education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

COMMON TEST

JUNE 2019

MARKS: 100

TIME: 2 hours

This question paper consists of 9 pages, an answer sheet and an addendum with 6 Annexures (7 pages).

Copyright Reserved

INSTRUCTIONS AND INFORMATION

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

2.

2.1 Use the ANNEXURES in the ADDENDUM to answer the following questions.

- ANNEXURE A for QUESTION 1.1
- ANNEXURE B for QUESTION 1.2
- ANNEXURE C for QUESTION 2.1
- ANNEXURE D for QUESTION 2.2
- ANNEXURE E for QUESTION 3.2
- ANNEXURE F for QUESTION 4.3

2.2 Answer QUESTION 3.2.3 on the ANSWER SHEET provided.
Write your surname and name in the spaces on the ANSWER SHEET and hand in the ANSWER SHEET with your ANSWER BOOK.

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.

10. Write neatly and legibly.

Copyright Reserved

QUESTION 1

1.1

Amy has been saving her money for a deposit to purchase a two-bedroom flat. She sees an advertisement in the local newspaper for two flats that she's interested in. She compares both flats and needs to decide which flat would be the most cost-effective purchase.

Refer to ANNEXURE A in the ADDENDUM and answer the following questions.

1.1.1 Determine **A**, the Loan amount for Flat 1. (3)

1.1.2 Use TABLE 1 and TABLE 2 to calculate **B**, the Monthly repayment for Flat 1.

You may use the formula:

Monthly repayment = (Loan amount ÷ 1 000) × factor (3)

1.1.3 Calculate **C**, the cost of the loan for Flat 2. (3)

1.1.4 The estate agent claims that Flat 1 is the most cost-effective buy. The interest paid on the loan is less than Flat 2.

Verify if this claim is correct, by showing all calculations. (5)

1.2

Olwethu is learning about conservation at school and convinces her Dad to install a Jojo tank to save rainwater to use at home.

Refer to ANNEXURE B in the ADDENDUM and answer the questions that follow.

1.2.1 The advertisement states that 2,5cm of rainfall on a 186 m^2 roof is equal to 4 732 litres of water.

Verify by calculation if this statement is correct.

You may use the formula:

Volume of rainwater = Area of roof × height of rainfall

NOTE:

1 m^3 = 1 000 litres (7)

Copyright Reserved

1.2.2 Olwethu's Dad decides to install a 5 000 litre Jojo tank with a height of 2,1 metres. The diameter of the concrete base that the Jojo tank sits on must be 10% bigger than the diameter of the Jojo tank.

Refer to Figure 1 in ANNEXURE B to determine the diameter of the concrete base in centimetres.

You may use the formula:

Volume of a Cylinder = $\pi \times$ radius$^2 \times$ height, where $\pi = 3{,}142$

NOTE:

1 litre = 1 000 cm^3 (8)

[29]

QUESTION 2

2.1

According to Statistics South Africa, Tourism had a major impact on our economy in 2017. The graphs in ANNEXURE C show the impact Tourism has on employment in South Africa.

Refer to ANNEXURE C and answer the following questions:

2.1.1 Tourism created 31 752 new jobs in 2017. Determine the percentage change in the number of new jobs created from 2016 to 2017. (3)

2.1.2 Comment on the trend of new jobs created by Tourism from 2010 to 2017. (2)

2.1.3 Determine the ratio in simplest form of air passenger travellers to road passenger travellers. (3)

2.1.4 722 013 individuals make up 4,5% of the South African workforce who work in the Tourism sector.

Verify, showing all calculations, if this claim is correct. (4)

2.2

Yandisa and her friends are planning a road trip from Pretoria to Cape Town, via Bloemfontein. The driving distance from Pretoria to Cape Town is 1461 km. They will stop to rest in Bloemfontein for 45 minutes and then drive straight through to Cape Town.

Refer to ANNEXURE D and answer the questions that follow.

2.2.1 Determine the general direction of Cape Town from Pretoria. (2)

2.2.2 Use the bar scale on the map to calculate the actual distance from Pretoria to Bloemfontein. (4)

2.2.3 Yandisa's friend claims, if they travel to Cape Town at a speed of 100 km per hour, it should take them approximately 15 and a half hours to reach their destination.

Verify, showing all calculations if this claim is correct. (6)

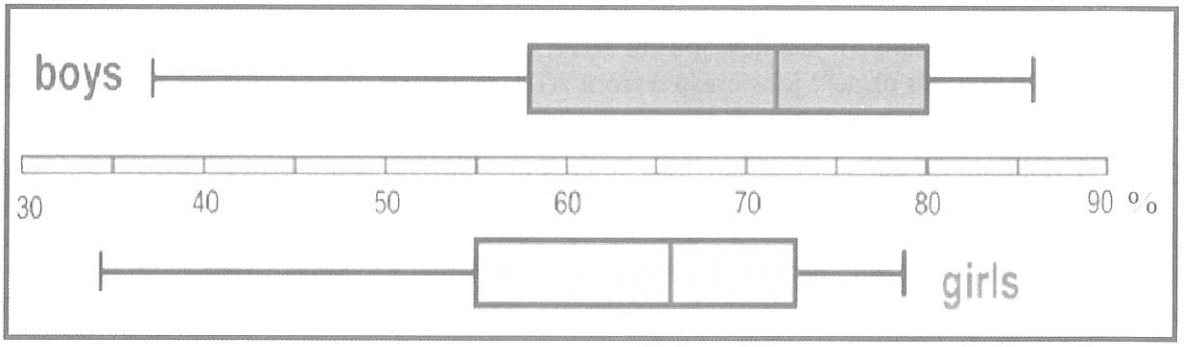
2.2.4 Yandisa and her friends leave Pretoria at 5:45 am for their road trip to Cape Town. Determine the time they will reach Cape Town. (3)

[27]

QUESTION 3

3.1 Mr Smith teaches Grade 12 Mathematical Literacy at Cameron High School. He analyses the test results for a class of matric learners. The box- and-whisker plot below shows the test results out of 100 percent.

