

# Education

KwaZulu-Natal Department of Education  
REPUBLIC OF SOUTH AFRICA

**MATHEMATICAL LITERACY**

**COMMON TEST**

**MARCH 2017**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 10**

**MARKS: 75**

**TIME: 1½ hours**

This question paper consists of 9 pages 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 ANSWERSHEET. Write your NAME in the spaces provided and hand it in 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 calculations clearly.
7. Round **ALL** the final answers off appropriately according to the given context, unless stated otherwise.
8. Indicate units of measurement, where applicable.
9. Write neatly and legibly.

**QUESTION 1**

1.1

Ethan is a grade 10 learner at Premier High School. There is a total of 1 140 learners at his school. TABLE 1 below shows the number of learners and their gender in each of the grades at his school. Some of the data has been omitted.

**TABLE 1: The number of learners at Premier High School in terms of grade and gender**

GRADE	MALES	FEMALES	TOTAL
8	152	140	292
9	105	140	<b>A</b>
10	<b>B</b>	144	267
11	89	120	209
12	48	79	127
<b>TOTAL</b>	<b>517</b>	<b>C</b>	<b>1140</b>

Study TABLE 1 and answer the questions that follow:

1.1.1 Determine the missing values:

- (a) **A** (2)
- (b) **B** (2)
- (c) **C** (2)

1.1.2 Calculate the total number of males as a percentage of the total number of learners in the school. (3)

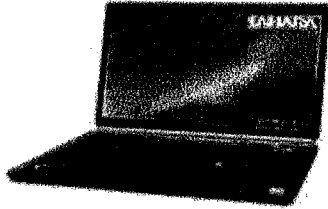
1.1.3 Write down the ratio number of males: number of females in grade 9 in simplified form. (3)

1.1.4 The Grade 12 learners are going on an excursion. Determine how many buses the school should hire to transport the learners, if each bus has seating capacity for 60 passengers. Show all calculations. (3)

1.1.5 Government regulation states that to determine the minimum number of teachers employed at a school the ratio 1: 35 should be used. Determine the minimum number of teachers that should be employed at the school. Show all calculations. (3)

1.2

Ethan's grandmother bought him a laptop on hire purchase for his birthday.



House & Home



**SAHARA**

*Microsoft Windows 10*

*Save R610!*

*New price: R4 989*

*Hire purchase: Deposit R499 + R262 × 30*

- 1.2.1 Calculate the original price of the laptop. (2)
- 1.2.2 Determine the deposit as a percentage new price. (3)
- 1.2.3 Determine the total price paid for the laptop, if bought on hire-purchase. (3)
- [26]

**QUESTION 2**

- 2.1 Theresa would like to make fresh fruit salad and ice-cream for desert. She purchased some goods at her local store Pricerite. She obtained the till slip below:

<b>PRICERITE</b>		
HOMESTEAD		
TEL No: 086 123 3221		
Tax Invoice VAT No. 4412126157		
PINEAPPLE		R6,99*
GOVERMT BAG 24 L		R0,50
GOVERMT BAG 24 L		R0,50
BANANAS 6'S		R11,99*
ICE-CREAM 1,5L		R36,99
MANGO 1'S		R6,89*
GRENADILLA 110g		R16,99
PEACHES 450g		R16,99
MANGO 1'S		R6,89*
MANGO 1'S		R6,89*
APPLES		R15,99*
LEMON per kg		R6,49*
PAW-PAW 1'S		R15,00*
<b>14 BALANCE DUE</b>		<b>R163,99</b>
<b>CASH ROUNDING</b>		
CASH		R200,00
CHANGE		R36,05
Cashier: Lindiwe Gumede		
<b>Rate</b>	<b>Vat</b>	<b>Total</b>
14,00%	8,84	71,97
00,00%	0,00	92,02
C0043	10:51:00	18-01-17
Please keep your till slip As proof of purchase		

