education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 10

MATHEMATICAL LITERACY

COMMON TEST

SEPTEMBER 2019

MARKS: 75

TIME: 1½ Hours

This question paper consists of 7 pages and an addendum with 4 annexures (5 pages).

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INSTRUCTIONS AND INFORMATION

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

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

   - ANNEXURE A for QUESTION 2.1
   - ANNEXURE B for QUESTION 2.3
   - 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 the final answers to TWO decimal places, unless stated otherwise.

8. Indicate units of measurements, where applicable.

9. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.

10. Write neatly and legibly.

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QUESTION 1

1.1 Mzwandile's grandmother buys sliced bread to make sandwiches and sell them at school. Below is the table showing some ingredients she uses to make sandwiches. Some values have been omitted.

Table 1: Average prices for some ingredients to make sandwiches

Ingredient	Standard sandwich loaf (20 slices)	Polony (2.5 kg)	Margarine spread (500g)
Price without VAT	R9,93	R43,43	**B**
VAT @ 15%	**A**	R6,52	R3,13
Price with VAT	R …	R49,95	R23,99

Source:http//pricecheck.com

Use the information and TABLE 1 above to answer the following questions.

1.1.1 Convert 500g of margarine spread mass to kilograms. (2)

1.1.2 Determine the value of **A**. (2)

1.1.3 Determine the value of **B.** (2)

1.1.4 Mzwandile's grandmother intends to spend R575 on loaves of bread per month, calculate how many loaves she will get if ONE loaf costs R11,50. (2)

1.1.5 If ONE loaf of bread makes FIVE sandwiches, determine the number of sandwiches to be made from ONE dozen loaves of bread. (2)

1.1.6 The bread delivery truck is 9 metres long in reality and 1,5 centimetres as a model.

Complete the following statement, write ONLY the answer.

1,5 centimetres on the model of the truck will represent ….. **centimetres** in reality. (2)

1.1.7 Mzwandile's grandmother purchased 15 loaves of bread altogether.

If her order was 40% brown loaves, determine the number of brown loaves she actually bought. (2)

[14]

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QUESTION 2

2.1 Study the graph in ANNEXURE A in the addendum, showing the athletic events starting times for the Capricorn districts competition and answer the following questions.

2.1.1 Write down the time at which the athletic events started? (2)

2.1.2 Determine the time at which the closing ceremony will start? (2)

2.1.3 Determine which age group will be on the field at 11:00 in morning? (2)

2.2 Each school must register at least ONE coach (representative educator) and EIGHT athletes during these games.

Determine the number of schools that participated in the events if there were 63 people registered in the events. (3)

2.3 Study the square Greco-Roman wrestling mat in ANNEXURE B in the addendum and answer the following questions.

2.3.1 Calculate the area of the wrestling mat in square metres (m^2).

You may use the formula: **Area of square** $= \boldsymbol{side} \times \boldsymbol{side}$ (2)

2.3.2 Determine the radius of the central wrestling area. (2)

2.3.3 Hence, calculate the area of the central wrestling area.

You may use the formula :
Area of circle $= \pi \times$ **radius**^{2} use $\pi = 3{,}142$ (2)

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QUESTION 3

3.1 Mr Welden works as a librarian, his wife works as a petrol attendant and they also own the tuck shop. ANNEXURE C in the addendum shows his monthly family budget.

Study Mr Welden's monthly family budget in ANNEXURE C and answer the following questions.

3.1.1 Show by calculation how the total income has been calculated. (2)

3.1.2 Explain the term Fixed expense. (2)

3.1.3 Give ONE possible reason why it is important that Mr Welden has savings every month. (2)

3.1.4 Which expense do you think Mr Welden should consider reducing from the budget? Explain your choice. (3)

3.1.5 Explain with a VALID reason, why school fees would be regarded as a high priority expense to Mr Welden's budget. (2)

3.2 Mr Welden's car consumes 7,6 litres per 100 km of fuel. Calculate how far his car will travel on 45 litres of fuel. (2)

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3.3 Mr Welden's assistant, Mbuso intends to purchase a new Defy stove and Defy Microwave for his wife.

