



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

**NATIONAL SENIOR CERTIFICATE: COMMON TEST
JUNE 2018**

**TO: THE CHIEF INVIGILATOR OF ALL SCHOOLS OFFERING
MATHEMATICAL LITERACY P1: GRADE 12**

ERRATA

Please take note of the following change:

Page 3	ERROR	CORRECTION
1.1 (line 3)	Senzo's network service provider ...	Stanley's network service provider ...

Kindly ensure that candidates are informed of the Errata.

**MR C. KHUMALO
ASSISTANT DIRECTOR
PROVINCIAL EXAMINATION**

DATE

2018-June-09

...Championing Quality Education-Creating and Securing a Brighter Future

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Education

KwaZulu-Natal Department of Education

MATHEMATICAL LITERACY P1

COMMON TEST

JUNE 2018

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MARKS: 100

TIME: 2 hours

This question paper consists of 8 pages and an addendum with
4 annexures (5 pages)

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 1.3
 - ANNEXURE B for QUESTION 2.2
 - ANNEXURE C for QUESTION 3.1
 - ANNEXURE D for QUESTION 4.1
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.

QUESTION 1

1.1

Stanley saw an advert of a television set on his smartphone. He is interested in buying it. The cash price is R11 199,00 including 15% VAT. On hire purchase the monthly instalment is R526,19 for 24 months. The deposit is 10% of the cash price. Senzo's network service provider charges him R2,75 per minute or part thereof during peak time and charges him R2,25 per minute or part thereof during off peak time.

- 1.1.1 Determine the price of the television set excluding VAT. (2)
- 1.1.2 Calculate the deposit amount of the television set. (2)
- 1.1.3 Calculate the total amount payable (including deposit) if he bought it on hire purchase. (3)
- 1.1.4 Stanley makes a call for 9 minutes and 20 seconds during peak time, calculate the amount his service provider will charge him. (2)
- 1.1.5 Determine the length of a call in minutes if Stanley was charged R18,00 during off peak time. (2)

1.2

Senzo travels for 13 minutes from home to the bus stop on the main road where he catches the bus to school. The bus takes 17 minutes to reach the school which is 10 km away.

- 1.2.1 Determine the distance (in metres) travelled by the bus. (2)
- 1.2.2 Calculate the total time taken by Senzo from home to school. (2)
- 1.2.3 If Senzo left home at 06:51, at what time will he arrive at the bus stop? (2)

1.3

The school governing body reviews the school site layout plan which was drawn in 2004 and was also projected for 2024. The school site layout plan is shown in ANNEXURE A.

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

- 1.3.1 Name the three features that are found on the school site layout plan of 2024 which were not on the plan in 2004. (3)
- 1.3.2 Refer to school site plan of 2004 and give the compass direction of the sports field from school building 1. (2)

1.4

A class educator wants to surprise her class by providing sandwiches and juice for lunch. She wants to know the choices of sandwiches. She organizes the results in a frequency table below.

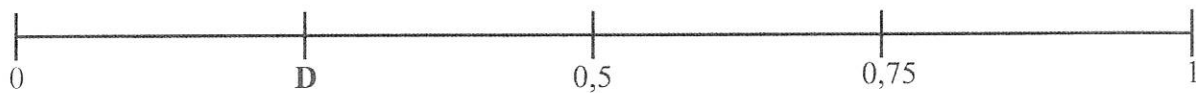
TABLE 1: FREQUENCY TABLE SHOWING CHOICES OF SANDWICHES

TYPE OF SANDWICH	TALLY	FREQUENCY
Chicken and mayo		13
Ham and egg		A
Cheese and tomato	B	6
Vegetable		2
TOTAL		C

1.4.1 Determine the missing values **A** and **B**. (4)

1.4.2 Determine the total number (**C**) of learners in class. (2)

1.5 A probability scale is drawn below with possibilities written as decimals.



Determine the missing value **D**. (2)

[30]

QUESTION 2

2.1

Koos runs a business in which he delivers clients, goods all over the country. He also sells crates of cold drinks in his premises. He expects to generate an income of R26 000,00 per month from deliveries and expects to get R2 400,00 per month from the sales of cold drinks. He draws a projected budget for July 2018.