Study the box- and- whisker plot and answer the questions that follow.



[Adapted Source: resourceaholic.com]

3.1.1 Calculate the interquartile range for the girl's marks. (3)

3.1.2 70% of the boys achieved a mark of 72,5% or less compared to 70% of the girls who achieved a mark of 69% or less.

Is this statement correct? If not, provide the correct statement. (4)

3.1.3 Determine the marks achieved by the top 25% of the girls. (2)

3.1.4 A statement was made that the boys performed better in the test than the girls. Use 2 values in the box – and – whisker plot to justify this statement. (4)

3.2 Mrs Zulu has an Elite account with Standard Bank. The bank sent her a brochure highlighting the changes in the bank fee charges for 2019. Part of the brochure is shown in ANNEXURE E.

Refer to ANNEXURE E and answer the questions that follow.

3.2.1 Show how the bank fee of R18, 25 in 2019 for Withdrawal (Other) was calculated. (3)

3.2.2 Mrs Zulu has 5 Debit orders (external) in 2019 compared to 3 Debit orders (external) in 2018. Determine how much more she pays for Debit order (external) in 2019. (3)

3.2.3 Use the ANSWER SHEET to complete the graph which shows the percentage change in bank fees from 2018 to 2019 on different transactions. (4)

[23]

Copyright Reserved

QUESTION 4

4.1

Jason wants to buy a pair of sneakers online. The sneakers are $178,57 in New York and the same pair of sneakers are £156,49 in London. The Table below show the exchange rate for the dollar and the pound.

TABLE 3: Exchange rates

$1	**ZAR 14,52**
£1	**ZAR 18,71**

4.1.1 Determine the cost of the sneakers in both countries in Rand and calculate how much Jason would save if he bought the sneakers from the cheapest country. (6)

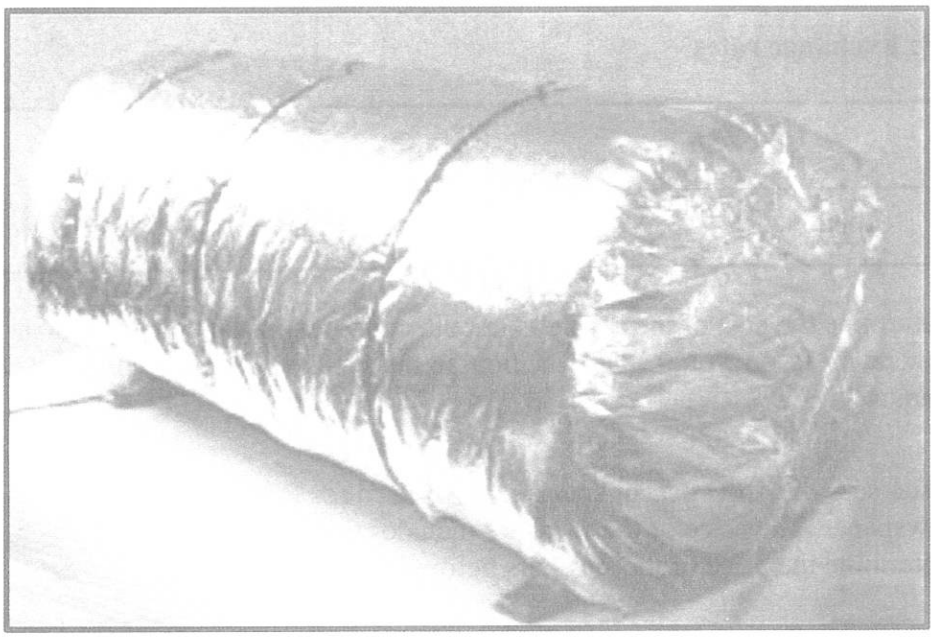
4.1.2 Jason sees the same pair of sneakers advertised for R3000 in the local newspaper. The price of the sneakers includes the inflation rate of 5,9%. Determine the price of the sneakers before inflation. (3)

Copyright Reserved

4.2

Olwethu informs her Dad, if they were to cover their geyser with a geyser blanket it would keep the water hotter in the geyser for longer and reduce their electricity consumption.

Figure 2: Geyser wrapped in a geyser blanket



The geyser above has a diameter of 45 cm and a height of 110 cm. Determine the surface area of the geyser blanket in m^2, if the blanket must be 20% bigger than the geyser to ensure it is completely insulated.

You may use the formula:

SA of Cylinder = $(2 \times \pi \times radius^2) + (2 \times \pi \times$ **radius** $\times$ **height**). where π =3,142 (7)

4.3 ANNEXURE F highlights the various reasons for car accidents involving teenagers.

Refer to ANNEXURE F and answer the questions that follow.