APPLIANCES ADVERTISEMENT

DEFY 500mm compact 4-plate stove



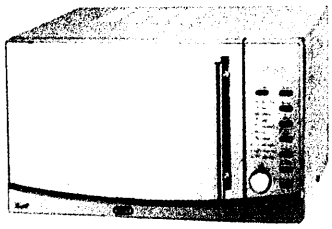
Cash R2 599

Save R300

25 990

uCount rewards

DEFY Microwave



Cash R1 690

Save R200

16 900

uCount rewards

Promotion from 02 - 10 June 2019, Delivery within 5 working days

Source:www.makro.co.za/appliances

Study the advertisement above and answer the questions that follow.

3.3.1 Calculate the total amount Mbuso will pay for both items, if he makes the purchase on the 5th of June 2019. (2)

3.3.2 Show by calculations that **R1 = 10** *uCount* reward points. (2)

3.3.3 Mbuso does NOT have sufficient money to purchase both items, he decides to borrow R3 000 from his bank to add onto what he has saved before the promotion.

a) Calculate how much money Mbuso saved before the promotion? (2)

b) Calculate how much money Mbuso will pay back on a loan of R3 000 over the period of 2 years if simple interest is charged at an interest rate of 12% p.a. (4)

c) Mbuso's monthly loan repayment to the bank is a little more than R150 per month and he decided a month later to increase his monthly repayment to R200 per month

Give ONE advantage of increasing the monthly repayment on the total cost of the loan. (2)

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QUESTION 4

4.1 Mark would like to build a house for his family. He draws a scaled diagram for the house he intends to build.

Use the floor plan in ANNEXURE D in the addendum to answer the following questions.

4.1.1 How many windows does the Mark's house have? (2)

4.1.2 Determine the value of **W**, the width of the toilet. (2)

4.1.3 Write down the number of people that can be seated on the couches in the living room. (2)

4.1.4 Show by calculations that the perimeter of the house is 46m.

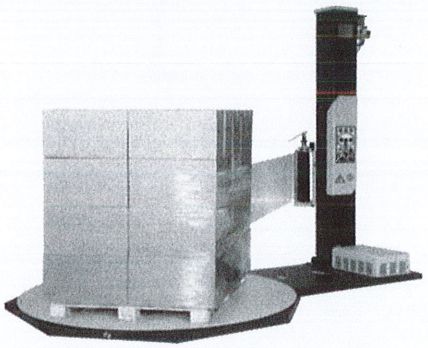
You may use the formula:

Perimeter of rectangle = 2 × length + 2 × width (3)

4.1.5 Describe the position of the bedroom with a door that swings towards the left from outside of the door, in relation to the house. (2)

4.2 Mark's son Andrew works as a packer, he operates the machine that wraps stacked boxes.

Note: The machine takes 4 minutes to wrap 24 boxes



Source: http://m.indiamart.com

4.2.1 Andrew needs to wrap 480 boxes using the machine, determine the time he will have finished wrapping ALL boxes if he starts at 08:15. (4)

4.2.2 If ONE box contains 30 deflated soccer balls, calculate the number of soccer balls packed in ALL 24 boxes. (2)

4.2.3 Andrew packs ONE load of 24 boxes in a stack of FOUR equal layers.

Give a possible arrangement of EACH stack he uses to pack one load of 24 boxes. (2)

4.2.4 Explain why boxes are wrapped with the plastic wrap before they are loaded. (2)

[21]