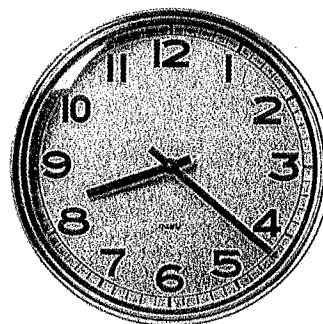
**Fruit Salad**

- 2.1.1 Write down the number of mangoes purchased. (2)
- 2.1.2 Determine the simplified ratio of the volume of ice-cream : volume of plastic bag. (2)
- 2.1.3 State one reason why VAT was not paid on some items. (2)
- 2.1.4 Calculate the cost per litre of ice-cream. (2)
- 2.1.5 Did Theresa pay for her goods in the morning or afternoon? (2)
- 2.1.6 State why cash rounding is done in stores. (2)
- 2.1.7 Theresa took 20 minutes to travel home after paying for her goods. At what time did she get home? (2)

**QUESTION 3**

3.1 Mr Morai is the athletic coach at his school, and he sent one of his athletes on a training run.

The athlete started his run at 07:00 and arrived at the finish line at the time on the clock alongside.



3.1.1 Write down the time on the clock. (2)

3.1.2 Determine the total time, in minutes, of the athlete’s training run. (3)

3.2 Mr Morai bought R60,00 airtime for his cell phone. His cell phone provider charges him a rate of R1,80 per minute. The call rate is based on a per second billing from the first second.

The TABLE 2 below shows the cost for calls lasting a different number of seconds.

**TABLE 2: Cost of cell-phone call**

Number of seconds	0	30	45	60	90	Y	120	180	240
Cost in Cents	0	90	X	180	270	300	360	540	720

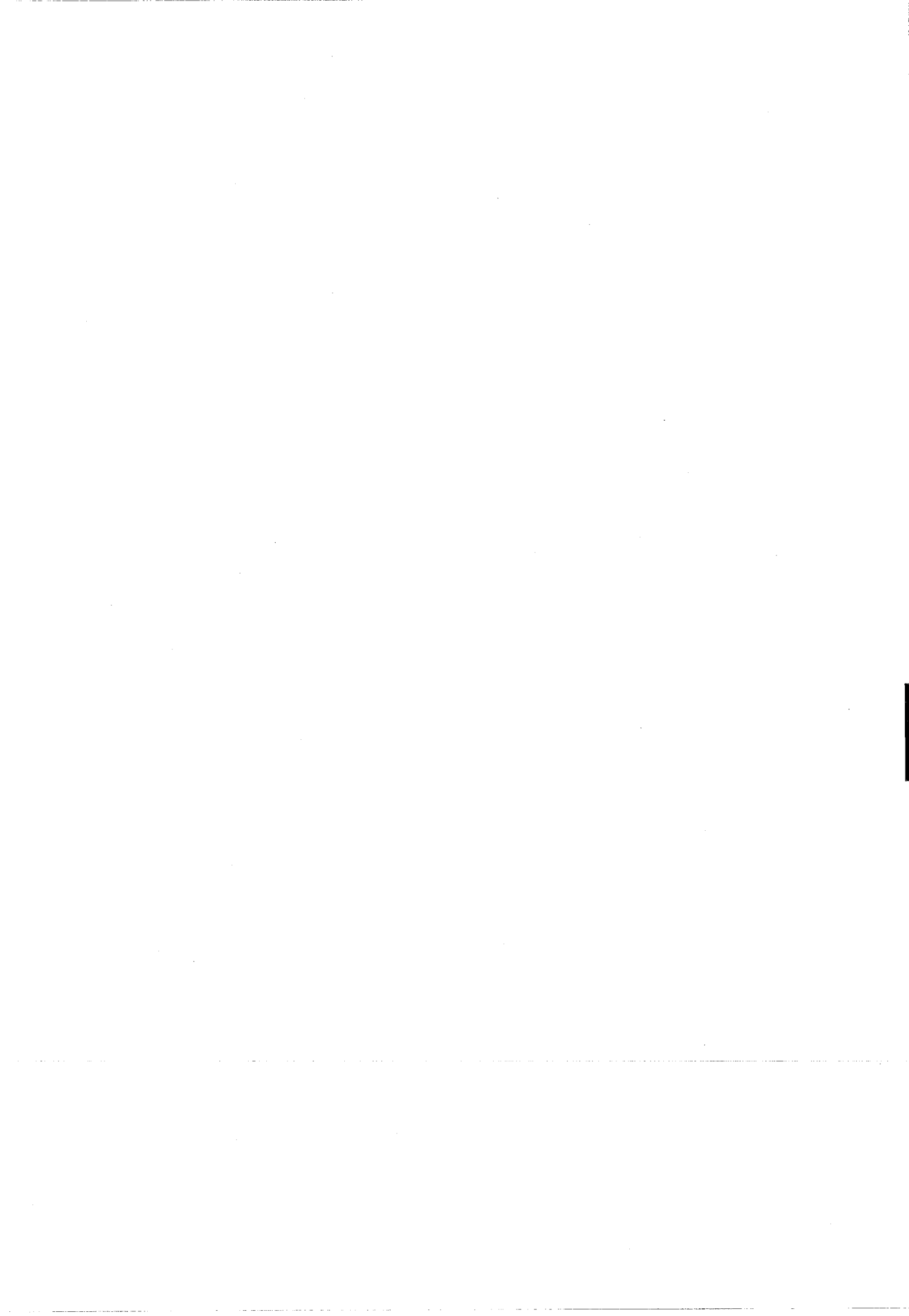
3.2.1 Determine the value of X and Y (5)