4.3.1 "6 out of 10 teen crashes involve driver distractions". Show using calculations if this statement is correct. (3)

4.3.2 Determine the probability as a percentage of an accident occuring that does not involve teenage driver distraction. (2)

[21]

TOTAL: 100

Copyright Reserved

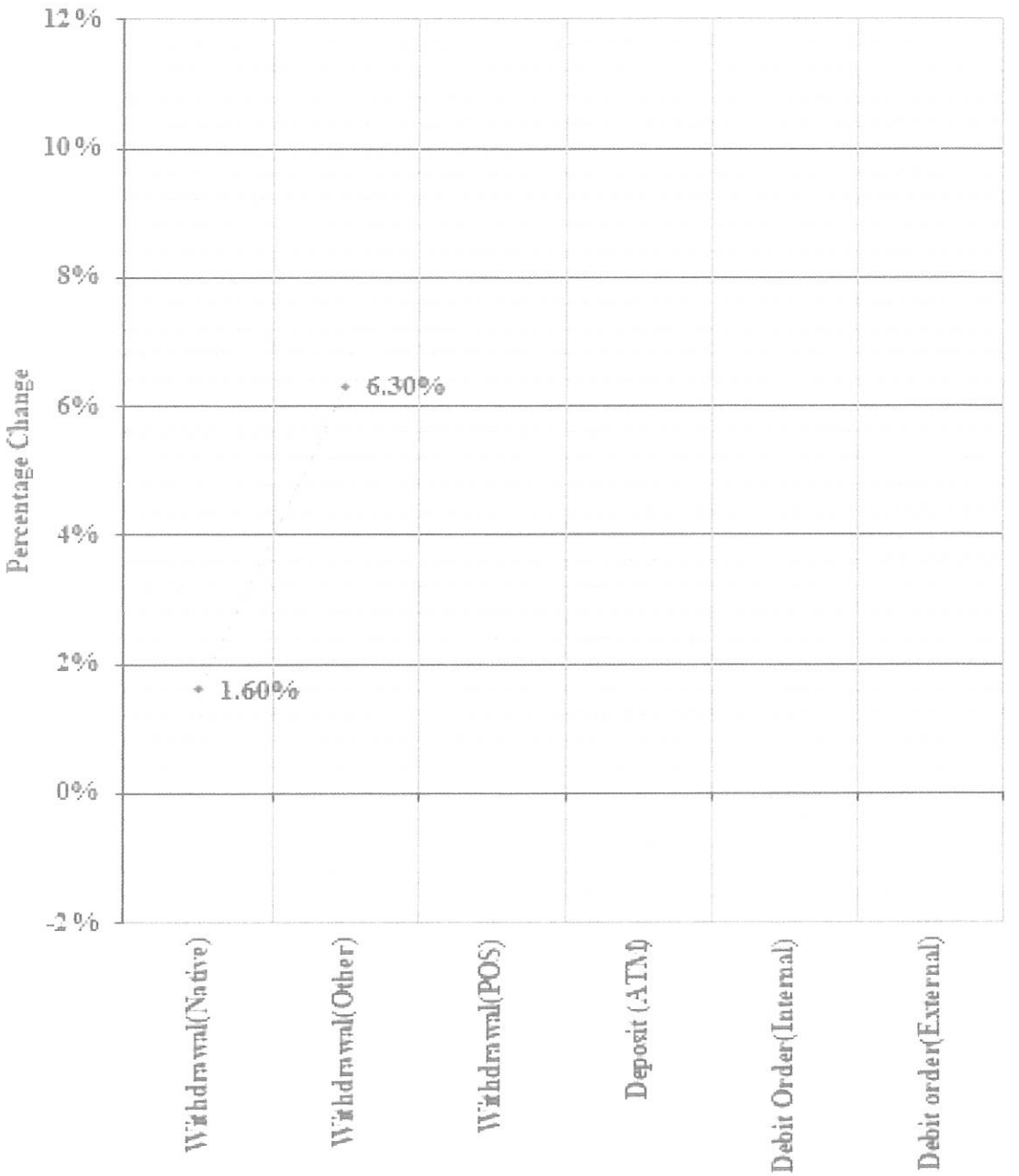
ANSWER SHEET

QUESTION 3.2.3

NAME: _____ **CLASS:** _____

PLEASE TEAR ON DOTTED LINE

Graph showing percentage change in Bank Fees



Types of transactions in bank account

Copyright Reserved

education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

ADDENDUM

COMMON TEST

JUNE 2019

This Addendum consists of 7 pages with 6 Annexures.

Copyright Reserved

ANNEXURE A

QUESTION 1.1

TABLE 1: Comparison of Loan Options for each Flat

FLAT 1		FLAT 2	
2-bedroom, 1 bathroom flat with undercover parking		2-bedroom, 1 bathroom flat with undercover parking	
Cash price	R725 000	**Cash price**	R750 000
Deposit	10%	**Deposit**	10%
Loan Amount	**A**	**Loan Amount**	R675 000
Interest rate	11%	**Interest rate**	10,5%
Loan period	25 years	**Loan period**	20 years
Monthly repayment	**B**	**Monthly repayment**	R6675,75
Cost of the loan	R1 902 690	**Cost of the loan**	**C**

TABLE 2: Loan factor values based on interest rate and loan period.

