KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

MATHEMATICAL LITERACY

COMMON TEST

MARCH 2024

MARKS: 100

TIME: 2 hours

This question paper consists of 9 pages, and an Addendum.

QUESTION 1

1.1 Mr Jarvis works at a tyre fitment company. He works from Monday to Saturday and earns a normal rate of R65 per hour. During weekends and holidays, he earns an overtime rate of 40% more than the normal rate.

Use the information above and answer the questions that follow:

1.1.1 Calculate the amount he will receive if he works for 8 hours on Monday. (2)

1.1.2 Determine the number of hours he worked for a total earning of R325 on the normal rate. (2)

1.1.3 Show by calculations that the overtime rate is R91. (2)

1.2 Study the Tax invoice on ANNEXURE A and answer the questions that follow. Some information has been omitted.

1.2.1 Write down the name of the client that serviced the vehicle. (2)

1.2.2 Determine the total amount due on this invoice. (2)

1.2.3 Calculate the unit price of rack ends. (2)

1.2.4 Give the name of the sales representative. (2)

1.3 TABLE 1 below shows the top five rule differences in men's and women's cricket.

TABLE 1: TOP FIVE RULE DIFFERENCE IN MEN AND WOMEN CRICKET

Description	Men	Women
Test match	5 days (90 overs per day)	4 days (100 overs per day)
Cricket ball weighs	156 grams	142 grams
Ground diameter	59 metres to 82 metres	55 metres to 64 metres
DRS	YES	NO
Over rate	4 minutes per over	3,6 min per over
NB: *1 over = 6 balls bowled, ** DRS = decision review system		

[Source: https://www.sportsadda.com/cricket/]

Study TABLE 1 above and answer the questions that follow.

1.3.1 Write down the simplified ratio of a mass cricket ball for women to men. (2)

1.3.2 Convert 3,6 minutes to seconds ONLY. (2)

1.3.3 Determine the number of balls that can be bowled in one day in a men's cricket match. (2)

1.3.4 The clock alongside shows the start time of playtime during the test match.

Write down the time on the clock using the 12-hour format. (2)

[22]

[Source: https://www.alamy.com/stock]

QUESTION 2

2.1 A private hospital offers two options to patients hiring walking crutches at a rental cost for up to 30 days.
Option A: R50 per day
Option B: R200 once off plus R40 per day

Use the information above to answer the questions that follow.

2.1.1 Write down the equation that can be used to calculate the total cost of hiring crutches using option A. (2)

2.1.2 The total cost of hiring walking crutches in option B can be calculated using the following formula.
Total cost = R200 + R40×number of days.

Use the formula to calculate the number of days for hiring crutches at a total cost of R1 320 on option B. (3)

2.1.3 A client states that the cost of hiring crutches for 25 days on option A will be more than the cost on option B. Verify this statement by showing ALL calculations. (3)

2.1.4 TABLE 2 below shows the comparison of hiring crutches for the two options.

TABLE 2: TOTAL COST OF HIRING CRUTCHES ON TWO OPTIONS

No. of days	**0**	**5**	**10**	**...**	**A**	20	22	24	**26**	**...**	**30**
Option A cost (R)	0	250	500	...	900	1000	1100	1200	**B**	...	1500
Option B cost (R)	200	400	600	...	920	1000	1080	1160	1240	...	1400

Study TABLE 2 and answer the questions that follow. (2)

a) Identify the dependent variable in the table above.

b) Calculate the missing values **A**, and **B**. (4)

c) The graph showing the total cost of hiring crutches on option B has been drawn on the answer sheet. Use the answer sheet and the table to draw the graph for hiring crutches on option A. (4)