Use the projected budget for July 2018 below to answer the following questions.

TABLE 2: SHOWING KOOS'S PROJECTED BUDGET FOR JULY 2018

MONTHLY INCOME		MONTHLY EXPENDITURE	
Income from deliveries	R26 000,00	Driver's salary	R5 400,00
Income from cold drink sales	R2 400,00	Delivery van instalment	R3 150,00
		Petrol	R2 200,00
		Municipality rates	R485,00
		Water and electricity	R1 083,20
		Contract cellphone	R759, 00
		Cost of cold drinks	R2 200
		Entertainment (15% of total monthly income) E	
		Petty cash	R800,00
TOTAL INCOME :	R28 400,00	TOTAL:	F

- 2.1.1 Name one fixed expense in the budget. (2)
- 2.1.2 Koos plans to entertain his clients by using 15% of his total income. Calculate the amount (**E**) to be used for entertainment. (2)
- 2.1.3 Calculate the total expenses (**F**). (3)
- 2.1.4 If the actual budget is the same as the projected one, how much profit will Koos make? (2)
- 2.1.5 Koos decides to increase the driver's salary by 12,5% the following month.
- (a) Calculate the driver's salary after the increment. (3)
- (b) Calculate the monthly UIF contribution (1% of the gross salary) from the driver. (2)

2.2

Marry, Koos's wife is a physiotherapist. She is 48 years old. She contributes to a medical aid scheme and has two dependants. She earns a monthly taxable income of R26 700,00. 2018/2019 SARS tax table is shown in ANNEXURE B.

2.2.1 Calculate Marry's annual taxable income. (2)

2.2.2 Hence, calculate her monthly tax. (8)

[24]

QUESTION 3

3.1

A local businessman owns a petrol service station. Petrol is stored in cylindrical tanks. The diameter of the tank is 2,5 metres and its height is 5 metres. A photo and a diagram of the petrol tank is shown in ANNEXURE C

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

3.1.1 Determine the radius of the petrol tank in metres. (2)

3.1.2 Calculate the surface area (in m^2) of the petrol tank.

You may use the following formula:

$$\text{Surface area of a cylinder} = 2 \times \pi \times \text{radius}^2 + (\pi \times \text{diameter} \times \text{height}).$$

Use $\pi = 3,142$ (2)

3.1.3 (a) Calculate the volume (in m^3) of the petrol tank. Round the answer to the nearest cubic metre.

You may use the following formula:

$$\text{Volume of a cylinder} = \pi \times \text{radius}^2 \times \text{height} \quad \text{Use } \pi = 3,142 \quad (3)$$

(b) Hence determine the number of litres of petrol that can fill up the tank if $1 m^3 = 1\,000$ litres. (2)

3.1.4 How long will it take to fill up the tank if petrol flows at a rate of 100 litres per minute? Give the answer in hours and minutes. (3)

[12]

QUESTION 4

4.1

A Geography educator from a school in Port Shepstone organizes an educational excursion to a mine in Vryheid for his learners. ANNEXURE D shows a map that he uses to plan for the educational excursion.

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

4.1.1 Explain what is meant by the scale on the map. (2)

4.1.2 Give the longest national road shown on the map. (2)

4.1.3 The distance on the map from Port Shepstone to Vryheid is 115 mm. Use the number scale to calculate the actual distance (in km) between Port Shepstone and Vryheid. (4)

4.1.4 From Port Shepstone the bus will travel along N2, from Durban it will take N3. Name the three towns that they will pass before reaching Durban. (3)
[11]

QUESTION 5

5.1

Grade 12 Mathematical Literacy classes are taught by three educators. Ms Khanyile teaches 12A (25 learners), Mr Zulu teaches 12B (24 learners) and Ms Khulu teaches 12 C (24 learners). Educators had to analyse Mathematical Literacy March test results out of 100 marks. The tables below show marks scored by learners in different classes and box and whiskers showing the

Use the above information, tables and box and whiskers to answer the following questions

TABLE 3: SHOWING MARKS SCORED BY GRADE 12 A LEARNERS IN MARCH TEST.

