Province of the EASTERN CAPE EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2019

MATHEMATICAL LITERACY P1
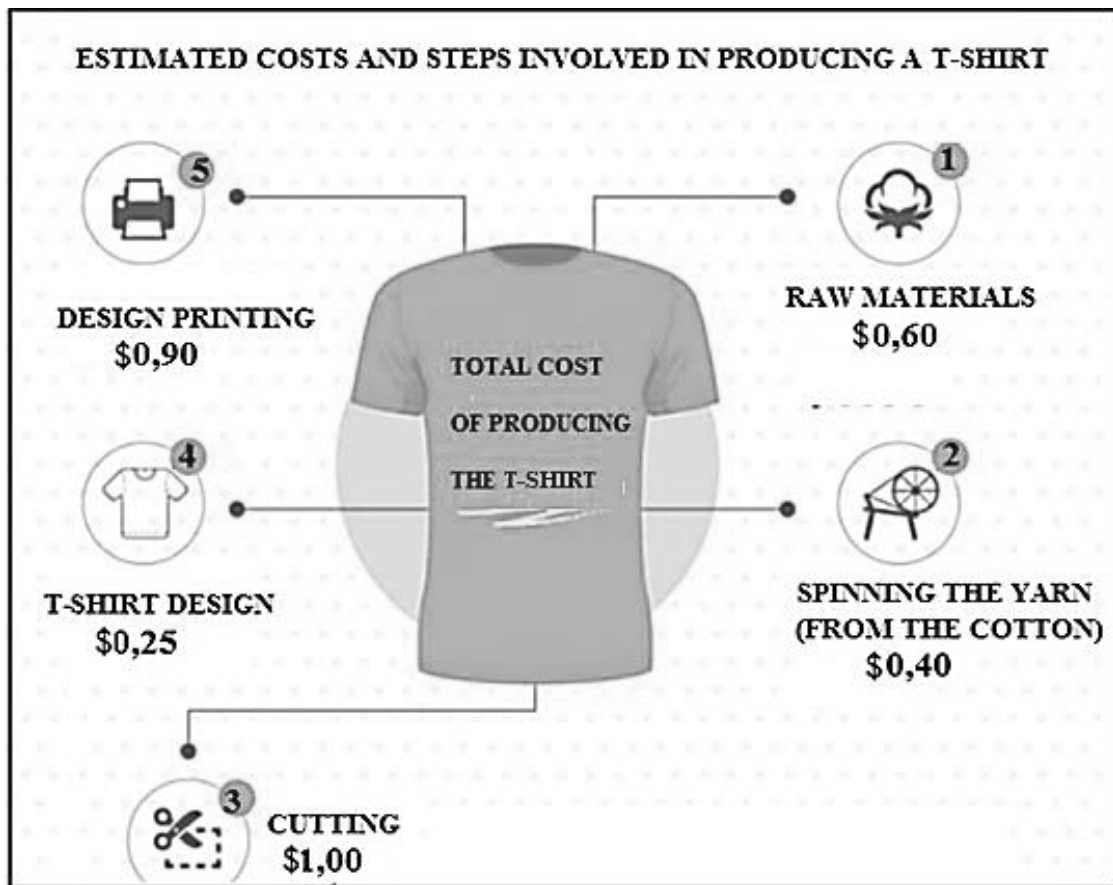
MARKS: 100

TIME: 2 hours

This question paper consists of 10 pages including 1 answer sheet.