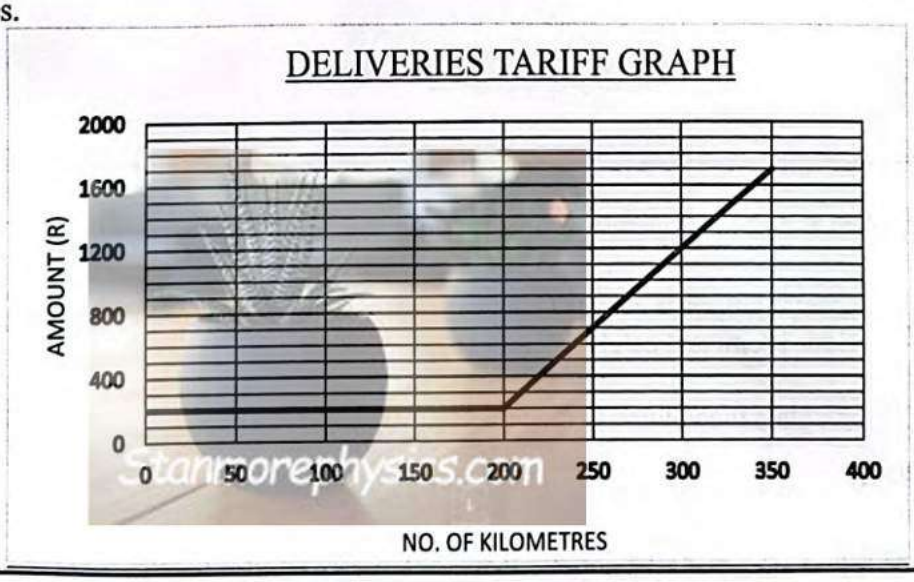
2.2 Ms Zicaba drives a truck that delivers crutches to different hospitals. The truck has a full tank capacity of 60 litres and fuel consumption of 6,9 litres per 100 km.

2.2.1 Explain the term *consumption* in this context. (2)

2.2.2 Calculate to the nearest litre, the number of litres of fuel she will use to drive 800 km. (3)

2.2.3 Her manager states that the full tank will be enough to make a delivery to a hospital that is 440km away from the warehouse without refuelling the vehicle on a return trip. Verify showing all calculations whether his statement is valid or not valid. (3)

2.3 The graph below shows the tariff the company uses to charge customers for deliveries of crutches.



Study the graph and answer the questions that follow.

2.3.1 Identify the type of relationship represented on the graph. (2)

2.3.2 Which of the following formulas will be the best to represent the relationship above?

A **Total cost =R200 + number of km travelled**
B **Total cost = R200 +R10 × number of km travelled**
C **Total cost = R200 + R10 × number of km above 200km**

Write ONLY a letter that represents the correct answer. (2)

2.3.3 Use the graph to determine the total amount to be charged for traveling 250 km. (2)

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QUESTION 3

3.1 Themba owns a roadside kitchen, his company was hired to serve breakfast to learners during the celebrations of the 2023 NSC matric results.

TABLE 3 below shows some items he used to serve learners.

TABLE 3: ITEMS USED TO MAKE BREAKFAST FOR LEARNERS

Item	Quantity	Price
Apricot Jam	6 X 900grams	R210
Joko tea bags	100's (0,4kg)	R47,95
Bread	20 slices (700 grams)	R17,25

[source: www.google.com/images]

Study TABLE 3 above and answer the questions that follow.

3.1.1 A rectangular box of JOKO tea bags has the following dimensions: length 20cm, width 18cm, and height 100mm. (3)

Calculate the volume of the box in cubic centimetres.

You may use the formula:

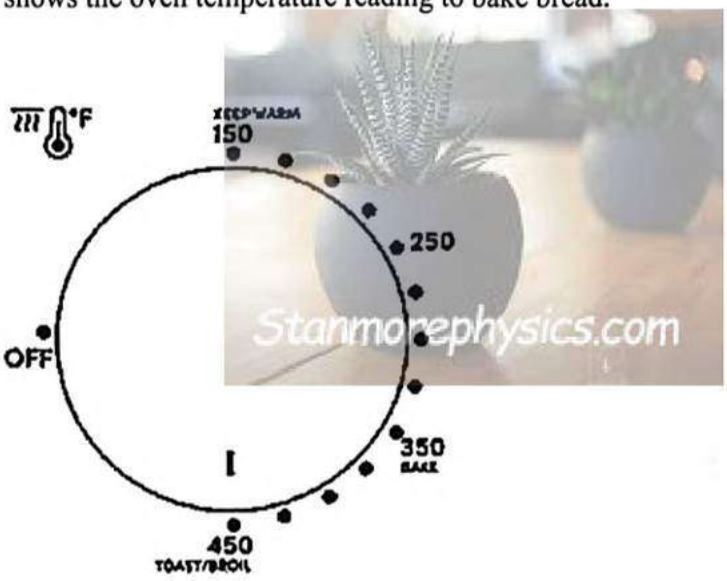
The volume of rectangular Prism = length× width× height

3.1.2 Calculate the price of ONE tea bag in rands. (2)

3.1.3 Determine the number of dozens of breads required to serve 150 learners if one learner will receive 4 slices of bread. (4)

3.1.4 The number of brown to white bread Themba uses are purchased in the ratio of 3:2 respectively. Determine the number of white bread he will use to serve the learners. (3)

3.2 The oven dial knob below shows the oven temperature reading to bake bread.



[Source: https://www.shutterstock.com/search/oven-knob]

Use the picture above to answer the questions that follow.

