GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PREPARATORY EXAMINATION

2020

10601

MATHEMATICAL LITERACY

PAPER 1

MARKS: 150

TIME: 3 hours

11 pages + 1 answer sheet

INSTRUCTIONS AND INFORMATION

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

2. Write your name in the space provided on the ANSWER SHEET and hand this in with your ANSWER BOOK.

3. Use the ADDENDUM as follows:

    - Use ANNEXURE A to answer Question 2.3
    - Use ANNEXURE B to answer Question 3.2
    - Use ANNEXURE C to answer Question 4.1
    - Use ANNEXURE D to answer Question 4.2
    - Use ANNEXURE E to answer Question 5.2

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

5. An approved calculator (non-programmable and non-graphical) may be used 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. Start EACH question on a NEW page.

10. Write neatly and legibly.

QUESTION 1

1.1 1.1.1 For what does the acronym *VAT* stand? (2)

1.1.2 Calculate the amount of VAT payable on a coffee mug that costs R75,90 (VAT exclusive). (2)

1.1.3 Prices increase annually due to inflation. If the cost of 1 kg bananas is R13,99 in 2020 and the price in 2021 increased by 9,5% due to inflation, calculate the new price of 1 kg bananas in 2021. (2)

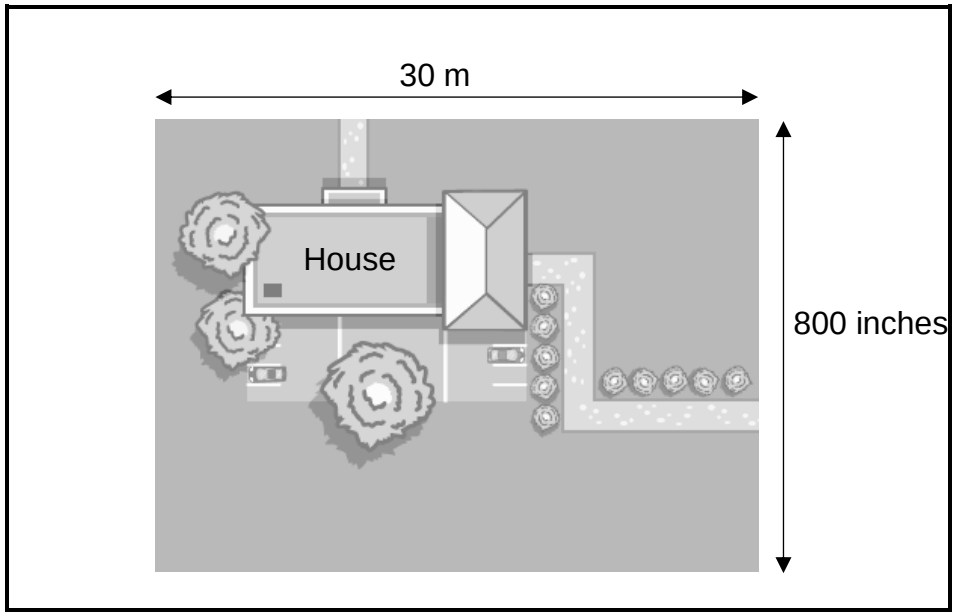
1.1.4 If Joan receives a gross monthly income of R13 500, determine how much she would contribute monthly towards UIF. (2)

1.1.5 Define the term *Gross income.* (2)

1.1.6 ABC Bank offers an interest rate of 8,5% per annum. Calculate the interest rate if it is compounded daily. Round-off your answer to 4 decimal places. (2)

1.1.7 Use the interest rate in QUESTION 1.1.6 to calculate the amount of interest John will receive if he invests R2 000 for one day. (2)

1.2 Nick wants to replace one of the fences of his yard with a concrete fence. The dimensions of the yard are as follows: The length is 30 m and the width is 800 inches. Refer to the diagram below and answer the questions that follow.



1.2.1 Convert the width of the yard to cm.
Use the conversion rate of **1 inch = 2,5 cm.** (2)

1.2.2 If the width of the yard is 20 m, calculate the total perimeter of the yard in metres.
Use the following formula: **Perimeter = (2 x length) + (2 x width)** (2)

1.2.3 The length of one concrete slab is 1,5 m. Determine how many concrete slabs he will use if he replaces only one of the lengths of fence of his yard. (2)

1.2.4 The ideal curing temperature for concrete must not exceed 90˚F. Convert this temperature to ˚C. Round-off your answer to the nearest whole number.
Use the following formula:

$$℃ = \frac{\mathbf{5}}{\mathbf{9}}(℉ - \mathbf{32})$$

(2)

1.3 The Grade 12 class wrote a class test and obtained the marks tabulated below. The class test totalled 50 marks. Use the information in the table provided and answer the questions that follow.

Table 1: Marks obtained out of 50

17	25	30	17	45
16	21	9	22	40
33	28	15	14	18

1.3.1 Determine the modal mark obtained for the test. (2)

1.3.2 Determine the probability of randomly selecting a learner that obtained more than 38 out of 50 for the test. (2)

1.3.3 Determine the range for the marks obtained. (2)

1.3.4 Calculate the percentage of the learner that scored the lowest mark obtained. (2)
[30]

QUESTION 2

2.1 Nico opened a small shop in his community. He gets most of his products from a bulk store or local farm. He adds a mark-up of 20% on the cost price to determine the selling price.

