



Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

MATHEMATICAL LITERACY

COMMON TEST

MARCH 2018

**NATIONAL
SENIOR CERTIFICATE**

GRADE 10

MARKS: 75

TIME: 1½ hours

This question paper consists of 6 pages, 1 Annexure and 1 Answer Sheet.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of THREE questions. Answer ALL the questions.
2. Answer QUESTION 3.2.2 on the attached answer sheet. Write your Name in the space provided 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 the calculation clearly.
7. Round off ALL the final answers appropriately according to the given context, unless stated otherwise.
8. Indicate units of measurements, where applicable.
9. Write neatly and legibly.

QUESTION 1

- 1.1 Mrs Madlala, a grade 10 Mathematical Literacy teacher at Sifundosethu High gave learners a test out of 70 marks. She has 60 learners in her class and 35 are girls.

- 1.1.1 Determine the number of boys in the classroom (2)
- 1.1.2 Calculate the number of girls as a percentage of total learners in the classroom (2)
- 1.1.3 What will be the ratio of girls to boys in the classroom? (2)
- 1.1.4 Calculate the actual pass mark of the test, if the pass percentage is 30% for the test. (2)

- 1.2 Mrs Jones is a sport organiser at the same school with Mrs Madlala, she received a quotation for the school cricket kit.

Study the quotation in **ANNEXURE A** and answer the following questions:

- 1.2.1 Write down the name of the store from where she received the quotation. (2)
- 1.2.2 On which day and date will the quotation expire? (2)
- 1.2.3 Calculate the number of cricket bats (A) quoted. (2)
- 1.2.4 Show by calculation how the discounted value of R1 671, 05 was calculated. (2)
- 1.2.5 At which floor will you find Mrs Jones's room? (2)
- 1.2.6 Identify the error made by the cashier on Mrs Jones identification number. (2)

[20]

QUESTION 2

- 2.1 The uMhlathuze Municipality uses the tariff structure shown below to charge electricity for the residential customers. Study the tariff structure below and answer the questions that follow.

Municipality billing tariff structure as from 1 July 2017 to 1 July 2018

- Block 1 from 0 kwh up to 50 kwh for R0,8545/kwh
- Block 2 from 51 kwh up to 350 kwh for R1,0910/kwh
- Block 3 from 351 kwh up to 600 kwh for R1,5305/kwh
- Block 4 above 600 kwh for R1,598/kwh

Source: Umhlathuze Municipality

- 2.1.1 Define the term tariff. (2)
- 2.1.2 Calculate the daily consumption in kwh for a house hold that consumed 250 kwh in February 2018 (1)
- 2.1.3 How much will it cost a family if they used 46 kwh of electricity in February 2018? (2)

- 2.2 The clock alongside shows the time, when Dan woke up in the morning of 27 March 2017.



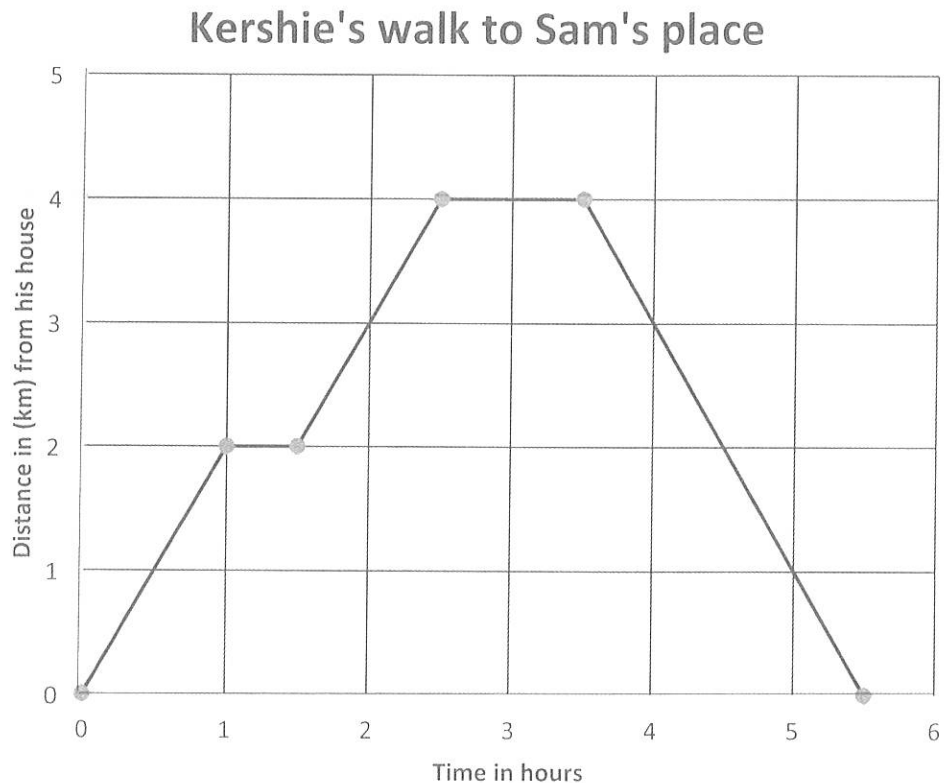
- 2.2.1 Express the time shown on the clock using the analogue format. (2)
- 2.2.2 Dan is planning to watch two TV programmes from the time he wakes up, the first one plays for 25min and the other 15min. Determine the time when two programmes finishes. (2)
- 2.2.3 If the movie is going to be played for 115 minutes. How many hours it will actually play? (2)