TOTAL: 75

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MATHEMATICAL LITERACY

ADDENDUM

SEPTEMBER 2019

NATIONAL SENIOR CERTIFICATE

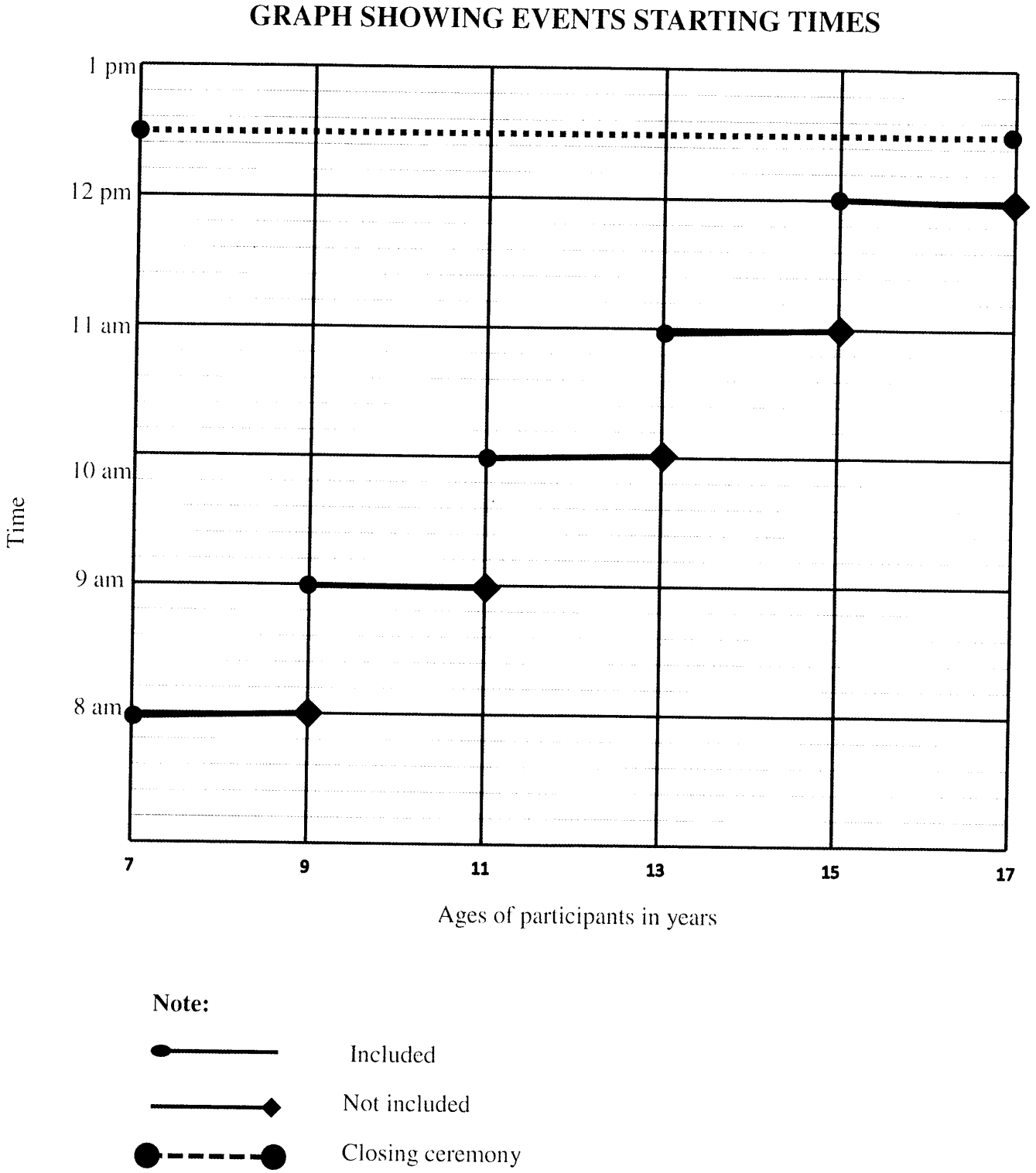
GRADE 10

This addendum consists of 5 pages with 4 annexures.