3.2.2 Use the axes provided on the ANSWER SHEET to draw a line graph that illustrates the data in TABLE 2. (4)

- 3.3 Mr Morai the athletics coach decides to purchase concentrated energy drinks to dilute and give to his athletes. The dilution instruction on an energy sports drink is 1: 4. The concentrated sports drink is sold in 1,5 ℓ bottles.
- 3.3.1 Explain what is meant by this dilution factor. (2)
- 3.3.2 Calculate how many litres of diluted sports drink Mr Morai would make if 1,5 of concentrated sports drink is diluted as per instruction. (3)
- 3.3.3 The diluted drink is served in glasses with a capacity of 250 ml. Determine how many full glasses of diluted sports drink can be poured from using 1,5 ℓ of concentrated drink. (4)
- 3.3.4 One of the athletes decides to mix 3,5 cups of concentrate with 15 cups of water. Determine showing all calculations, whether or not the drink will taste the same as it would if made according to the dilution instruction given on the bottle. (4)

[27]

**TOTAL: 75**





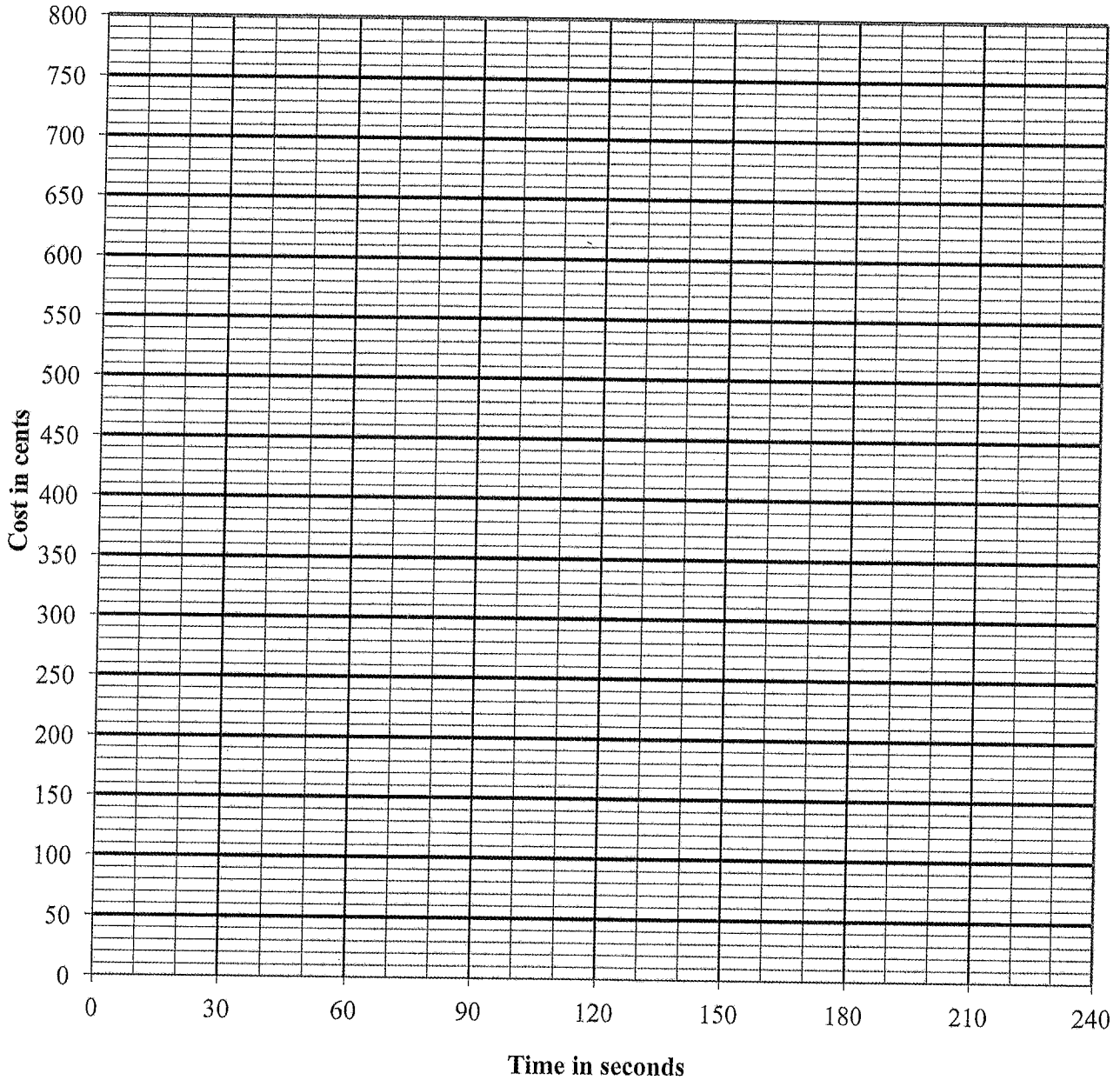
**ANSWER SHEET**

NAME: \_\_\_\_\_

**GRADE 10** \_\_\_\_\_

**QUESTION 3.2.2**

**COST OF CELL-PHONE CALLS**



TEAR - OFF PAGE

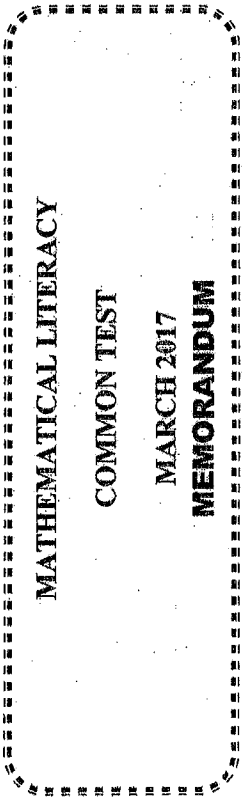


MAT & MATHS - GR10



# Education

KwaZulu-Natal Department of Education  
REPUBLIC OF SOUTH AFRICA



## MATHEMATICAL LITERACY

COMMON TEST

MARCH 2017  
MEMORANDUM

**NATIONAL  
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**GRADE 10**

MARKS: 75

Symbol	Explanation
M	Method
M/A	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy (Answer)
C	Conversion
S	Simplification
RT / RG / RM	Reading from table / Reading from graph / Reading from map
F	Choosing the correct formula
SF	Substitution in formula
O	Opinion
P	Penalty e.g. for no units, incorrect rounding, etc
R	Rounding off / Reason
U	Unit

This memorandum consists of 7 of pages.