2.3

Kershi leaves home at 09:00 to visit his friend Sam.

He walked for 2km then took a 30 minutes rest along the way, before he start walking again.

Study the graph below and answer the questions that follow.



- 2.3.1 How far is Sam's house from Kershi's home? (2)
- 2.3.2 Determine the time Kershi will spend on his friend place. (2)
- 2.3.3 At what time did he left his friend place to go back home? (3)
- 2.3.4 How many minutes did Kershi spend for the last 3km of his journey back home. (3)
- 2.3.5 Determine Kershi's average speed of the journey to his friend place excluding the resting time to the nearest km per hour.

You may use the formula: $\text{Speed} = \frac{\text{Distance travelled (km)}}{\text{Time taken (hours)}}$ (3)

[25]

QUESTION 3

3.1 Ms Holmes teaches Tourism in grade 10 at Mayerton Secondary School. She organises an excursion to the Airport, and there are 68 learners in her classroom.

3.1.1 Determine the number of 14-seater mini-buses will be required for transport, if all 68 learners go on the excursion and why. (3)

3.1.2 Hence, determine the number of full mini buses to transport the learners (2)

3.2

Ms Holmes decided to hire a bus for the excursion

- Only 60 learners went on an excursion
- The cost of hiring the bus is R1 200



Source: www.google.co.za/search?q=bus&dc

The table below shows the cost per learner going on an excursion. Use the information and the table to answer the questions that follow.

TABLE 2: The cost per learner going to an excursion

Number of learners	60	50	P	...	30	20	15	10
Cost per learner(R)	R20,00	R24,00	R25,00	...	R40,00	R60,00	Q	R120,00

3.2.1 Calculate the value of :

(a) **P** (2)

(b) **Q** (2)

3.2.2 Use the **ANSWER SHEET** provided to draw the graph that illustrates the relationship between the cost and number of learners going on an excursion. (4)

3.2.3 Use the graph or table 2 to identify the type of the relationship. (2)

3.2.4 What happens to the cost per learner, if a number of learners going on excursion increase? (2)

3.3 During lunch, Ms Holmes visited the nearest super market to buy Daly's 1.5l concentrated juice. The dilution factor on the label reads 1:4.

3.3.1 What does the dilution factor of 1:4 mean? (2)

3.3.2 Ms Holmes wants to mix the juice with water using the 15litres container. She stated that 10l of water and 5l of concentrated juice will be required. Show with calculations whether her statement is correct. (4)

3.3.3 The juice costs was R23.90 before it was reduced to R19.90. Determine the percentage discount Ms Holmes would receive.

You may use the formula :

$$\text{Percentage discount} = \frac{\text{New Amount} - \text{Old Amount}}{\text{Old Amount}} \times 100\% \quad (3)$$

3.3.4 Nosipho one of the learners, stated that the juice will taste sweeter if they mix $2\frac{1}{2}$ cups of Daly's juice to 10 cups of pure water. Justify with calculations whether her statement is correct. (4)

[30]