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ANNEXURE A

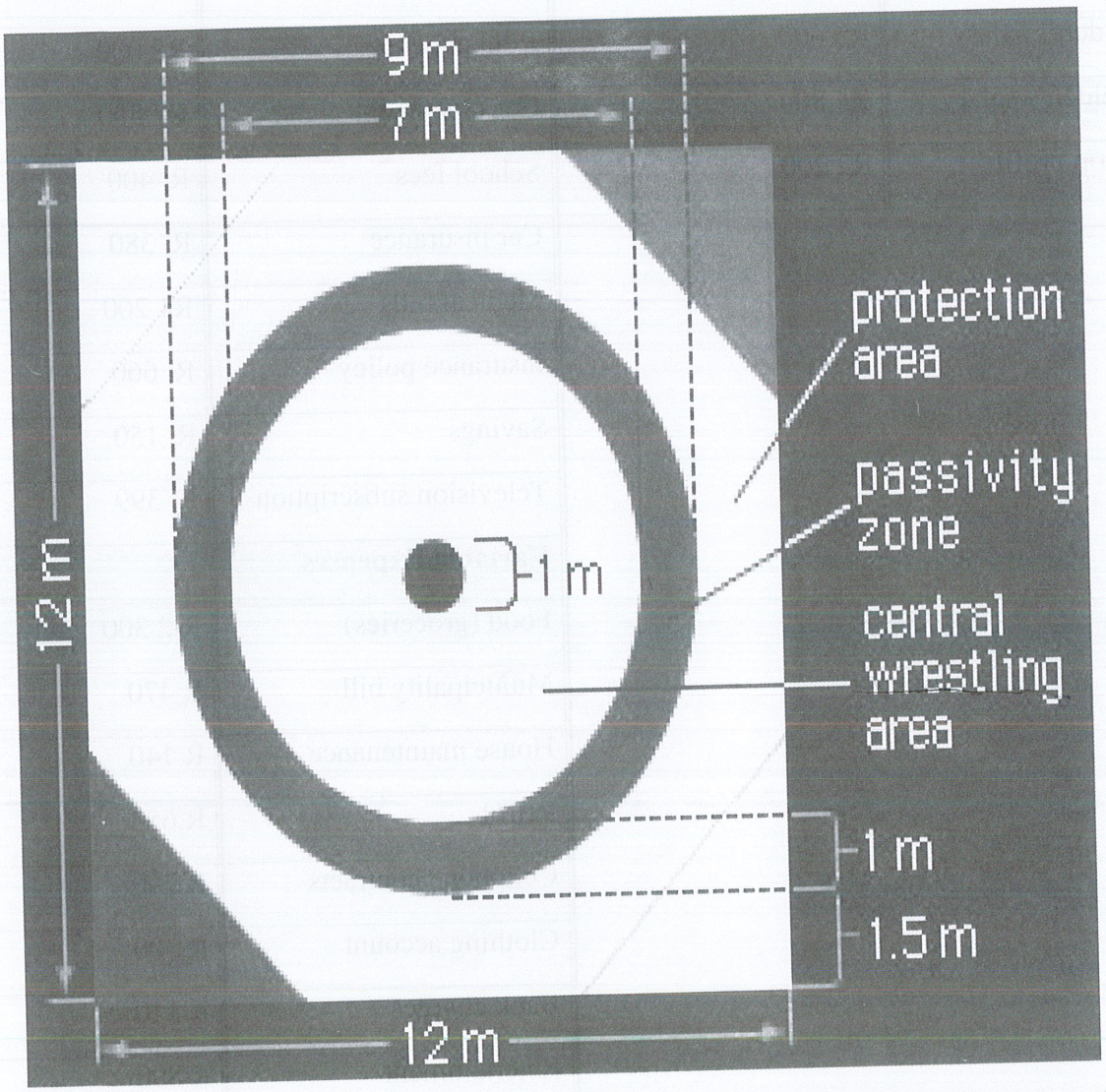
Question 2.1



ANNEXURE B

Question 2.3

SQUARE GRECO-ROMAN WRESTLING MAT



Source:http//images.app.goo.gl/Olympics/wrestling/mats

Note:

*Wrestling is a sport in which a contender attempts to defeat an opponent without the use of striking