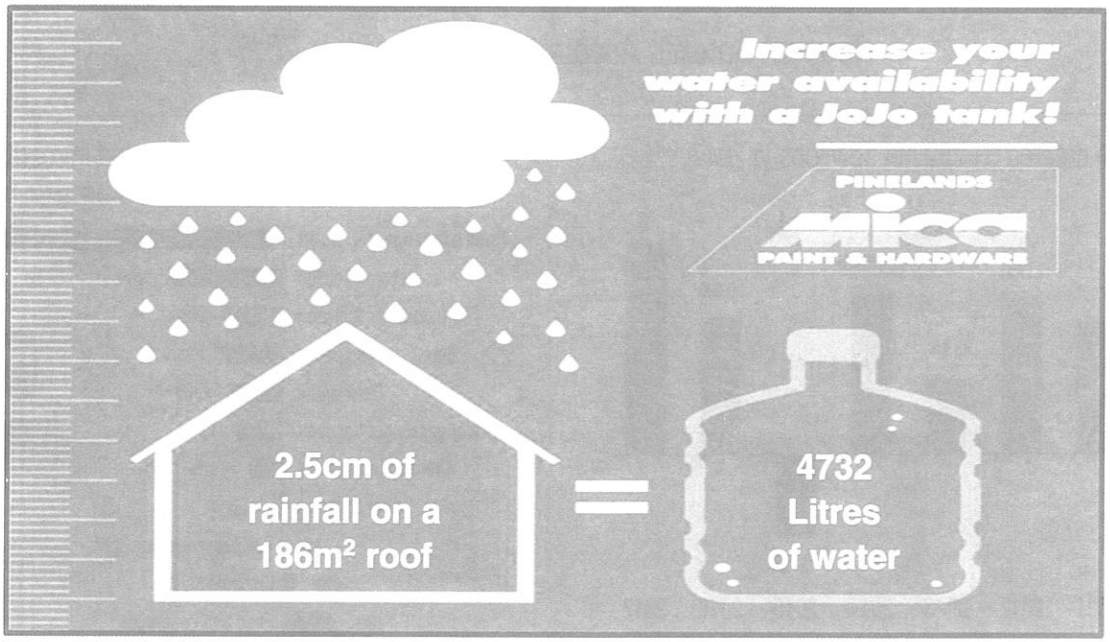
LOAN PERIOD	INTEREST RATE			
	10%	**10,5%**	**11%**	**12%**
15 years	10,73	11,01	11,24	12,03
20 years	9,51	9,89	10,35	11,04
25 years	9,07	9,42	9,72	10,56

Copyright Reserved

ANNEXURE B

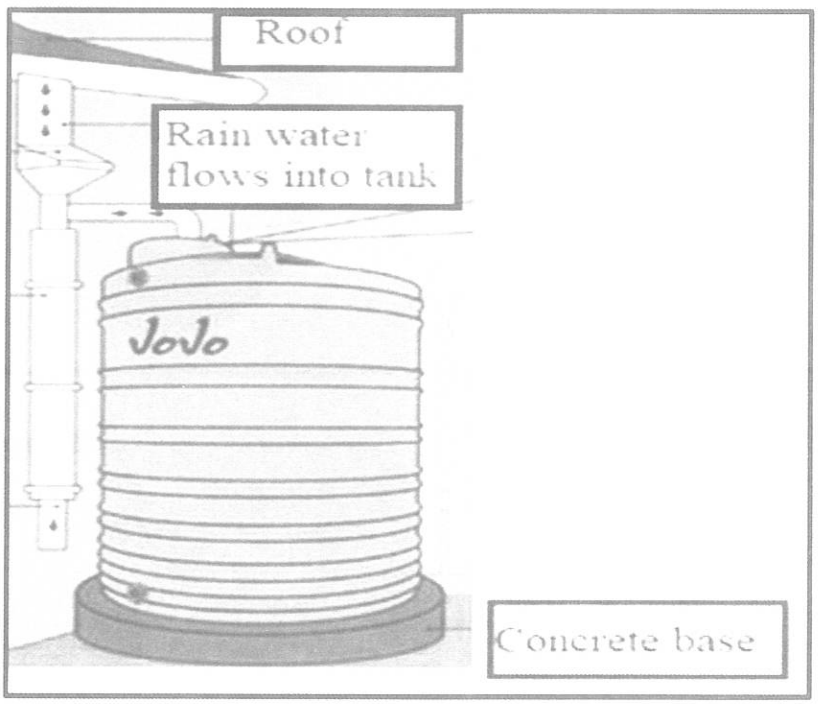
QUESTION 1.2

Advertisement 1: Mica Store Claim



[Source: www.mica.co.za]

Figure 1: Jojo tank



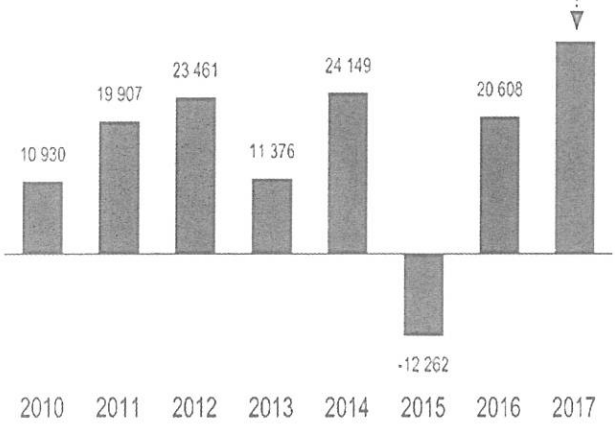
ANNEXURE C

QUESTION 2.1

Tourism's impact on employment in South Africa

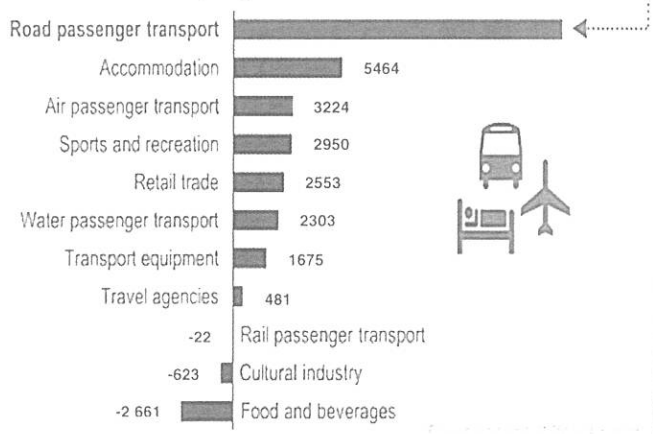
Tourism Satellite Account for South Africa, 2017