TOTAL: 75

TABLE 1 : The quotation for the school cricket team

ANNEXURE A

		QOUTATION	
		DATE	28/01/2018..... SATURDAY
		PAGE	1 OF 1
		DOC. NO	QU144539
Sport vibe		Shop NO. 18 Cypress Hills bay 0009 Tel: XXX 792 5221 Fax: XXX 792 5224	
Cashier : Junaid Hamed		Quote to: Mrs Jones Id No. 862029 2176 08 6 Cell: xxx 421 1478	
Code	Description	QTY unit	Unit price
BAS1BT	Cricket Batting pads	13	R1 090
BasC002	Cricket Bat	A	R1 349
CsBa005	Cricket Ball(Maroon)	8	R218
Gsb00101	Cricket batting Gloves	13	R309
<i>Terms and condition: prices are valid for 10 days only, Prices and stock are subjects to change and availability.</i>			
		<i>All Orders will be release once the money reflects on our bank account.</i>	
		Sub total	R33 421
		Discount @ 5%	R1 671,05
		Amount excl VAT	R31 749,95
		Tax@14%	R4 444,99
		TOTAL DUE	R36 194,94
		Signature	
		Date...../20.....	

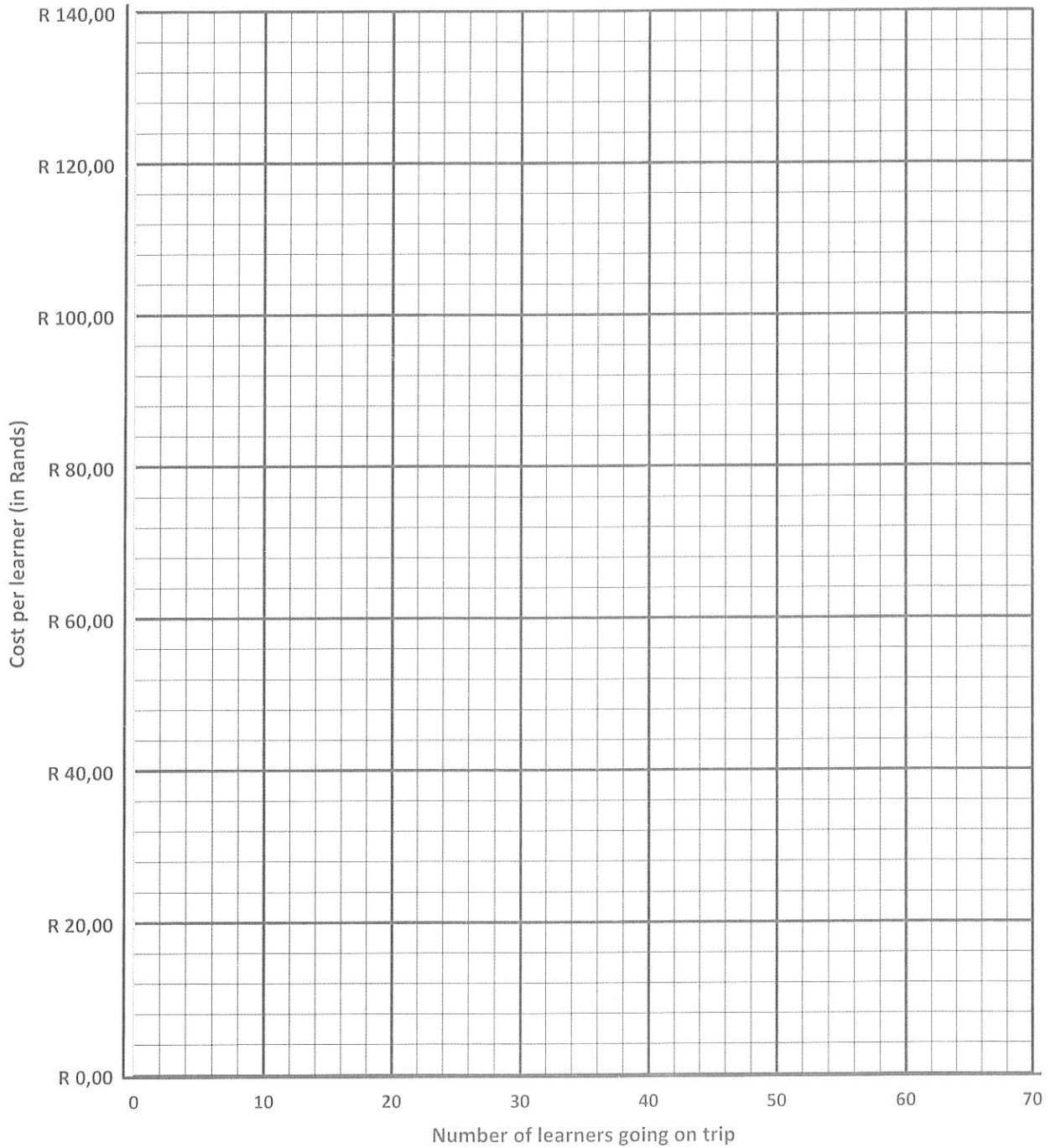
Answer sheet

Name: _____

Grade 10 _____

Question 3.2.2

Cost per learner going on a trip



TEAR-OFF SHEET



(10 + 11)