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ANNEXURE C

Question 3.1

MR WELDEN'S FAMILY MONTHLY BUDGET

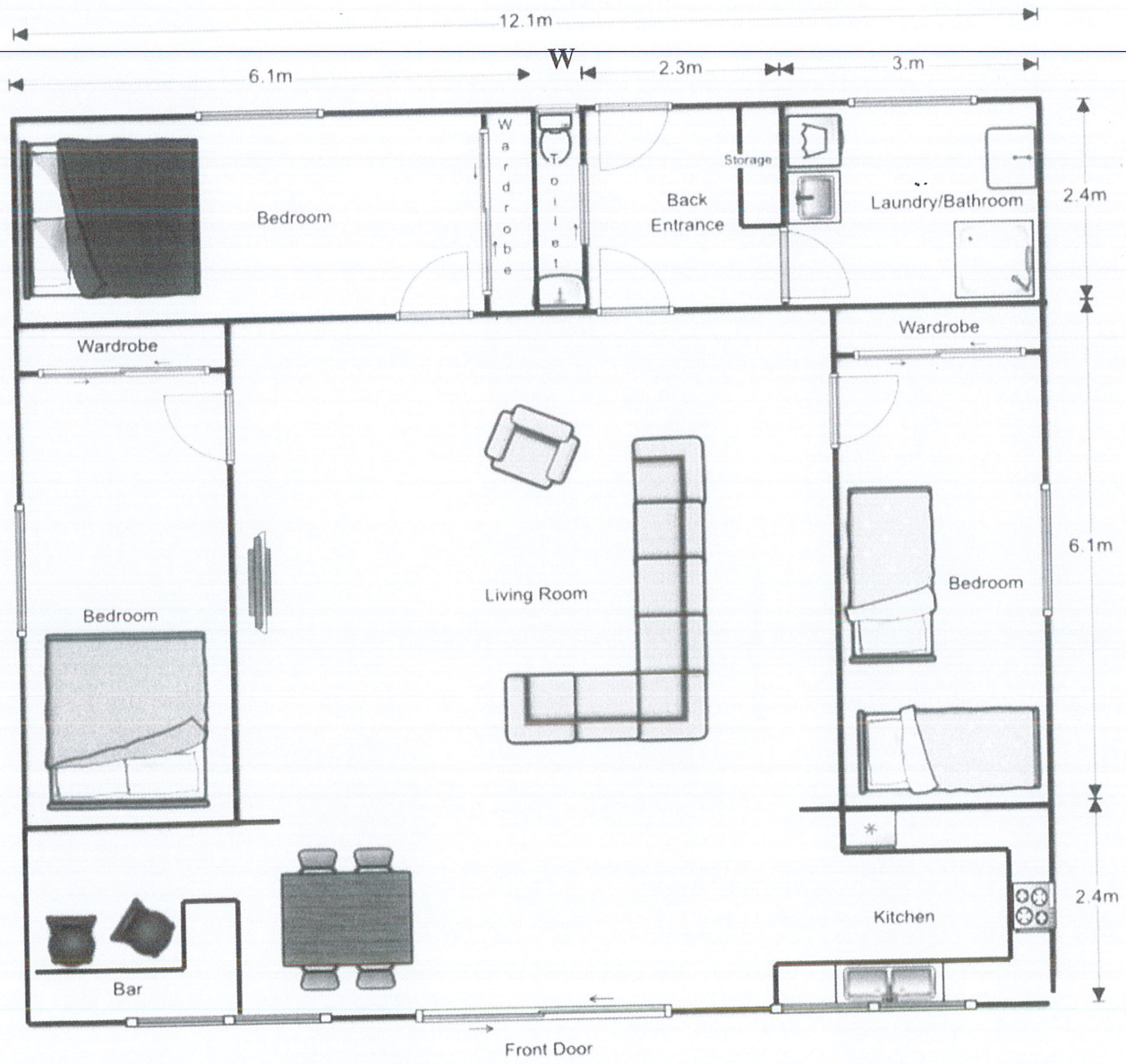
Income	**Amounts**	**Expenses**	**Amounts**
Fixed income		**Fixed expenses**	
Mr Welden's salary	R5 600	Rent expense	R2 000
Mrs Welden's salary	R4 800	Car repayment	R1 500
Tuck shop profit	R2 200	School fees	R 400
		Car insurance	R 380
		Medical bills	R1 200
		Insurance policy	R 660
		Savings	R 150
		Television subscription	R 399
		Variable Expenses	
		Food (groceries)	R 2 300
		Municipality bill	R 470
		House maintenance	R 140
		Petrol	R 650
		Cellphone contracts	R 780
		Clothing account	R 300
		Bank charges	R 110
		Entertainment	R 800
		Other bills	R 200
Total Income	**R 12 600**	**Total Expenses**	**R 12 439**
	Total left over		**R 161**

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ANNEXURE D

Question 4.1

MARK'S HOUSE PLAN



Source: httpjs9.com/shipping-container-home-floor-plans

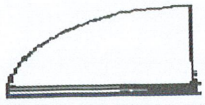
Keys:



Window



Sliding door



Door swing

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MARKING GUIDELINE

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GRADE 10

MARKS: 75

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
NPR	No penalty for units/rounding
SF	Correct substitution in a formula
O	Opinion/ reason/deduction/example
J	Justification
R	Rounding off/
F	deriving a formula
E	Explanation
U	Units
AO	Answer only full marks

This marking guideline consists of 6 pages.