2.1.1 Nico sells his oranges at R7,99 per kilogram. Determine his selling price for 3,8 kg oranges. (2)

2.1.2 Nico buys 120 butternuts from a farmer for R720,00. What is the cost price for one butternut? (2)

2.1.3 Calculate the total income that Nico will receive if he sells 240 butternuts with a 20% mark-up. (3)

2.1.4 Nico wants to make more profit by selling his tomatoes at a higher price because of a higher demand. Calculate the percentage increase if the original price of tomatoes was R15,50 per kilogram and he increased the price to R23,25 per kilogram.

Use the formula: $\textbf{\% Increase} = \frac{\textbf{New Price - Old Price}}{\textbf{Old Price}} \times \mathbf{100}$ (2)

2.2 Sabir is going to university to study to become a pharmacist. His father decided to buy him a new Toyota Aygo as a reward for his wonderful Grade 12 results. The Toyota Aygo is currently on special for the reasonable price of R174 900 including VAT. They decided to buy the car on hire-purchase and pay off the balance in 60 monthly instalments. Simple interest is charged at a rate of 14% p.a. A deposit of 10% is required.

2.2.1 How many years will it take them to pay for the car? (2)

2.2.2 Calculate the amount they need to pay as a deposit. (2)

2.2.3 Calculate the loan amount after the deposit has been paid. (2)

2.2.4 Determine the total amount of interest paid over the 60-month period on the outstanding balance. (3)

2.2.5 Hence, calculate his monthly instalment if the total amount payable is R267 597. (2)

2.3 The annual government spending statements have been released for the 2017/18 and 2018/19 financial year. Refer to the statistics in ANNEXURE A, in the ADDENDUM and answer the questions that follow.

2.3.1 Calculate the difference in the consolidated spending of 2017/18 and the consolidated spending of 2018/19. (6)

2.3.2 Which consolidated spending increased the most from 2017/18 to 2018/19? Calculate the difference between these two years. (3)

2.3.3 Calculate the percentage decrease in health expenses from 2017/18 to 2018/19. (4)

[33]

QUESTION 3

3.1 During a heatwave, Mlungisi decided to sell ice cream sandwiches to her fellow scholars. The sandwiches are cylindrical and packed in a rectangular prism. The dimensions of the cylindrical ice cream sandwiches are as follows: The radius of one of the ice cream sandwiches is 3,5 cm and the height of one ice cream sandwich is 3 cm. Refer to the picture and information below and answer the questions that follow.



[Adapted from: patandstick.com.au]

Formulae:

Perimeter = $2 \times \pi \times r$ **Use π = 3,142**

Area = $\pi \times (radius)^2$

Volume = $\pi \times (radius)^2 \times height$

3.1.1 Define the term *perimeter*. (2)

3.1.2 The height of the rectangular prism, in which the ice cream sandwiches are packed, is 17 cm. Determine how many ice cream sandwiches can be stacked in one box. (2)

3.1.3 Calculate the volume of one ice cream sandwich. (4)

3.1.4 Mlungisi is worried about her weight after eating too many ice cream sandwiches. Her Body-Mass-Index (BMI) is currently 29,38 kg/m^2 and she is 1,65 m tall. Determine her current mass (in kg) and round-off your answer to the nearest kg.

Use the following formula: **BMI= $\frac{\text{Mass in kg}}{(\text{Height in m})^2}$** (3)

3.1.5 Mlungisi needs to walk to the shop to buy ingredients for dinner. The shop is 450 metres from her house. It takes her 6 minutes to walk from her house to the shop.

(a) Calculate her average speed in metres per minute.

Use the formula: **Average speed** $= \frac{\textbf{Distance}}{\textbf{Time}}$ (2)

(b) The shop closes at 17:00 and she must collect money from her grandmother halfway to the shop. She spends 12 minutes at her grandmother to collect the money. If she leaves the house at 16:40, at what time will she reach the shop? (2)

3.1.6 Mlungisi has a dripping tap in her kitchen. The water drips at a rate of 12 ml every minute. Determine the amount of water, in litres, that is wasted in one full day. (4)

3.2 Johnny uses the Gautrain to get to school. Study the timetable of the departure and arrival times of the Gautrain in the ADDENDUM, ANNEXURE B, to answer the questions that follow.

3.2.1 At what time intervals does the train leave from each station? (2)

3.2.2 How many stations are indicated on the timetable for the Gautrain? (2)

3.2.3 Is the time represented in the timetable in digital or analogue format? (2)

3.2.4 How long does it take the Gautrain to travel from Sandton to Hatfield? (2)
[27]

QUESTION 4

4.1 Pete and a few of his friends decided to go away for a weekend after the preparatory examinations. The Kosama resort they will be staying at, is shown on ANNEXURE C in the ADDENDUM. Refer to ANNEXURE C and answer the questions that follow.