Tourism created 31 752 net new jobs in 2017



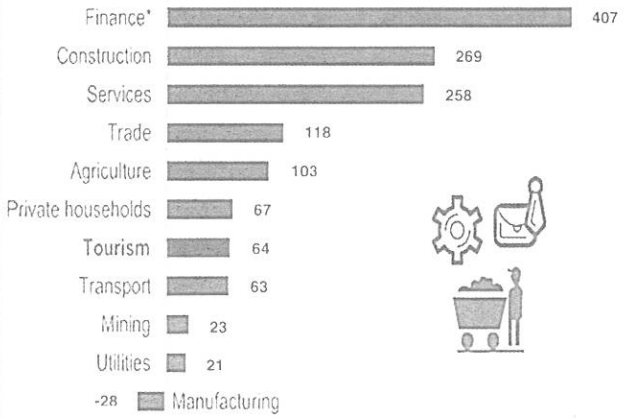
16 676 of these jobs were created in road transport

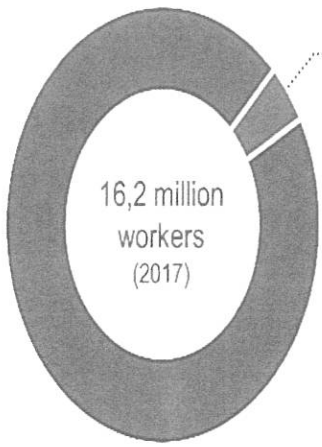
Number of jobs gained/lost in the tourism sector, 2017



Tourism created more jobs than manufacturing and mining

Number of jobs gained/lost by industry, 2014–2017 (thousands)





4,5%

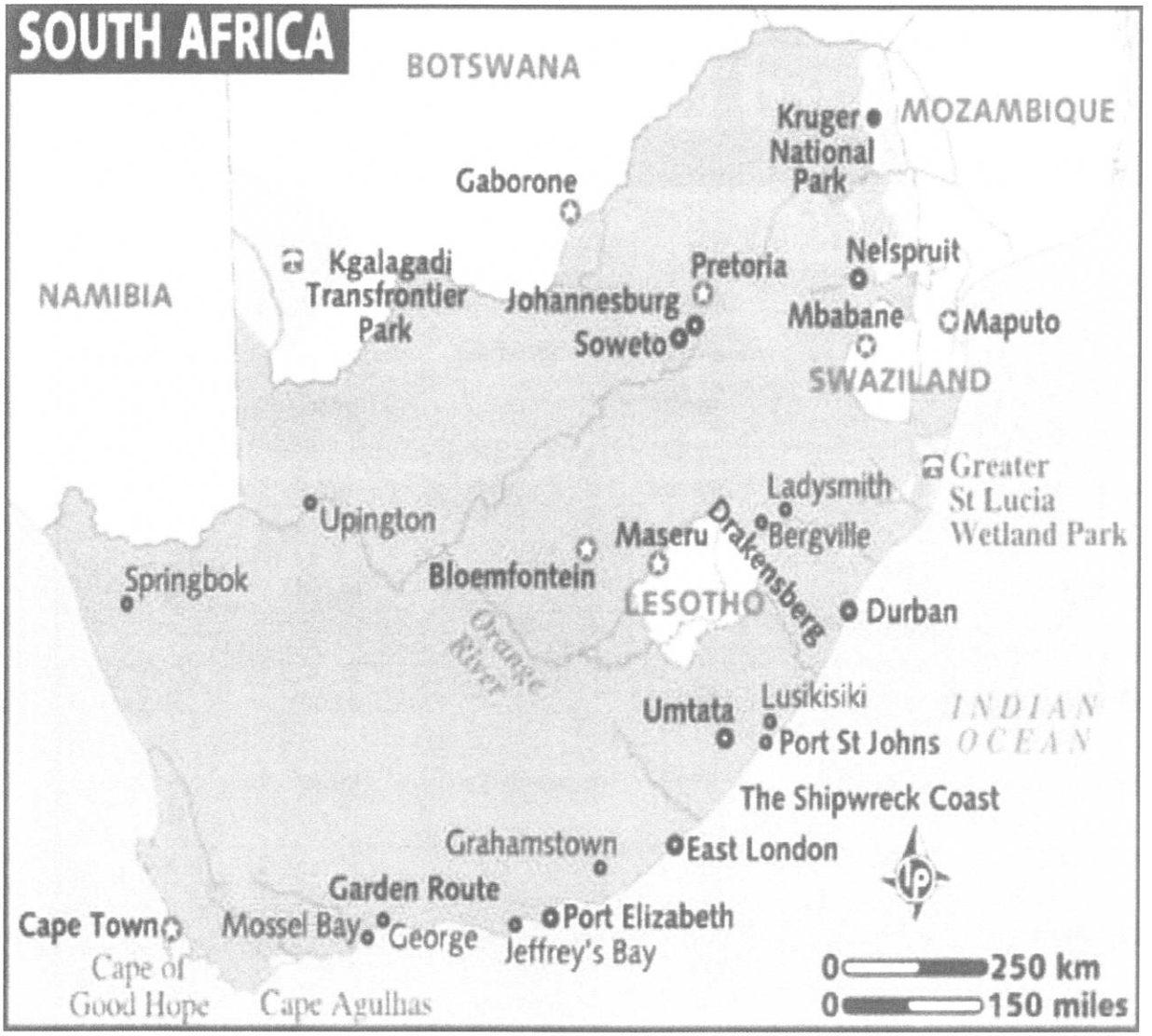
of South Africa's workforce were employed in the tourism sector

722 013 individuals

[Source: www.statsa.gov.za]