3.2.1 Write down the temperature reading with units on the dial knob. (2)

3.2.2 Hence, use the given formula to convert the temperature above to degrees Celsius.
$°C = (°F-32) \div 1,8$ (3)

3.2.3 Themba states that the mass of one bread will be approximately 25 ounces. Note that **1 ounce = 28,3495 grams**. Critically comment on his statement by showing all calculations. (5)

[22]

QUESTION 4

4.1 Madison sells circular button wall mirrors. The mirror has a circular frame around it with spherical iron balls.

The inner diameter of the mirror is 24,3 inches and the outer diameter is 27 inches.

PICTURE SHOWING CIRCULAR BUTTON MIRROR.

Diagram of the circular mirror	Picture of the mirror
	

[source: www.amazon.ca/madison-park-signature-marlowe-spherical]

Note: The thickness of the frame is 0,74 inches.

Use the information and the picture above to answer the questions that follow.

4.1.1 Show by calculations that the diameter of ONE spherical iron ball is 1,35 inches. (3)

4.1.2 Define the term *radius* according to the given context. (2)

4.1.3 Determine the outer radius of the mirror in inches. (2)

4.1.4 Hence, calculate the circumference of the mirror in cm. **Note: 1 inch = 2,54cm** (4)

You may use the formula:

Circumference of the circle = 2× 3,142×radius

4.2 TABLE 4 below shows the part of Madison's annual business financial report for 2019/2020.

TABLE 4 MADISON: FINANCIAL REPORT

From 1 March 2019 to 28 February 2020

INCOME		EXPENSES	
Description	**Amount (in Rand)**	**Description**	**Amount (in Rand)**
Donations and grants	140 000	Salaries	420 500
Municipal subsidy	300 000	Salaries for casual labour	100 000
Sales	1 262 420	Rates: water and light	34 600
		Telephone	3800
		Rent	180 000
		Bank fees	1 080
		Food: carten	146 200
		Maintenance	12 950
		Uniforms	9800
		Transport costs	23 670
TOTAL INCOME	**1 702 420**	**TOTAL EXPENSES**	**XXXXX**

[Adapted from: https://www.horizonhs.org/news/]

Study TABLE 4 above and answer the questions that follow.

4.2.1 Determine the number of months covered in this financial report. (2)

4.2.2 Name the main source of income for the Madisons. (2)

4.2.3 Determine the average monthly amount that was paid on bank fees. (2)

4.2.4 Identify ONE expense that is fixed and give a reason for your answer. (2)

4.2.5 Express the total salaries as a percentage of the total income. (3)

4.2.6 Madison sold five mirrors after 6 hours and 10 minutes from the time shown on the digital clock.

[Source: https://www.google.com/images/watches] (2)

Write down the time at which All five mirrors were sold.

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TOTAL MARKS:100

ANNEXURE A

Question 1.2

TAX INVOICE ON REPAIRS

TYRE FITMENT & SUSPENSION SERVICE	**CLIFF TYRES** SALES REP: Saleesmac Vendor No: 284371		DATE:25 JAN 2024
Contact details: ADDRESS: DEPPO TRADING CBD 3867	OTHER DETAILS: 035 288 7724	VAT NO: 552019632	BANKING DETAILS: BASA ACC:308856**** BRANCH CODE:633004
CLIENT INVOICE DETAILS MBOMVU MK 55 BAS HENDERSON ROAD EMPANGENI 3880		CELL NO: 063 445 3697 EMAIL ADDRESS: MKMBOMVU@GMAIL.COM	
CASH SALE	JOB CARD: SERVICE	TOYOTA COROLLA 2004 REG NO: BX 01 CD ZN	