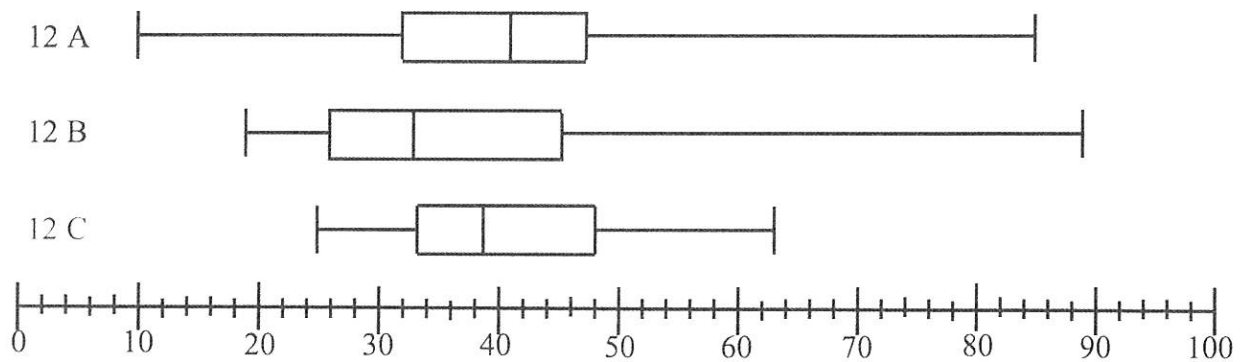
10	15	19	22	28	32	32	32	36	38	41	41	41
41	42	44	44	46	47	48	49	53	56	68	85	

TABLE 4: SHOWING MARKS SCORED BY GRADE 12 B LEARNERS IN MARCH TEST.

19	21	21	23	25	25	27	28	28	30	31	32
34	35	41	42	43	44	47	49	53	55	58	89

TABLE 5: SHOWING MARKS SCORED BY GRADE 12 C LEARNERS IN MARCH TEST.

25	28	29	32	32	33	34	36	36	36	37	38
39	41	41	42	47	47	49	55	56	57	62	63



5.1.1 Give the minimum mark scored by a learner in 12 C. (2)

5.1.2 Determine the modal mark for 12 A. (2)

5.1.3 Calculate the mean for 12 B. (3)

5.1.4 Give the value which is an outlier in 12 B. (2)

5.1.5 Calculate the interquartile range (IQR) for 12 C.

You may use the following formula:

$$\mathbf{IQR = Q_3 - Q_1} \quad (2)$$

5.1.6 Write down the values of the five-number-summary for 12 A. (5)

5.1.7 If a learner is randomly chosen from 12 C, what is the probability (as a decimal) of choosing a learner who scored above 50 marks (3)

5.1.8 What percentage of learners scored marks from the minimum to quartile 1 in class A? (2)

5.1.9 Calculate the range for 12 B. (2)

[23]

TOTAL: [100]