No	Solution	Explanation	L
1.1.1 (a)	$A = 105 + 140\sqrt{M}$ $= 245\sqrt{CA}$ <p style="text-align: center;"><b>OR</b></p> $A = 1\ 140 - (292 + 267 + 209 + 127)\sqrt{M}$ $= 245\sqrt{CA}$	1 M for adding 1 CA answer Answer only full marks	L1
1.1.1 (b)	$B = 267 - 144\sqrt{M}$ $= 123\sqrt{CA}$ <p style="text-align: center;"><b>OR</b></p> $B = 517 - (152 + 105 + 89 + 48)\sqrt{M}$ $= 123\sqrt{CA}$	1 M for subtraction 1 CA answer Answer only full marks	L1
1.1.1 (c)	$C = 1\ 140 - 512\sqrt{M}$ $= 628\sqrt{CA}$ <p style="text-align: center;"><b>OR</b></p> $C = 140 + 140 + 144 + 120 + 79\sqrt{M}$ $= 628\sqrt{CA}$	1 M for subtraction 1 CA answer Answer only full marks	L1
1.1.2	$\sqrt{A}$ $\text{Number of males} = \frac{517}{1\ 140} \times 100\% \sqrt{M}$ $= 45,35\% \sqrt{CA}$	1 A for 517 1 M for multiplying by 100 1 CA Answer only full marks	L1
1.1.3	$\sqrt{M}$ $105 : 140\sqrt{A}$ $= 3 : 4\sqrt{S}$	1 M for ratio 1 A correct values 1 S simplification Answer only full marks	L1

No	Solution	Explanation	L
1.1.4	Number of buses = $\frac{127}{60}$ ✓M = 2,1166... ✓A = 3 ✓R	1 M dividing correct values 1 A answer IR for rounding Answer only full marks	L2 L3 (3)
1.1.5	Number of teachers = $\frac{1140}{35}$ ✓M = 32,57... ✓A = 33 ✓R	1 M dividing correct values 1 A answer IR for rounding Answer only full marks	L2 L3 (3)
1.2.1	Original Price = R4 989,00 + R610,00 ✓M/A = R5 599 ✓A	1 M/A adding correct values 1 A answer Answer only full marks	L1 (2)
1.2.2	Percentage deposit = $\frac{499}{4989} \times 100\%$ ✓M = 10% ✓CA	1 A for 499 1 M multiplying by 100 1 CA for answer Answer only full marks	L2 (3)
1.2.3	Five purchase = R499 + R262 × 30 ✓A = R499 + R7 860 ✓M/A = R8 359 ✓A	1 A for identification 1 M/A product 1 A answer Answer only full marks	L2 (3) 1261

QUESTION 2 [22 MARKS]			
No	Solution	Explanation	L
2.1.1	3 ✓✓A	2A correct number of mangoes	L1 (2)
2.1.2	1,5 : 24 ✓M/A = 1 : 16 ✓A	1M/A reading correct values 1A simplification	L2 (2)
2.1.3	In South Africa fresh fruit and vegetables are VAT free items ✓✓O	20 opinion	L4 (2)
2.1.4	Cost per litre ice-cream = $\frac{R3699}{15}$ ✓M/A = R24,66 ✓A	1M/A correct values 1A answer	L2 (2)
2.1.5	morning ✓✓A	2A	L1 (2)
2.1.6	1 and 2 cent coins have been discontinued ✓✓O	20 opinion	L4 (2)
2.1.7	✓M/A 20 minutes after 10:51 = 11:19 ✓A OR 19 minutes pass 11	1M/A adding 20 minutes 1A for correct time Answer only full marks	L1 (2)
2.2.1 (a)	R250 ✓✓RG	2RG	L2 (2)
2.2.1 (b)	R62,50 ✓✓RG	2RG (Accept any value between R60 and R65)	L2 (2)
2.2.1 (c)	5 ✓✓RG	2RG	L2 (2)
2.2.2	The more people that travel in the car the less the transport cost per person ✓✓O	20 opinion	L4 (2) 1221