INSTRUCTIONS AND INFORMATION

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

2   Use the attached ANSWER SHEET to answer QUESTION 5.7.

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

4.   Diagrams are NOT necessarily drawn to scale, unless stated otherwise.

5.   Round off ALL the final answers according to the context used, unless stated otherwise.

6.   Indicate units of measurement, where applicable.

7.   Start EACH question on a NEW page.

8.   Show ALL calculations clearly.

9.   Write neatly and legibly.

QUESTION 1

1.1   Inako designs and sews T-shirts. The steps and costs in producing a T-shirt are shown below.

ESTIMATED COSTS AND STEPS INVOLVED IN PRODUCING A T-SHIRT

DESIGN PRINTING
$0,90

RAW MATERIALS
$0,60

TOTAL COST
OF PRODUCING
THE T-SHIRT

T-SHIRT DESIGN
$0,25

SPINNING THE YARN
(FROM THE COTTON)
$0,40

CUTTING
$1,00

[Source: www.graincreative.com]

Use the above information to answer the questions that follow.

1.1.1   Write down the actual number of steps involved in the production of a T-shirt.   (2)

1.1.2   Write down the process where the production has a maximum cost.   (2)

1.1.3   Calculate the total estimated cost of producing the above T-shirt.   (2)

1.1.4   Write down the website where the production of this T-shirt was found.   (2)

1.1.5   Write down the simplified ratio of the cost of the T-shirt design to the cutting of the T-shirt.   (2)

1.1.6   It takes 4 hours 45 minutes to sew a T-shirt. Determine the time when Inako completes one if he starts sewing at 8:25 am.   (2)

1.2 **TABLE 1** below shows the shoe sizes of a Grade 11 Mathematical Literacy class.

TABLE 1: SHOE SIZES

Shoe Size	4	5	6	7	8	9
Frequency	3	12	22	18	3	2

Use the above information to answer the questions that follow.

1.2.1 Explain the term *frequency* in this context. (2)

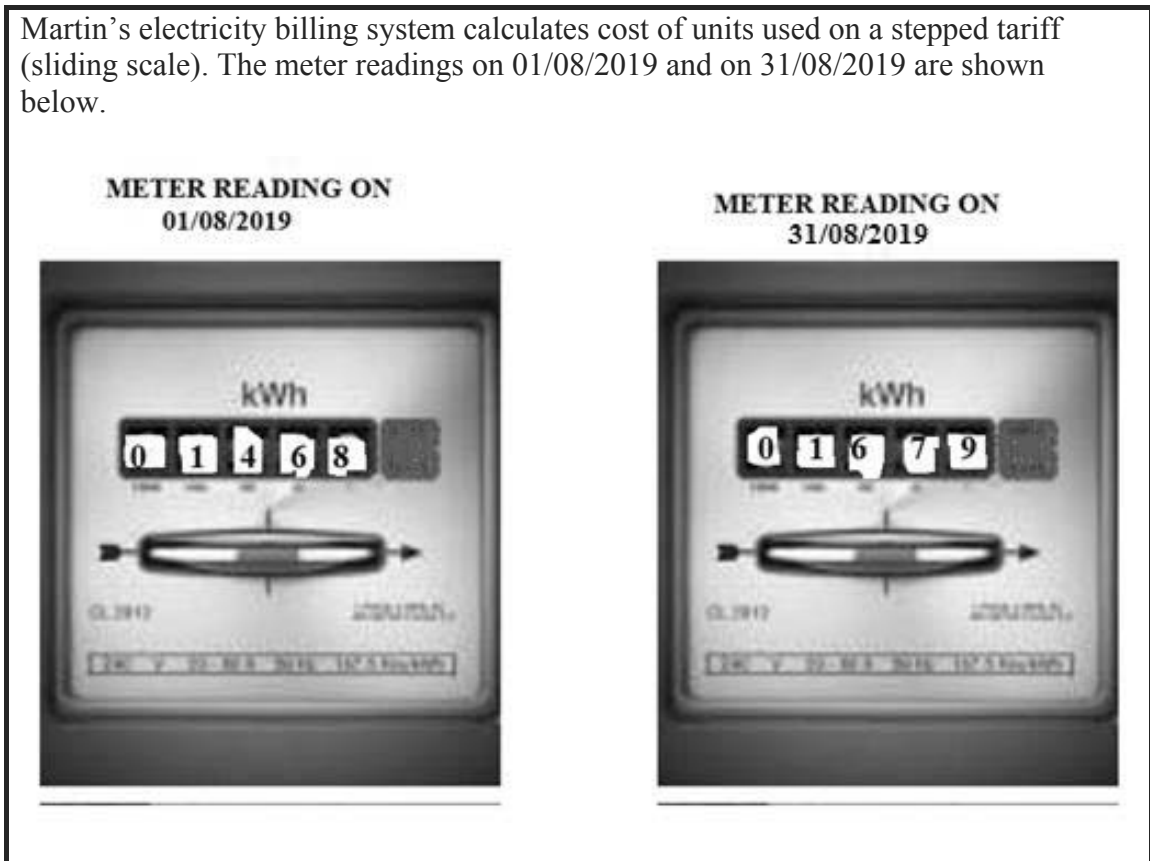1.2.2 Determine the number of learners in the class. (2)