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MATHEMATICAL LITERACY P1

ADDENDUM

COMMON TEST

JUNE 2018

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

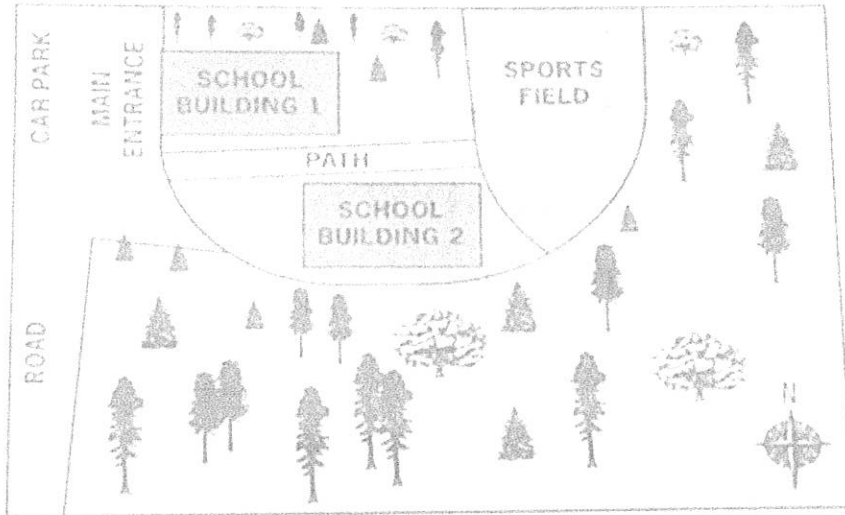
This addendum consists of 5 pages with 4 annexures.