ANNEXURE D

QUESTION 2.2



[Source: www.lonelyplanet.com]

ANNEXURE E

QUESTION 3.2

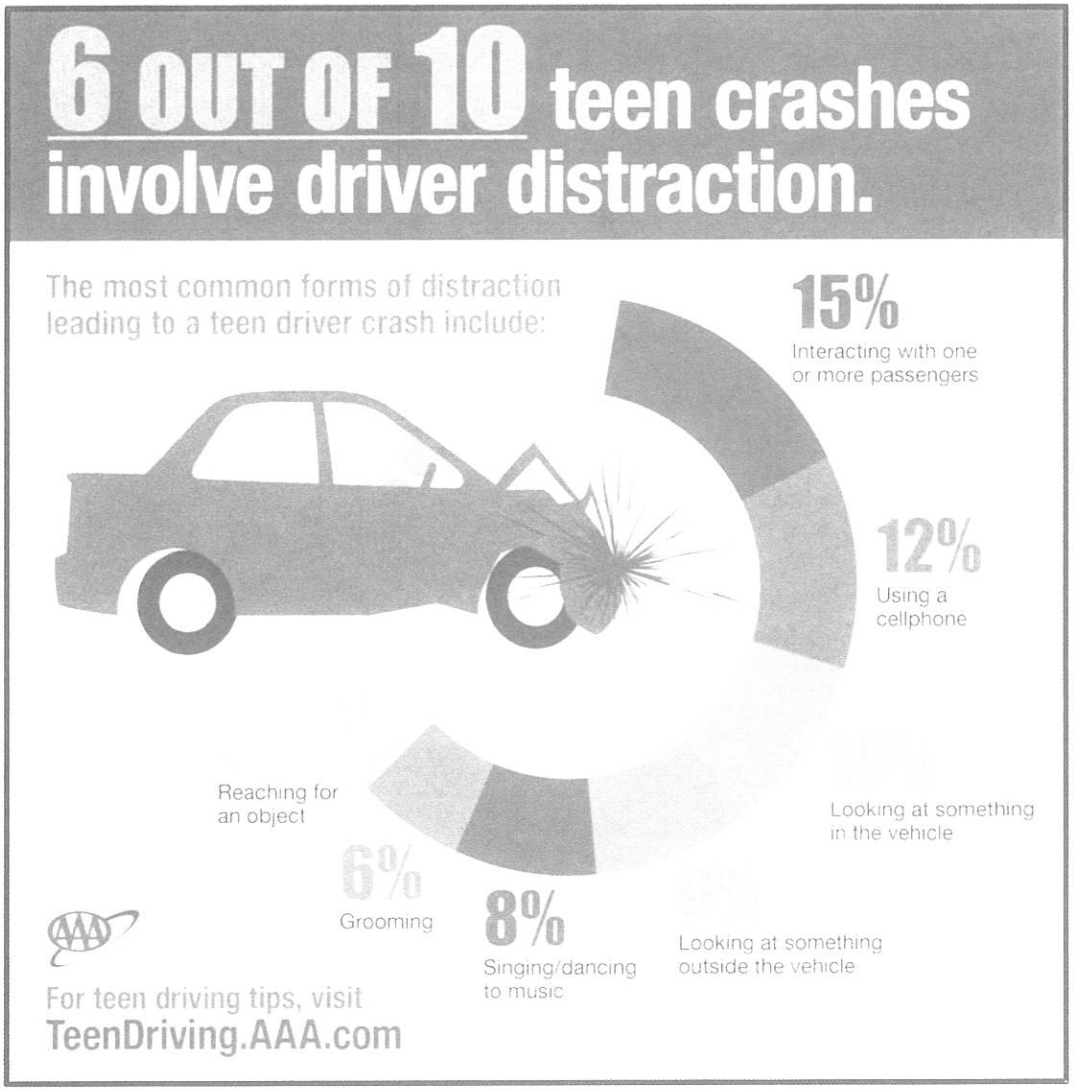
Standard Bank

Standard Bank Elite Account	2018 Fees (15% VAT)	R500 transaction in 2018	2019 Fees	R500 transaction in 2019	% Change from 2018 to 2019
Withdrawal (Native)	R1.82/R100	R9.10	R1.85/R100	R9.25	+1.6%
Withdrawal (Other)	R8.07 + R1.82/R100	R17.17	R9.00 + R1.85/R100	R18.25	+6.3%
Withdrawal (POS)	R1.82	R1.82	R2.00	R2.00	+9.9%
Deposit (ATM)	R1.82/R100	R9.10	R1.85/R100	R9.25	+1.6%
Debit order (internal)	R4.54		R4.50		-1.0%
Debit order (external)	R16.64		R18.00		+8.2%
Account fee (PAYT)	R60.53		R65.00		+7.4%

[Source: Businesstech.co.za]

ANNEXURE F

QUESTION 4.3



[Source: www.rmiia.org]

Copyright Reserved

GR 12 MLIT - P2 + MATH - P2

education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

MARKING GUIDELINE

COMMON TEST

JUNE 2019

MARKS: 100

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD/RM	Reading from a table/ graph/ diagram/Map
SF	Correct substitution in a formula
O	Opinion/ reason/deduction/example/Explanation
J	Justification
R	Rounding off
F	deriving a formula
AO	Answer only
P	Penalty e.g. for units, incorrect rounding off etc.
NPR	No penalty for rounding / units

This marking guideline consists of 9 pages.