1.2.3 Write down the modal shoe size for this class. (2)

1.2.4 Explain the meaning of the term *probability*. (2)

[20]

QUESTION 2

2.1   Martin's electricity billing system calculates cost of units used on a stepped tariff (sliding scale). The meter readings on 01/08/2019 and on 31/08/2019 are shown below.

Study the meter readings above and **TABLE 2** below to answer the questions that follow.

TABLE 2:   STEPPED TARIFF SYSTEM (SLIDING SCALE) USED TO CALCULATE COST IN CENTS OF ELECTRICITY UNITS

Step	Range in KiloWatt per hour (kWh)	Charge in cents in KiloWatt per hour (c/kWh)
1	0 – 150	61,50
2	Above 150 – 350	82,50
3	Above 350 – 600	108
4	Above 600	195

2.1.1   Write down the amount (in cents) charged for one Kilowatt per hour in step 1.   (2)

2.1.2   Calculate the total amount Martin paid for units used in August 2019 according to the above tariff system. Give your final answer in rands and cents.   (6)

2.2 The following advertisement for a cellphone appeared in a magazine from a network provider.

Study the information above and answer the questions that follow.

2.2.1 The price was reduced from R2 499 to R1 948. Show how the 22% discount was calculated. (2)

2.2.2 The price of R1 948 includes Value Added Tax (VAT 15%). Calculate the VAT amount included in the price. (3)

2.3 In December 2018, Statistics South Africa announced that the annual inflation rate was 4,5%.

2.3.1 Explain the meaning of the term *inflation*. (2)

2.3.2 Calculate the price of a laptop in December 2018 if its price was R5 999 in December 2017. (3)

2.4 Sona won R50 000 with the LOTTO. She invested 75% of the amount that she won in a bank that offers an interest rate of 7, 5% per annum compounded annually. She sent R10 000 to her sister studying in the United States of America (USA).

Use the above information to answer the questions that follow.

2.4.1 Determine the amount Sona invested with the bank. (2)

2.4.2 Calculate the total interest earned in 2 years by investing 75% of the amount won. (5)

2.4.3 Convert the amount Sona sent to her sister into USA dollars ($).

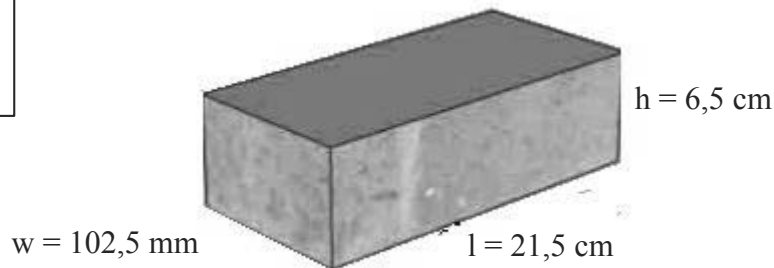**You may use the exchange rate:**
1$ = R14, 38 (2)

[27]

QUESTION 3

A brick company truck transports a load of 2 793 bricks. The dimensions of each brick are 21,5 cm by 102,5 mm by 6,5 cm. The weight of one brick is 3,275 kg.