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QUESTION 1 [14 marks]			
Que	**Solution**	**Explanation**	**T/L**
1.1.1	Weight in kg = $\frac{500g}{1000}$ ✓C = 0,5 ✓A	1C,Dividing by 1000 1A, Answer **AO** (2)	M L1
1.1.2	✓MA **A** = $\frac{15}{100} \times R9{,}93$ = R1,4895 ≈ $R1{,}49$ ✓A	1MA, Multiplying by 15% 1A, Answer **AO** **NPR** (2)	F L1
1.1.3	✓MA **B** = R23,99 – R3,13 = R20,89✓A **OR** ✓MA **B** = $\frac{100}{115} \times R23{,}99$ = R20,86✓A	1MA, Subtraction 1A, Answer **OR** 1MA, Multiplying by $\frac{100}{115}$ 1A, Answer **AO** (2)	F L1
1.1.4	No. of loaves = $\frac{R575}{R11{,}50}$ ✓MA = 50 ✓CA	1MA, Dividing by R11,50 1CA, Number of loaves **AO** (2)	F L1
1.1.5	✓MA Number of sandwiches = 12 × 5 = 60 ✓A	1MA, Multiplying by 12 1A, Number of sandwiches **AO** (2)	B L1
1.1.6	9 00 ✓✓A	2A, Concept of scale and conversion (2)	MP L1
1.1.7	Number of brown bread = $\frac{40}{100} \times 15$ ✓M = 6 ✓A **OR** Number of breads = 0,4 × 15 ✓M = 6 ✓A	1M, Percentage concept 1A, Answer **OR** 1M, Multiply by 0,4 1A, Answer. **AO** (2)	B L1
			[14]

QUESTION 2 [15 marks]			
Que	**Solution**	**Explanation**	**T/L**
2.1.1	8:00 am✓✓RT **OR** 08:00 ✓✓RT	2RT, Reading from the graph **Accept 8 am OR Eight in the morning** (2)	M L1
2.1.2	Time = 12:00 + 24min + 6min ✓RT = 12:30pm ✓RT	2RT, Reading from the graph **AO** (2)	M L2
2.1.3	13 years✓✓RT	2RT, Reading from the graph **Accept 14 years** (2)	B L2
2.2	Number of people per school = 8 + 1 = 9 ✓MA Number of schools = $\frac{63}{9}$ ✓M = 7 ✓CA	1MA, Adding number of people 1M, Dividing total 1CA, Number of schools (3)	B L2
2.3.1	Area = $12m \times 12m$ ✓SF = $144m^2$✓A	1SF, Substituting correct values 1A, Answer **AO** (2)	M L2
2.3.2	Radius = $\frac{7m}{2}$ ✓M = 3,5m ✓A	1M, Dividing diameter by 2 1A, Answer **AO** (2)	M L1
2.3.3	Area = $3.142 \times 3{,}5m \times 3{,}5m$✓SF = 38,4895 m^2✓CA	**CA from 2.3.2** 1SF, Substituting radius 1CA, Answer **NPR** (2)	M L2
			[15]

QUESTION 3 [25 marks]			
Que	**Solution**	**Explanation**	**T/L**
3.1.1	✓MA ✓MA Income = R5 600 + R4 800 + R2 200 = R12 600	1MA, Adding two correct values 1MA, Adding the third correct value (2)	F L2
3.1.2	Expenses that remains the same for longer period. ✓✓E **OR** Expenses that are not variable. ✓✓E **OR** Expenses that have constant amounts. ✓✓E	2E, Explanation (2)	F L1
3.1.3	He could be saving for future expenses. ✓✓R **OR** He could be saving for unforeseen circumstances. ✓✓R	2R, Reason (2)	F L4
3.1.4	✓RT Entertainment, because he also pays a television subscription / Not a necessity / Wasteful expenditure.✓✓O ✓RT **OR** Food, too much money has been budget. ✓✓O ✓RT **OR** Petrol, alternative means of transport can be used (clubbing). ✓✓O ✓RT **OR** Clothing account, cash purchase / lay-bye can be used. ✓✓O	1RT, Mentioning the correct expense 2O, Opinion (3)	F L4
3.1.5	Because education is a basic need. ✓✓O **OR** Because education is important. ✓✓O	2O, Opinion (2)	F L4
3.2	Distance = $\frac{45}{7,6} \times 100$✓M = 592,1km ✓A	1M, Using rate 1A, Answer **NPR** (2)	B L2