Copyright Reserved

QUESTION 1 [29 MARKS]

Ques	Solution	Explanation	T &L
1.1.1	Deposit = R 725 000 × 10% ✓MA = R72 500 Loan Amount = R725 000 – R72 500 ✓M = R652 500 ✓CA **OR** ✓M Loan Amount = R725 000 × 0,9 ✓MA = = R652 500 ✓CA	1MA multiplying by 10% 1M subtracting deposit 1CA loan amount **OR** 1M multiplication 1MA multiplying by 0,9 1CA loan amount (3)	F L2
1.1.2	✓SF Monthly repayment = (R652 500 ÷ 1 000) × 9,72 ✓RT = R6 342,30 ✓CA	**CA from 1.1.1** 1SF dividing by 1 000 1RT correct factor 1CA monthly repayment (3)	F L3
1.1.3	✓RT Cost of the loan = R6 675,75 × 240 ✓C = R1 602 180✓A **OR** ✓RT Cost of the loan = R6 675,75 × 12 × 20 ✓C = R1 602 180✓A	1RT monthly repayment 1C convert to months 1A cost of loan **OR** 1RT monthly repayment 1C convert to months 1A cost of loan (3) **AO**	F L2
1.1.4	**Flat 1** ✓RT Interest paid = R1 902 690 – R652 500 ✓CA = R1 250 190 ✓CA **Flat 2** Interest paid = R1 602 180 – R675 000 = R927 180 ✓CA Claim is incorrect ✓O	**CA from 1.1.1** 1RT cost of the loan 1CA subtracting loan amount 1CA interest paid on the loan **CA from 1.1.3** 1CA interest paid on the loan 1O deduction (5)	F L4

Copyright Reserved

1.2.1	2,5cm ÷ 100 ✓C = 0,025m ✓A Volume of rainwater = $186m^2 \times 0{,}025$m ✓SF = 4,65 m^3 ✓CA Number of litres = 4,65 × 1000 ✓C = 4 650 litres ✓CA Statement is incorrect✓O **OR** ✓C ✓M Volume of rain water = 186 (100 × 100) × 2,5 cm ✓SF = 4 650 000 cm^2 ✓CA = 4 650 000 ÷ 1 000 ✓C = 4 650 litres ✓ CA Statement is incorrect✓O	1C 1A 1SF 1CA 1C 1CA 1O **OR** 1C 1M 1SF 1CA 1C 1CA (7)	dividing by 100 answer in metres substitution correct volume multiplying by 1000 number of litres deduction converting multiplication correct substitution correct volume converting number of litres	M L4
1.2.2	5000×1000✓C =5 000 000 cm^3 2,1m×100 =210 cm 5 000 000 cm^3 = 3,142 × r^2 × 210cm ✓SF $\frac{5000\,000}{3{,}142\times 210} = r^2$ ✓M $\sqrt{7577{,}82} = r$ ✓S r = 87,05 cm ✓CA Diameter of the tank = 87,05 × 2 ✓M = 174,1cm Diameter of concrete base = 174,1 × 1,1 ✓MA = 191,51cm ✓CA **NPR**	1C 1 SF 1 M 1S 1CA 1M 1MA 1CA (8)	multiplying by 1000 substitution changing the subject of the formula simplification radius multiplying by 2 increasing by 1,1 diameter	M L3
		[29]		

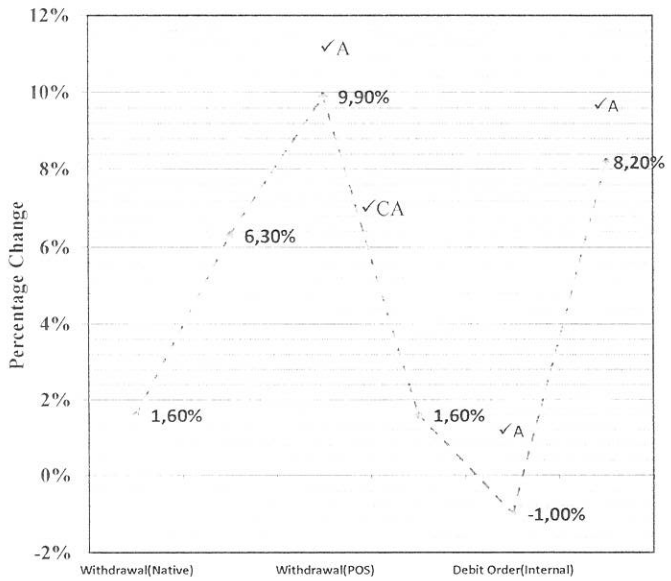
QUESTION 2 [27 MARKS]

2.1.1	✓MA % increase = $\frac{31\,752-20608}{20\,608\checkmark MA} \times 100\%$ = 54,08%✓A	1MA 1MA 1A (3) **NPR**	subtracting correct values dividing by 20 608 correct percentage	DH L2
2.1.2	The trend shows the number of jobs in the tourism sector increasing from 2010 to 2017 ✓✓O	2O (2)	increase in trend	DH L4
2.1.3	3 224:16 676 ✓✓A 806 : 4 169 ✓S	1A 1A 1S **AO** (3)	correct values correct order simplification	DH L2
2.1.4	✓A Number of workers = 16 200 000 × 4,5% ✓MA = 729 000 ✓CA Claim is incorrect ✓O	1A 1MA 1CA 1O (4)	correct number of workers multiplying by 4,5% number of workers opinion	DH L4
2.2.1	South West / SW ✓✓A	2A (2)	correct direction	M L2
2.2.2	2,1 cm = 250 km ✓A ✓MA Actual distance = (4 cm × 250km) ÷ 2,1 cm ✓M = 476 km ✓CA	1A **Accept 2cm to 2,2 cm** 1MA 1M **Accept 3,9 cm to 4,1 cm** 1CA (4)	measuring bar scale multiplying by 250km dividing by 2,1 cm actual distance	M L3
2.2.3	Time = $\frac{1461}{100}$ ✓MA = 14,61 =14 + (0,61 × 60) ✓C = 14 hours 37 minutes ✓CA Total time = 14h37m + 45 minutes ✓MA = 15 hours 22 minutes ✓CA Claim is correct✓O **OR** Claim is incorrect, time is less than 15hours 30 minutes ✓O	1MA 1C 1CA 1MA 1CA 1O **NPR** (6)	dividing by 100 multiplying by 60 time hours and minutes adding 45 minutes duration of trip conclusion	M L4