ANNEXURE A

QUESTION 1.3

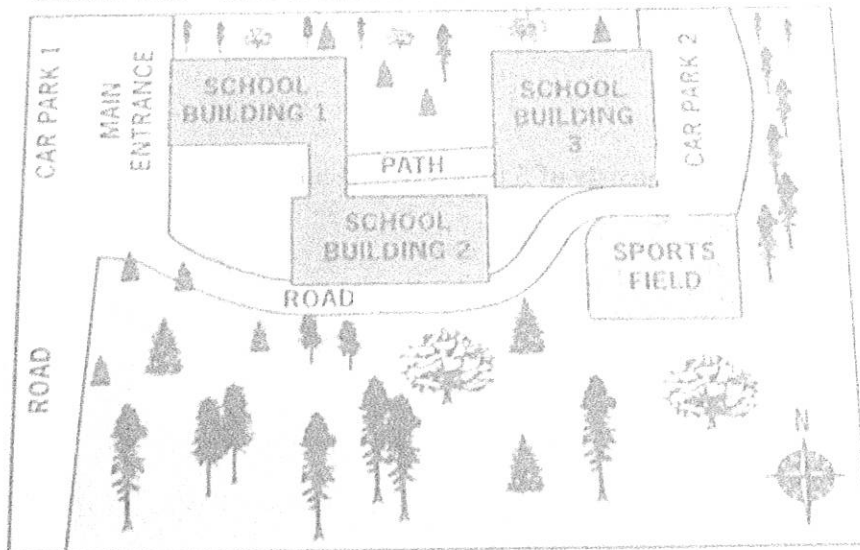
School site layout plan 2004

School Site - 2004: 600 students



School site layout plan 2024

School Site - 2024: 1,000 students



www.school layout plans.com

ANNEXURE B

QUESTION 2.2

SARS TAX TABLE 2018/2019

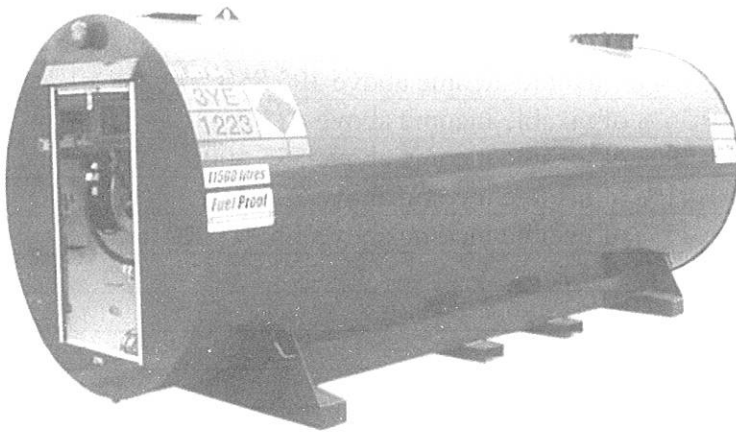
INCOME TAX: INDIVIDUALS AND TRUSTS 2018/2019		
Taxable income (R)	Rate of Tax (R)	Tax bracket
0 – 195 850	18% of taxable income	1
195 851 – 305 850	35 253 + 26% of taxable income above 195 850	2
305 851 – 423 300	63 853 + 31% of taxable income above 305 850	3
423 301 – 555 600	100 263 + 36% of taxable income above 423 300	4
555 601 – 708 310	147 891 + 39% of taxable income above 555 600	5
708 311 – 1 500 000	207 448 + 41% of taxable income above 708 310	6
1 500 001 and above	532 041 + 45% of taxable income above 1 500 000	7
TAX REBATES		
Primary	R14 067	
Secondary (Persons 65 and older)	R7 713	
Tertiary (Persons 75 and older)	R2 574	
TAX THRESHOLDS		
AGE	TAX THRESHOLD	
Below age 65	R78 150	
Age 65 to below 75	R121 000	
Age 75 and over	R135 300	
MEDICAL TAX CREDIT RATES 2018/2019 YEAR OF ASSESSMENT		
R310 per month for the taxpayer who paid the medical scheme contributions		
R310 per month for the first dependant		
R209 per month for each additional dependant (s)		