DIMENSIONS OF A BRICK

l = length
w = width
h = height

h = 6,5 cm

w = 102,5 mm

l = 21,5 cm

3.1   Write down the number of bricks transported in ONE truck to the nearest thousand.   (2)

3.2   Calculate the total surface area (cm^2) of 500 bricks.

        You may use the formula:

        Total Surface Area = 2[(length× width) + (length× height)+ (height× width)] ×500
        [2 (l x w) + 2(l x h) + 2(h x w)] x 500   (3)

3.3   Determine the number of complete pallets in one full truck load if one pallet has 500 bricks.   (3)

3.4   The weight of one pallet is 1 637,5 kg. Convert this weight into tons.
                1 000 kg = 1 ton   (2)

3.5   Alex bought 3 300 bricks to build his house. The builders used 50 bricks per square metre (m^2). Calculate the area of the house if 75 bricks were not used.

        You may use the formula:
        Area of the house = $\dfrac{\text{bricks bought} - \text{bricks not used}}{\text{number of bricks per m}^2}$ (4)

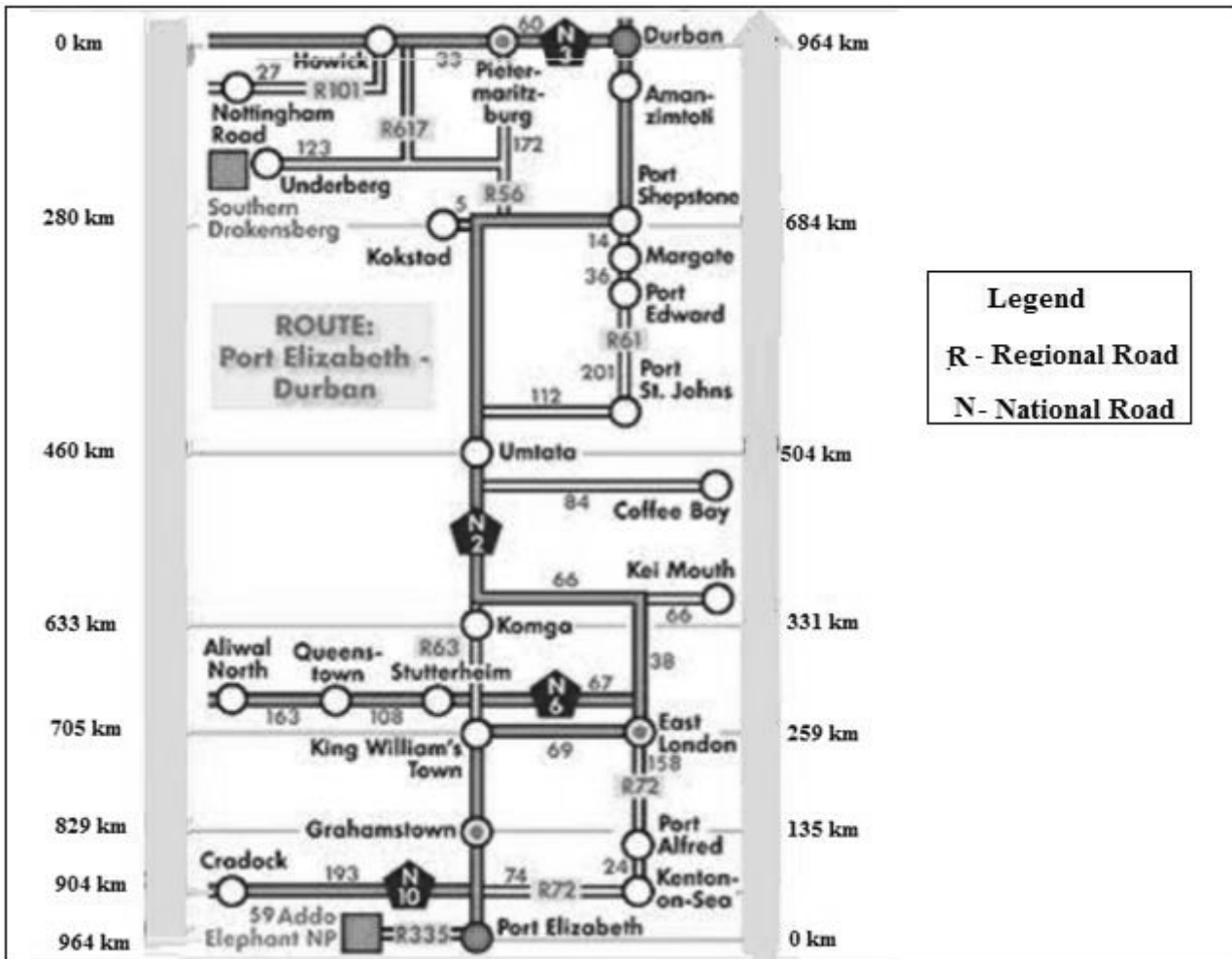3.6   Show that the volume of one brick is 1 432,44 cm^3.