Que	Solution	Explanation	T/L
3.3.1	Total = R2 599 + R1 690✓MA = R4 289 ✓A	1MA, Adding both cash price 1A, Answer **AO** (2)	F L1
3.3.2	No of points/R1 = $\frac{25990}{R2599}$ ✓M = 10 ✓A **OR** R2 599 : 25 990 ✓M R1 : 10 uCount points ✓S **OR** No of points/R1 = $\frac{16\,900}{R1\,690}$ ✓M = 10 ✓A **OR** R1 690 : 16 900 ✓M R1 : 10 uCount rewards ✓S	1M, Dividing 1A, Answer **OR** 1M, Ratio Concept 1S, Simplification **OR** 1M, Dividing 1A, Answer **OR** 1M, Ratio Concept 1S, Simplification (2)	B L2
3.3.3.a)	Saved amount = R4 289 – R3 000 ✓M = R1 289 ✓CA	**CA from 3.3.1** 1M, Subtraction 1CA. Answer (2)	F L2
3.3.3.b)	✓M First year interest = $\frac{12}{100} \times R3\,000$ =R360 First year balance = R 3 360 ✓CA Second year balance = R 3 360 + R360 ✓M = R3720✓A	1M, % concept 1CA, 1st year balance 1M, Adding interests 1A, Final amount (4)	F L3
3.3.3.c)	He can finish his loan amount sooner/quicker. ✓✓O **OR** He can reduce the interest amount added on his loan. ✓✓O	2O, Opinion (2)	F L4
			[25]

QUESTION 4[21 marks]			
Que	**Solution**	**Explanation**	**T/L**
4.1.1	9 windows ✓✓RT	2RT, Reading from a plan **Accept 7** (2)	MP L2
4.1.2	✓MA **W** = 12,1m – 6,1m - 2,3m – 3m = 0,7m✓A **OR** **W** = 12,1m – (6,1m+ 2,3m + 3m) = 12,1m – 11,4m ✓MA = 0,7m ✓A	1M, Subtracting all correct length 1A, Answer **OR** 1MA, Subtracting 11,4m 1A, Answer **AO** (2)	MP L2
4.1.3	Number of people = 7✓✓RM	2RM, Reading from the plan **Accept 8** (2)	MP L2
4.1.4	✓SF Perimeter = $2 \times 12{,}1m + 2 \times (2{,}4m + 6{,}1m + 2{,}4m)$ ✓M = 24,2m + 21,8m ✓S = 46m	1SF, Substitution in a formula 1M, Adding width dimensions 1S, Simplification (3)	M L3
4.1.5	The bedroom is between kitchen and laundry/bathroom✓✓RT	2RT, Reading from the plan (2)	MP L4
4.2.1	Number of loads = $\frac{480}{24}$ = 20✓MA Duration = 20 × 4 = 80 minutes ✓CA = 1hr 20minutes Time = 08:15 + 1hr20min ✓M = 09:35✓CA	1MA, Number of loads 1CA, Total duration 1M, Adding duration 1CA, Answer (4)	M L3
4.2.2	✓M Total = 30 × 24 = 720✓A	1M, Multiplication 1A, Answer **AO** (2)	MP L1
4.2.3	Possible arrangement of boxes per stack = 3 by 2 by 4 ✓✓A **OR** 3 rows ,2 columns and 4 layers ✓✓A	2A, Answer (2)	MP L1
4.2.4	So that they will not fall when loaded ✓✓O **OR** To avoid being wet. ✓✓O **OR** Security reasons ✓✓O	2O, Opinion (2)	MP L4
			[21]

TOTAL: 75

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