4.1.1 If each room can accommodate a maximum of two people, determine how many people can stay at the resort. (2)

4.1.2 Determine the number of people that can be accommodated in the dining room if all the seats are filled. (2)

4.1.3 What is the difference between the number of people residing (staying) at the resort and the number of people that can dine at the resort? (2)

4.1.4 Define the term *floor plan*. (2)

4.1.5 On which elevation is the dining room windows situated? (2)

4.1.6 Write down the length of the wall on the Northern elevation. (2)

4.2 Suzy and her friends are visiting the Hartbeespoort Nature Reserve to do some research for a Life Sciences assignment. They will be travelling from Magaliespark (A on the map on ANNEXURE D) to Hartbeespoort Nature Reserve (B on the map). Refer to the GPS plan on ANNEXURE D and answer the questions that follow.

4.2.1 In which general direction would Suzy and her friends be travelling? (2)

4.2.2 Measure the straight line distance from Magaliespark to Hartbeespoort Nature Reserve. Give your answer in centimetres. (2)

4.2.3 Hence, calculate the scale of the map if the actual straight line distance is 3,9 km. Round-off your answer to the nearest ten thousand. (4)

4.2.4 Explain the meaning of the number scale you calculated in QUESTION 4.2.3. (2)

4.2.5 Identify the regional road they will be using when travelling from Magaliespark to Hartbeespoort Nature Reserve. (2)
[24]

QUESTION 5

5.1 Thato is researching the annual weather forecast of Hartbeespoort. Below are the average temperatures and rainfall measurements over a period of one year. This information will give you a clear indication of what kind of weather you can expect over the course of a typical year. Use the information in the table below and answer the questions that follow.

Table 2: Average temperature and rainfall for the year in Hartbeespoort

Month	Lowest temperature in ˚C	Highest temperature in ˚C	Number of rainfall days
January	18	29	8
February	18	30	6
March	16	28	6
April	12	25	3
May	8	23	1
June	5	21	0
July	5	21	0
August	7	23	0
September	12	28	1
October	15	28	8
November	16	28	8
December	18	29	8

5.1.1 Explain the difference between *discrete data* and *continuous data*. (2)

5.1.2 In which month was the highest temperature recorded? (2)

5.1.3 How many months had less than 3 rainy days? (2)

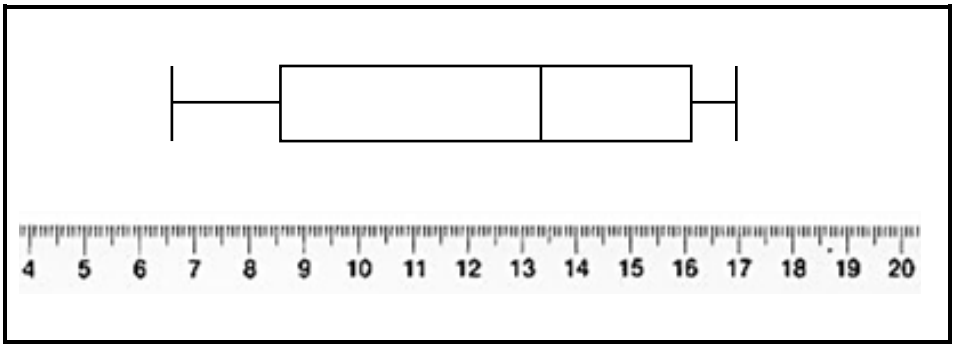
5.1.4 Determine the range for the number of rainy days recorded. (2)

5.1.5 Use the column with the lowest temperatures recorded and arrange it in ascending order. (2)

5.1.6 Use the information in QUESTION 5.1.5 and determine the median temperature for the year. (2)

5.1.7 Calculate the mean number of rainfall days for the year. (3)

5.1.8 The box-and-whisker diagram below represents the quartile values for the lowest temperatures recorded for the year. Use the box-and-whisker diagram or the 5-number summary (below) to determine the Interquartile Range.



The 5-number summary:

Minimum	Q1	Q2	Q3	Maximum
6,5	8,5	13,4	16,2	17

(4)

5.1.9 The graph on the ANSWER SHEET reflects the lowest temperatures recorded for the year. Use the information in the table on the previous page to draw a graph on the same set of axes representing the highest temperatures recorded for the year. Remember to tear off your ANSWER SHEET and insert it in your ANSWER BOOK. (5)

5.2 Crime rates have been changing from 1995 to 2018. Refer to the graph in ANNEXURE E regarding South Africa's annual percentage change in murder rates and answer the questions that follow.

5.2.1 During which year was the biggest decrease in murder rates? (2)

5.2.2 If the total number of murders during the 15/16 period was 31 320, how many murders were there in 16/17? (2)

5.2.3 Calculate the mean percentage increase in murder rates from the year 12/13 to 17/18. (3)

5.2.4 Determine how many years showed a decrease in murder rates. (2)

5.2.5 Calculate the difference between the year with the biggest decrease and the year with the biggest increase in murder rates. (3)

[36]

TOTAL 150

END

ANSWER SHEET

Name: _____ GR 12- ____

QUESTION 5.1.9