Source: www.sars.gov.za

ANNEXURE C

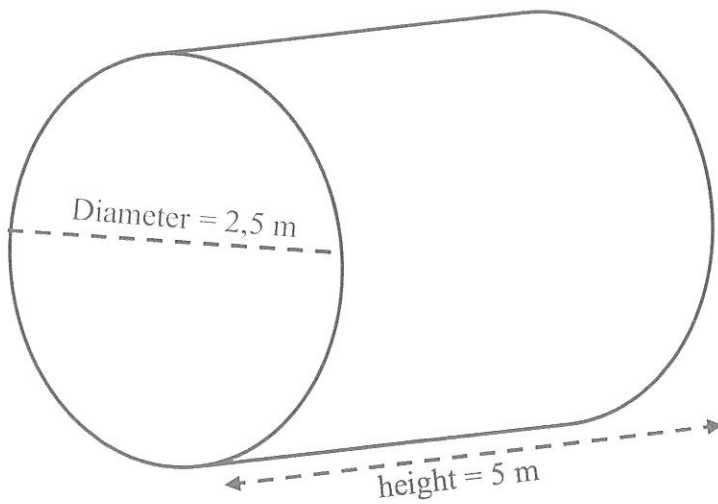
QUESTION 3.1

Photo of a petrol storage tank



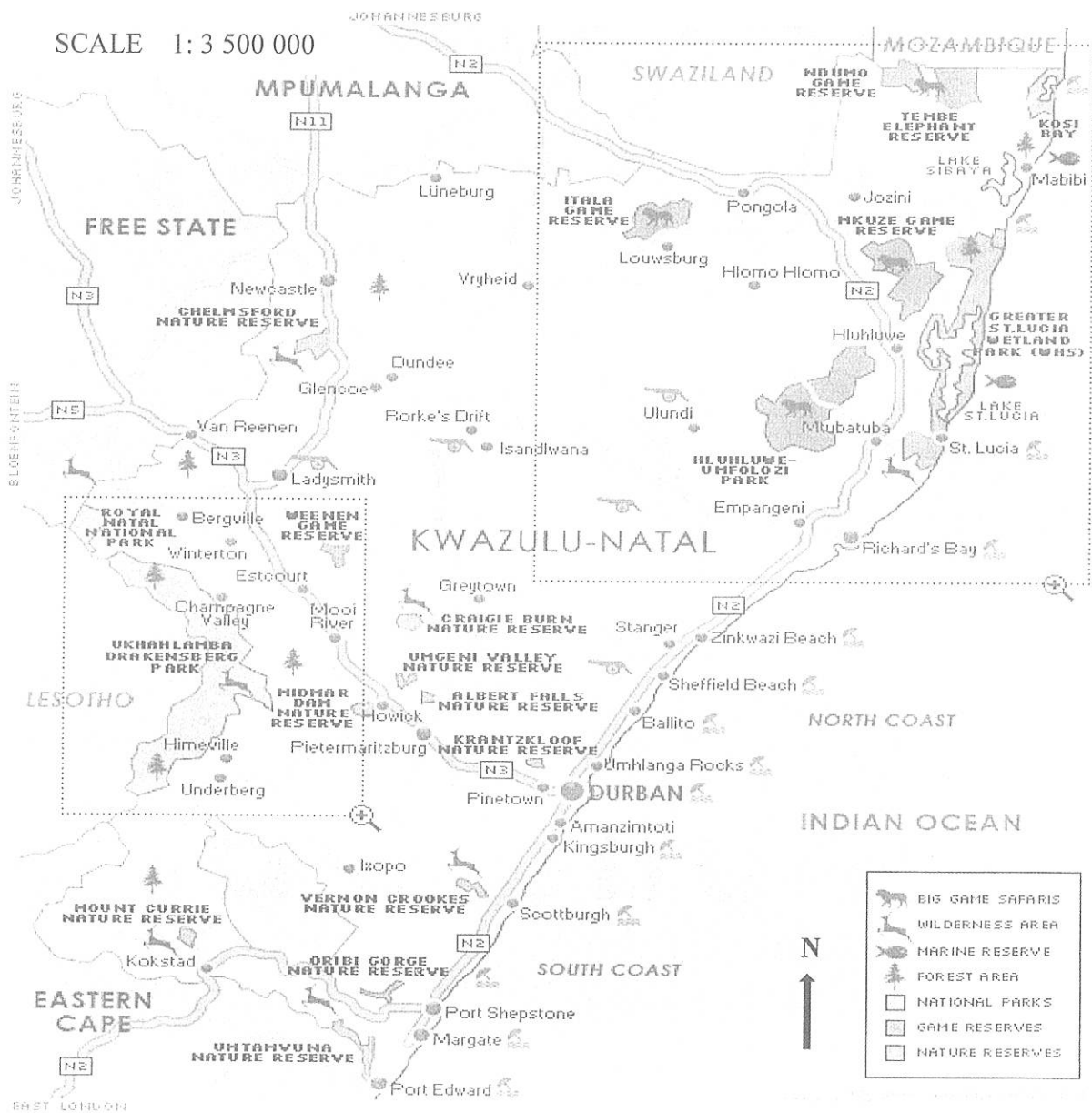
Source: www.petroltanks.com

Diagram of a petrol storage tank



ANNEXURE D

Map showing Kwa-Zulu Natal and other provinces.



Source: www.maps.co.za



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MATHEMATICAL LITERACY PI

COMMON TEST

JUNE 2018

MARKING GUIDELINE

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

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 full marks
P	Penalty e.g. for units, incorrect rounding off etc
NPR	No penalty for rounding / units

This marking guideline consists of 5 pages.

