of the global vaccinations. Round off your answer to one decimal place. (5)

4.1.6 Which measure of central tendency will best describe the given data above? Justify your choice. (2)

4.1.7 Give one disadvantage of the mean. (2)

4.1.8 If a country is chosen at random, what is the probability that its percentage of people who have received at least one dose of Covid-19 vaccine is less than the mean percentage you calculated in 4.1.5. Write your answer as a percentage rounded off to one decimal place. (3)

4.2 Travis and his friend always prefer pizza takeaway for lunch every Sunday. Their favorite is Debonairs pizza and fizzy drinks. Debonairs has 4 NEW pizza flavors and 3 cool drink flavors to choose from.

Pizza Flavors

1. Spicy Chicken (SC)
2. Sweet & Sour Rib (SSR)
3. Creamy Chicken (CC)
4. Seasonal Veg (SV)



Cool Drinks

1. Iron Brew (ib)
2. Coca Cola (cl)
3. Sprite (sp)



Use the information above to answer the questions that follow.

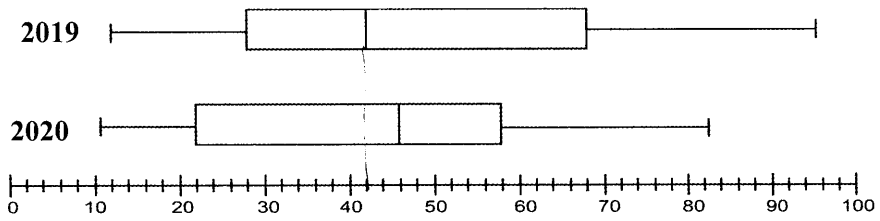
4.2.1 The incomplete tree diagram on Annexure D shows the combination of a pizza and a cool drink Travis and his friend can buy. Write down the missing parts **(a)** and **(b).** (2)

4.2.2 Use your tree diagram to find the probability of choosing Spicy Chicken with Iron Brew or Coca Cola. Write your answer as a fraction in its simplest form. (3)

[25]

QUESTION 5

5.1 The box-and-whisker plots below show the March Test Mathematical Literacy results for the 2019 and 2020 Maranatha High School Mathematical Literacy classes.



Use the diagram above to answer the questions that follow.

5.1.1 Write down the minimum and maximum marks for the 2019 class. (2)

5.1.2 The class of 2019 had 120 Mathematical Literacy learners. Calculate the number of learners who got a mark that was less than the Lower Quartile (Q_1) as well as the value of Q_1. (4)

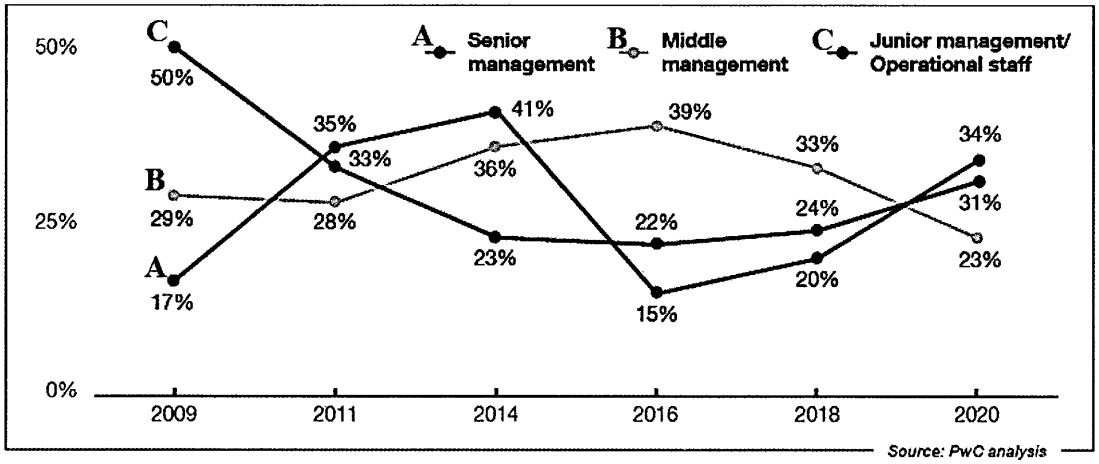
5.1.3 Calculate the interquartile range (IQR) for the 2020 class marks.
You may use the formula:
$\mathbf{IQR = Q_3 - Q_1}$ (4)

5.1.4 Compare the two box-and-whisker-plots and decide on the class whose learners performed better in the March test. Justify your answer. (4)

5.2 Organised crime in work places is a common phenomenon in South Africa. The perpetrators are mostly managers at different levels. The graph below shows main perpetrators of internal fraud in work places.

Main perpetrators of internal fraud in South Africa

Q At what level within your organisation was the internal perpetrator of the most disruptive economic crime incident?



5.2.1 What type of graph is used to display this data? (2)

5.2.2 Which year witnessed the same percentage level of internal fraud by managers in South Africa and what was the approximate level for that particular year? (2)

5.2.3 Describe the trend shown by the graph from 2016 to 2020. (4)

5.2.4 It was stated that internal fraud led to losses that exceed $100 million or R1,45 billion. Use these values to find the rand / dollar exchange rate used in this statement. Write your answer in the form rounded to three decimal places.
R1: $..... (4)

[26]

TOTAL MARKS 150

1 450 000 000

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