2.2.4	✓MA ✓MA Time = (5 am + 15 hours) + (45 minutes + 22 minutes) = 9:07 pm / 21:07 ✓CA **OR** Time = 05:45 + 15h 22 min ✓✓MA = 9:07 pm / 21:07 ✓CA	**CA from 2.2.3** 1MA add 15 hours 1MA add 22 minutes 1CA arrival time **Accept 9:15 pm / 21:15** **OR** 2MA add 15 h 22 min 1CA arrival time **Accept 9:15 pm / 21:15** **AO** (3)	M L3
		[27]	

QUESTION 3 [23 MARKS]

Ques	Solution	Explanation	T&L
3.1.1	IQR = Q3 – Q1 = 72,5 – 55✓✓RG = 17,5 ✓CA	1RG Q3 **Accept Q3 = 72 to 73** 1RG Q1 1CA answer (3)	DH L3
3.1.2	Statement is incorrect ✓O ✓RG 50% of the boys achieved a mark of 72,5% or less ✓RG ✓RG compared to 50% of the girls who achieved a mark of 66% or less.	1O opinion 1RG 50% of boys 1RG 50% of girls 1RG median/Q2 is 66% (4)	DH L4
3.1.3	✓RG ✓RG Top 25% of girl's marks = 72 to 79 marks	1RG 72 above Q3 1RG 79 max mark **AO** (2)	DH L3
3.1.4	Q1 ✓RG for boys is 57,5✓RG and for girls is 55✓RG therefore boys performed better. **OR** Q2 ✓RG for boys is 72 ✓RG and for girls is 66✓RG therefore the boys performed better. **OR** Q3 ✓RG for the boys is 80 ✓RG and for the girls 72,5 ✓RG therefore the boys performed better. Boys performed better in all instances ✓J	1RG reading the correct quartile 2RG reading the correct values for boys and girls **OR** 1RG reading the correct quartile 2RG reading the correct values for boys and girls **OR** 1RG reading the correct quartile 2RG reading the correct values for boys and girls 1J justification (4)	DH L4

3.2.1	✓A Bank fee = R9,00 + (1,85 × $\frac{500}{100}$) ✓✓MA = R18,25 **OR** ✓RT Bank fee = R17,17 × 1,063 ✓✓ MA = R18,25	1A adding R9,00 1MA dividing R500 by 100 1MA multiplying by R1,85 **OR** 1RT reading from table 1MA dividing interest by 100 1MA multiplying by interest (3)	F L2
3.2.2	✓MA ✓M Debit orders(external) 2019 = (18×5) – (16,64×3) =R40,08 ✓A	1MA multiplying by number of DO 1M subtracting 1A answer (3)	F L2
3.2.3	**Graph showing percentage change in Bank Fees**  **Types of transactions in bank account** **1CA for joining all the points ✓** **1A for 9,9% ✓** **1A for -1% ✓** **1A for 8,2% ✓** (4)	F L3
	[23]		

QUESTION 4 [21 MARKS]

Ques	Solution	Explanation	T &L
4.1.1	Cost in New York = 178,57× 14,52✓MA = R2592,84✓A Cost in London = 156,49× 18,71✓MA = R2927,93✓A Saving = R2927,93 - R2592,84✓M = R335,09✓CA	1MA multiplying by the correct exchange rate 1A cost in Rands 1MA multiplying 1A cost in Rands 1M subtracting 1CA saving (6)	F L3
4.1.2	Price of sneakers = $\frac{R3000}{1,059}$ ✓ ✓MA =R2832,86✓CA OR Price of sneakers = R3 000 × $\frac{100}{105,9}$ ✓ ✓MA = R2832,86✓CA	1MA dividing interest by 100 1MA dividing by inflation 1CA price of sneakers 1MA dividing interest by 100 1M dividing by inflation 1CA price of sneakers (3)	F L2
4.2	Radius = 45cm ÷ 2 = 22,5 cm ✓A ✓SF SA of Cylinder = (2 × 3,142× 22,5 cm^2) + (2 × 3,142 × 22,5 × 110) = 18 734,175cm^2 ✓CA = 18 734,175 ×1,20 ✓M = 22 481,016 cm^2 ✓S = 22 481,016 cm^2 ÷100^2 ✓C = 2,25m^2 ✓CA	1A radius 1SF substitution 1CA total surface area 1M increasing by 20% 1S simplification 1C total surface area 1CA convert to m^2 **NPR** (7)	M L3

4.3.1	15 + 12 + 10 + 9 + 8 + 6 + 6 ✓MA = 66% Simplified : 6,6 out of 10 ✓S Statement is incorrect ✓O	1MA adding correct values 1S simplification 1O opinion **AO** (3)	P L4
4.3.2	P (does not involve teenage driver distraction) = 10 – 6,6 ✓MA = 3, 4 $= \frac{3,4}{10} \times 100$ = 34% ✓A **OR** P(does not involve teenage driver distraction) = 100% - 66%✓MA = 34% ✓MA	1MA subtracting 1A probability **OR** 1MA subtracting 1A probability **AO** (2)	P L3
		[21]	

TOTAL: 100

Copyright Reserved