        You may use the following formula:
        Volume = Length × Width × Height   (2)
        [16]

QUESTION 4

Study the map below and answer the questions that follow.

4.1 Name the type of map shown above. (2)

4.2 Write down the total distance from Durban to Port Elizabeth. (2)

4.3 Determine the number of regional roads found on the map. (2)

4.4 Name the national road from Durban to Port Elizabeth via East London. (2)

4.5 Calculate the total distance from Grahamstown to Umtata (Mthatha). (2)

4.6 Ivani took 2,5 hours to travel from East London to Port Elizabeth. Calculate Ivani's speed (in km/h).

You may use the formula:

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

(3)

4.7 Explain how a person will travel from Port Edward to Umtata. (2)

[15]

QUESTION 5

TABLE 3 below shows research results done by the United States Department of Agriculture (USDA) in 2014 and 2016 to determine the kinds and numbers of animals.

TABLE 3: KINDS AND NUMBERS OF ANIMALS IN 2014 AND 2016

Kinds of animals	Numbers in 2014	% OF TOTAL in 2014	Numbers in 2016	% OF TOTAL in 2016
Guinea Pigs	169 528	20,3	183 237	22,3
Hamsters	121 930	14,6	102 633	12,5
Rabbits	150 344	18,0	139 391	17
Dogs	59 358	7,1	60 979	7,4
Non-Human Primates	57 735	**A**	71 188	8,7
Pigs	45 392	5,4	50 226	6,1
Sheep	10 315	1,2	12 196	1,5
Other Farm Animals	27 393	3,3	20 597	2,5
Cats	21 083	2,5	18 898	2,3
All other covered species	171 375	20,5	161 467	19,7
TOTAL	**834 453**	**100**	**820 812**	**100**

[Source: www.speakingofresearch.com]

Use the table above to answer the questions that follow.

5.1   Arrange the numbers of animals in 2016 in descending order.   (2)

5.2   Determine the median of the numbers of animals in 2016.   (3)

5.3   Calculate the difference in percentage (%) of the number of pigs in 2014 and 2016.   (2)

5.4   Determine the mean of all types of animals in 2016.   (3)

5.5   Calculate the range of the numbers of animals in 2014.   (2)

5.6   Determine the value of **A**, the Non-Human Primates percentage of totals in 2014.   (3)

5.7   An incomplete bar graph showing the number of animals during 2016 is drawn on the ANSWER SHEET. Fill in the remaining bars.   (4)

5.8   Determine, as a decimal fraction, the probability of randomly selecting an animal that will be from any kind of animals with a population less than 50 000 in 2014.   (3)

[22]

TOTAL: 100

ANSWER SHEET

QUESTION 5.7

NAME OF LEARNER: ……………………………………. GRADE 11: ………