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MARKING GUIDELINE

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SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy (Answer)
C	Conversion
S	Simplification
RT/RG/RD	Reading from a table/ graph/ diagram
SF	Correct substitution in a formula
O	Opinion/ reason/deduction/example
J	Justification
R	Rounding off/ deriving a formula
F	deriving a formula
E	Explanation
U	Units
AO	Answer only full marks

This marking guideline consists of 5 pages.

QUESTION 1 [20]	SOLUTION	EXPLANATION	TOPIC/ LEVEL
1.1.1	Number of boys = $60 - 35 \checkmark$ MA = $25 \checkmark$ A	IMA subtracting number of girls IA answer AO	B L1
1.1.2	Percentage $\frac{35}{60} \times 100\% \checkmark$ M = $58,33\% \checkmark$ A	IM, %concept ICA Answer AO	B L1
1.1.3	$35 : 25 \checkmark$ M $7 : 5 \checkmark$ A	IM, correct ratio order ICA answer AO	B L1
1.1.4	Actual pass mark $\frac{30}{100} \times 70 \text{ marks} \checkmark$ M = $21 \text{ marks} \checkmark$ A	IM percentage concept IA answer AO	B L1
1.2.1	Sport Vibe $\checkmark \checkmark$ A	2A answer	F L1
1.2.2	\checkmark A Tuesday, 07/02/2018 \checkmark A OR \checkmark A Tue, 07 Feb 2018 \checkmark A	IA Day IA Date OR IA Day IA Date	F L2
1.2.3	A = $\frac{R13490}{R1349} \checkmark$ M = $10 \text{ bats} \checkmark$ A	IM dividing by R1 349 IA answer AO	F L2
1.2.4	Discount of 5% = $\frac{5}{100} \times R33421 \checkmark \checkmark$ M = R1 671.05	2M percentage discount concept (2)	F L2
1.2.5	10 th floor $\checkmark \checkmark$ A	2A answer	F L1
1.2.6	• There is no 20 th month on the calendar year $\checkmark \checkmark$ E OR • The month of birth is incorrect $\checkmark \checkmark$ E	2A explanation OR 2A explanation	F L4
			[20]

QUESTION 2	[25]	SOLUTION	EXPLANATION	TOPIC/ LEVEL
2.1.1		Tariff is the rate per unit for using a service. ✓✓E OR Tariff is the consumption rate/cost per unit for service rendered. ✓✓E	2A definition	F L1
2.1.2		Daily consumption = $\frac{250 \text{ kWh}}{28}$ ✓M = 8,93 kWh per day ✓CA	1M dividing by 28 days of Feb. 1CA answer NPR	F L2 (2)
2.1.3		Cost = 46 kWh × R0,8545 ✓M = R 39,31 ✓A	1M multiplying by a correct tariff 1A correctly rounded off answer AO	F L2 (2)
2.2.1		6:40am ✓✓A	2A answer	M L1 (2)
2.2.2		Time = 06:40 + 25min + 15min ✓M = 07:20 ✓A OR Time = 06:40 + 40minutes ✓ = 07:20 ✓	1M adding minutes 1A answer OR 1M adding minutes 1A answer	M L2 (2)
2.2.3		115min = 1 hour and 55min = 1 hour + $\frac{55}{60}$ hour = 1,92 hours	1M hours and minutes 1A answer AO	M L2 (2)
2.3.1		4km ✓✓RG	2RG	B L2 (2)
2.3.2		1hour ✓✓RG	2RG	B L2 (2)
2.3.3		✓RG Departure time = 09:00 + 3,5hrs ✓M = 12:30 ✓CA OR Departure time = 09:00 + 3hrs 30min ✓ = 12:30 ✓	1RG reading 09:00 1M adding 3,5 hrs 1CA OR 1M adding 3hrs 30min ✓ = 12:30 ✓	B L3 (3)