QUESTIONS	Solution	Explanation	T & L
1.1.1	Price excluding VAT = $\frac{R11\ 999,00}{1,15} \checkmark M$ = R10 433,91 $\checkmark A$ OR Price excluding VAT = $\frac{100}{115} \times R11\ 999,00 \checkmark M$ = R10 433,91 $\checkmark A$	IM dividing by 1,15 1A price excluding VAT OR IM multiplying by $\frac{100}{115}$ 1A price excluding VAT AO (2)	F L1
1.1.2	Deposit amount = $\frac{10}{100} \times R11\ 999,00 \checkmark M$ = R1 199,90 $\checkmark A$	IM multiplication 1A deposit amount AO (2)	F L1
1.1.3	Total amount = R1 199,90 + (R526,19 \times 24) $\checkmark M$ = R1 199,90 + R12 628,56 $\checkmark M$ = R13 828,46 $\checkmark CA$	IM multiplying by 24 IM adding 1CA total amount AO (3)	F L1
1.1.4	Total cost = $10 \times R2,75 \checkmark M$ = R27,50 $\checkmark A$	IM multiplication 1A total cost AO (2)	F L1
1.1.5	Length of a call = $\frac{R18,00}{R2,25} \checkmark M$ = 8 minutes $\checkmark A$	IM dividing by R2,25 1A no. of minutes AO (2)	F L1
1.2.1	Distance = $10\ km \times 1\ 000 \checkmark C$ = 10 000 m $\checkmark A$	1C multiplying by 1 000 1A distance AO (2)	M L1
1.2.2	Total time = 13 minutes + 17 minutes $\checkmark M$ = 30 minutes $\checkmark A$	IM adding 1A total time AO (2)	M L1
1.2.3	Arrival time = 06:51 + 13 minutes $\checkmark M$ = 07:04 $\checkmark A$	IM adding 1A arrival time AO (2)	M L1
1.3.1	School building 3 $\checkmark A$ Car park 2 $\checkmark A$ Road $\checkmark A$	3A features (3)	M&P L1
1.3.2	South East OR SE $\checkmark \checkmark A$	2A direction (2)	M&P L1
1.4.1	A = 8 $\checkmark \checkmark A$ B = 111 1 $\checkmark \checkmark A$	2A number 2A tallies (4)	DH L1
1.4.2	C = 13 + 8 + 6 + 2 $\checkmark M$ = 29 $\checkmark A$	IM adding 1A total AO (2)	DH L1
1.5	D = 0,25 $\checkmark \checkmark A$	2A decimal Accept $\frac{1}{4}$ or 2,5% (2)	P L1
			130

QUESTION 2 [24 MARKS]		F	(2)	F
2.1.1	Delivery van instalment ✓✓A	L1		L1
2.1.2	$E = \frac{15}{100} \times R28\,400 \checkmark A$ = R4 260,00 ✓A	L2	400	L2
2.1.3	$F = R5\,400,00 + R3\,150,00 + R2\,200 + R485,00 + R1\,083,20 + R759,00 + R2\,200,00 + R4\,260,00 + R800,00$ = R20 337,20 ✓CA	L2	(2)	L2
2.1.4	Profit = R28 400,00 – R20 337,20 ✓M = R8 062,80 ✓CA	L2	(3)	L2
2.1.5	Salary after the increment = $\frac{\checkmark M}{400,00} \times R5\,400,00 + (12,5\% \times R5\,400,00)$ = R6 075,00 ✓A OR Increase = $12,5\% \times R5\,400,00 \checkmark M$ = R675,00 Salary after the increment = R5 400,00 + R675,00 ✓M = R6 075,00 ✓A	L2	(2)	L2
(b)	UIF contribution = $1\% \times R6\,075,00 \checkmark M$ = R60,75 ✓CA	L1	(2)	L1
2.2.1	Annual taxable income = R26 700,00 × 12 ✓M = R320 400,00 ✓A	L1	(2)	L1
2.2.2	tax = R63 853 + 31% of the amt above R305 850 ✓A = R63 853 + 0,31 (R320 400 – R305 850) = R63 853 + (0,31 × R14 550) ✓M = R68 363,50 ✓CA Tax payable = R68 363,50 – R14 067 ✓M = R54 296,50 = R54 296,50 – [(R310 × 2 × 12) + (R209 × 12)] ✓M = R44 348,50 ✓CA Monthly tax = R44 348,50 ÷ 12 ✓MA = R3 695,71 ✓CA	L3	(8)	L3
			[24]	