**QUESTION 3 [27 MARKS]**

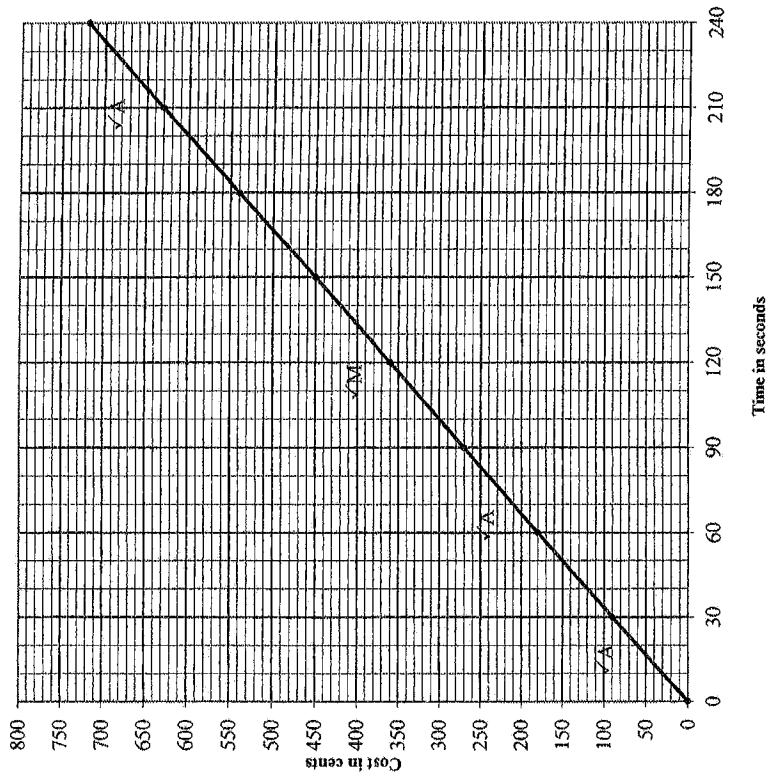
No	Solution	Explanation	L
3.1.1	08:22 ✓✓A OR 22 minute pass 8 o'clock ✓✓A OR 8:22 am ✓✓A	2A correct time   (2)	L1
3.1.2	Total time = 1 hr + 22 minutes ✓M = 60 minutes + 22 minutes ✓C = 82 minutes ✓CA	1M for duration 1C for conversion to minutes 1CA answer  (3)	L1
3.2.1	✓M X = 45 seconds × $\frac{180}{60}$ ✓C = 135 cents ✓CA  Y = $\frac{300}{3}$ ✓M/A = 100 seconds ✓A	1M multiplication 1C conversion 1CA answer  1M/A for dividing correct values 1A answer <b>Answer only full marks</b> (5)	L3

No.

3.2.2

Solution

**COST OF CELL-PHONE CALLS**



1A starting at (0 ; 0)

2A four points plotted correctly

1M joining the points

(4)

L

L2

No	Solution	Explanation	L
3.3.1	For every 1 part of concentrated energy add 4 parts of water ✓✓O	20 explanation (2)	L4
3.3.2	1,5 ℓ add $4 \times 1,5 \ell$ water = $1,5 \ell + 6 \ell$ ✓A = $7,5 \ell$ ✓A ✓M/A	1 M/A multiplying 4 by 1,5 1 A product of 6 1 A answer (3)	L3
3.3.3	$7,5 \ell = 7,5 \times 1\,000 \text{ ml}$ ✓C = $7\,500 \text{ ml}$ ✓A Number of glasses = $\frac{7\,500}{250}$ ✓M = 30 ✓CA	1 C conversion to ml 1 A for ml 1 M dividing 1 CA answer (4)	L3
3.3.4	3,5 cups add $4 \times 3,5$ cups water ✓M/A = $3,5 + 14$ = $17,5$ cups diluted drink ✓A No. It will taste different since there is more water. ✓✓O OR 3,5: 15 ✓M/A 1:4,3 ✓A No. It will taste different since there is more water. ✓✓O	1 M/A multiplying 4 by 3,5 1 A simplification 20 conclusion 1 M/A correct ratio 1 A simplification 20 conclusion (4)	L4
TOTAL: 75			[27]