QUE	SOLUTION	EXPLANATION	TOPIC/ LEVEL
2.3.4	✓RG Time spent = 1,5hrs × 60 ✓M = 90 minutes ✓CA	1RG identifying time in hours 1M, multiplying by 60 1CA, conversion AO	B L2 (3)
2.3.5	✓MA Speed = $\frac{8 \text{ km}}{2 \text{ hrs}}$ ✓SF = 4km/h ✓	1MA, 8km 1SF correct substitution 1A answer	B L3 (3)

[25]

QUESTION 3 [30]	SOLUTION	EXPLANATION	TOPIC/ LEVEL															
3.1.1	$\text{No. of mini buses} = \frac{68}{14} \checkmark M$ $= 4,857$ $= 5 \text{ mini-buses} \checkmark R$ <p>\therefore All 68 learners are accommodated OR 4 mini buses will not be enough $\checkmark O$</p> <p>4 mini buses $\checkmark \checkmark A$</p>	1M dividing by 14 1A rounding 1O reason	B L4															
3.1.2	2A answer	[Accept 3]	B															
3.2.1 a)	$P = \frac{R1200}{R25} \checkmark M$ $= 48 \text{ learners} \checkmark A$	1M concept 1A answer AO	L1 B L3															
3.2.1 b)	$Q = \frac{R1200}{15} \checkmark M$ $= R80 \checkmark A$	1M concept 1A answer AO	B L3															
3.2.2	<div style="border: 1px solid black; padding: 10px;"> <p>Cost per learner going on a trip</p> <table border="1"> <caption>Data points from the graph</caption> <thead> <tr> <th>Number of learners</th> <th>Cost per learner</th> </tr> </thead> <tbody> <tr><td>10</td><td>120</td></tr> <tr><td>20</td><td>60</td></tr> <tr><td>30</td><td>40</td></tr> <tr><td>40</td><td>30</td></tr> <tr><td>50</td><td>25</td></tr> <tr><td>60</td><td>20</td></tr> </tbody> </table> </div>		Number of learners	Cost per learner	10	120	20	60	30	40	40	30	50	25	60	20	1A for correct starting point 1A, joining points 1A for correct last points 1CA for shape	B L3
Number of learners	Cost per learner																	
10	120																	
20	60																	
30	40																	
40	30																	
50	25																	
60	20																	

QUE	SOLUTION	EXPLANATION	TOPIC/ LEVEL
3.2.3	Indirect proportion/ inverse proportion. $\checkmark \checkmark E$	2A answer	B (2)
3.2.4	As the number of learners, increase the cost per learner decrease. $\checkmark \checkmark O$	2O reason	L1 B (2)
3.3.1	One part of concentrated juice is added to 4 parts of pure water. $\checkmark \checkmark E$	2E explanation	B L1 (2)
3.3.2	$\text{Amount of juice} = \frac{15\ell}{5} \checkmark MA$ $= 3\ell \checkmark CA$ $\text{Amount of water} = \frac{15\ell}{5} \times 4$ $= 12\ell \checkmark CA$ <p>\therefore her statement is incorrect. $\checkmark CA$</p> <p style="text-align: center;">OR</p> $1k + 4k = 5k \checkmark MA$ $\frac{15\ell}{5} = 3$ <p>Water: $4 \times 3 = 12\ell \checkmark CA$ Juice: $1 \times 3 = 3\ell \checkmark CA$ \therefore Her statement is incorrect. $\checkmark CA$</p>	1MA, dividing by 5 parts 1CA amount of concentrated juice 1CA amount of water 1CA conclusion OR 1MA, total of 5 parts 1CA amount of concentrated juice 1CA amount of water 1CA conclusion	B L4 (4)
3.3.3	$\text{Percentage discount} = \frac{R23,90 - R19,90}{R19,90} \times 100\% \checkmark M$ $= \frac{R4}{R19,90} \times 100\% \checkmark SF$ $= 16,74\% \checkmark A$	1M, percentage concept 1SF, correct simplification 1CA, answer	F L2 (3)
3.3.4	2,5 cups : 10 cups $\checkmark M$ 1:4 $\checkmark SF$ <ul style="list-style-type: none"> Her statement is incorrect, because the mixture gives the same ratio as the dilution factor. $\checkmark \checkmark E$ Calculations gives the same ratio $\checkmark \checkmark E$ 	1MA correct ratio and order 1A simplification 2E explanation	B L4 (4)
TOTAL : 75			[30]