QUESTION 3 [12 MARKS]		M	(2)	M
3.1.1	Radius = $2,5\text{ m} \div 2 \checkmark M$ = 1,25 m ✓A	L1		L1
3.1.2	SA cylinder = $2 \times \pi \times \text{radius}^2 + (\pi \times \text{diameter} \times \text{height})$ = $2 \times 3,142 \times (1,25\text{ m})^2 \times 5\text{ m} + 3,142 \times 2,5\text{ m} \times 5\text{ m} \checkmark SF$ = 49,09375 m ² ✓CA	L2	(2)	L2
3.1.3	Volume of a cylinder = $\pi \times \text{radius}^2 \times \text{height}$ = $3,142 \times (1,25\text{ m})^2 \times 5\text{ m} \checkmark SF$ = 24,546875 m ³ ✓CA ≈ 25 m ³ ✓R	L2	(3)	L2
(a)	$1\text{ m}^3 = 1\,000\text{ litres}$ $25\text{ m}^3 =$ litres Litres = $\frac{25 \times 1\,000}{1} \checkmark MA$ = 25 000 litres ✓CA	L1		L1
3.1.4	100 litres : 1 minute 25 000 litres : minutes Minutes = $\frac{25\,000 \times 1}{100} \checkmark M$ = 250 minutes ✓CA ÷ 60 = 4 hours 10 minutes ✓C	L2	(2)	L2
			[12]	
QUESTION 4 [11 MARKS]		M&P	(2)	M&P
4.1.1	One unit on the map represents three million five hundred thousand units in reality/ on the ground/ in real life. ✓A	L1		L1
4.1.2	N2 ✓✓A	L1	(2)	L1
4.1.3	Actual distance in mm 1 : 3 500 000 1 mm : 3 500 000 mm 115 mm : mm = $\frac{115 \times 3\,500\,000}{1} \checkmark M$ = 402 500 000 mm ✓A Actual distance in km = 402 500 000 ÷ 1 000 000 ✓C = 402,5 km ✓CA OR 1 mm : (3 500 000 mm ÷ 1 000 000) ✓C 1 mm : 3,5 km ✓A 115 mm × 3,5 ✓M Actual distance = 402,5 km ✓CA	L2	(4)	L2
4.1.4	Scottburgh ✓A Kingsburgh ✓A Amanzimtoti ✓A	L1	(3)	L1
			[11]	

QUESTION 5 23 MARKS		2A minimum mark	DH
5.1.1	Minimum mark of 12 C = 25 ✓✓A	(2)	L1
5.1.2	Modal mark for 12A = 41 ✓✓A	(2)	DH L1
5.1.3	Mean = $\frac{19 + 21 + 21 + \dots + 55 + 58 + 89}{24}$ ✓M = $\frac{900}{24}$ ✓M = 37,5 ✓CA	IM adding all values IM dividing by 24 ICA mean AO (3)	DH L2
5.1.4	Outlier in 12B = 89 ✓✓A	2A outlier AO (2)	DH L1
5.1.5	IQR = $Q_3 - Q_1$ = 48 - 33,5 ✓M = 14,5 ✓A	IM subtraction IA interquartile range AO (2)	DH L2
5.1.6	Minimum = 10 ✓A $Q_1 = 32$ ✓A $Q_2 = 41$ ✓A $Q_3 = 47,5$ ✓A Maximum = 85 ✓A	5A correct values (5)	DH L1
5.1.7	P (scored above 50 marks) = $\frac{5}{24}$ ✓A = 0,21 ✓CA	IA numerator IA denominator ICA decimal fraction NPR (3)	P L2
5.1.8	Percentage = 25% ✓✓A	2A correct percentage (2)	DH L1
5.1.9	Range of 12 B = 89 - 19 ✓M = 70 ✓A	IM subtraction IA range AO (2)	DH L1
TOTAL: 100 		 23 	