STOCK CODE	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE	VAT@15%
TR5470APEX	TIE ROD ENDS SET	1	R300	R300	R39,13
TR05467APEX	RACK ENDS	2	R150	R300	R39,13
LABOUR	REPLACE ABOVE PARTS	2	R350	R700	R91,30
TOTAL VALUE OF GOODS	R1130,44		TOTAL DUE: R1300		TOTAL VAT:169,56

Thank you

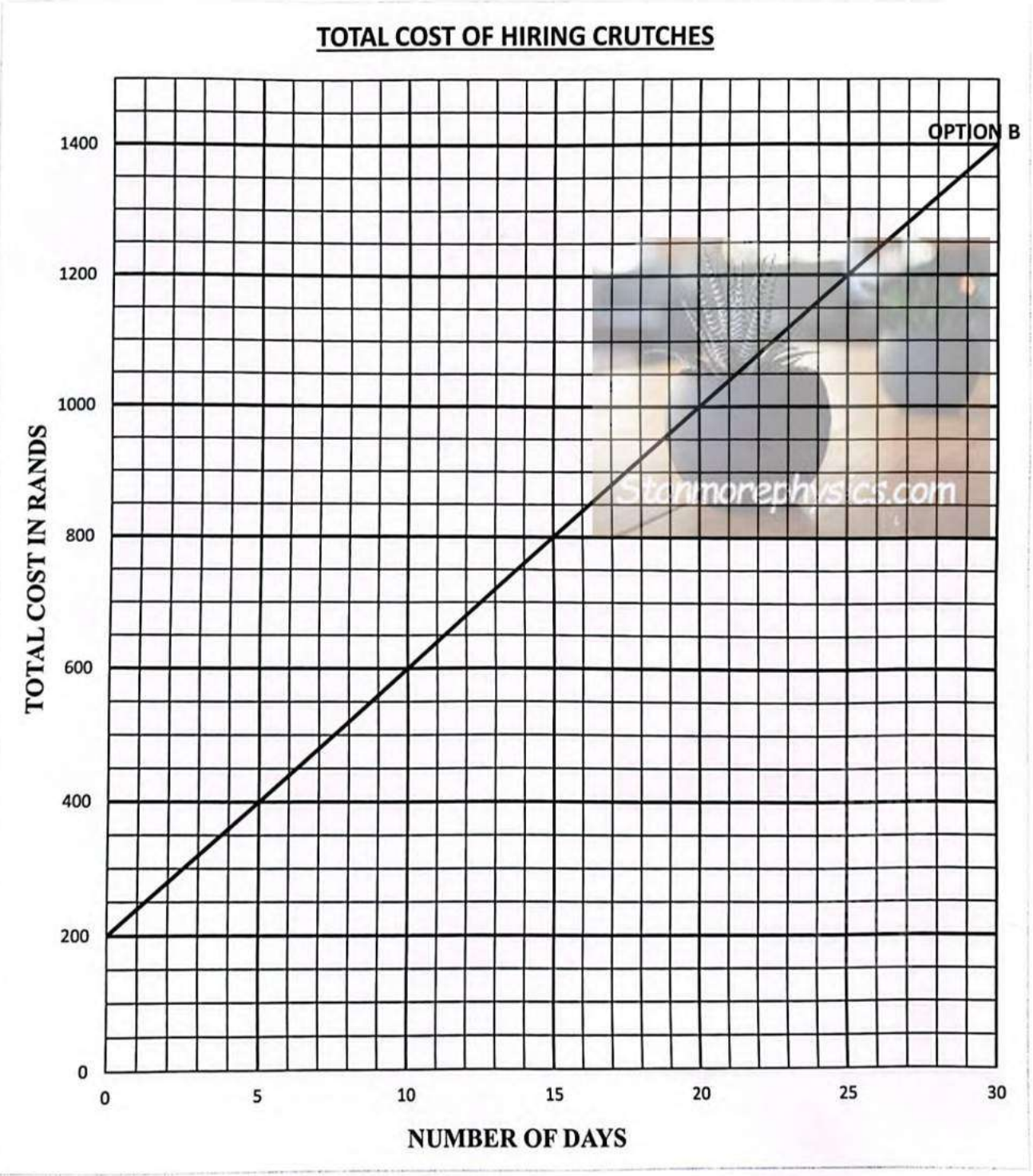
[Adapted from:real tax invoce:tyre boys]

NAME OF LEARNER: _____

GRADE 11: _____

ANSWER SHEET

QUESTION 2.1.4(C)



PLEASE TEAR ON DOTTED LINE

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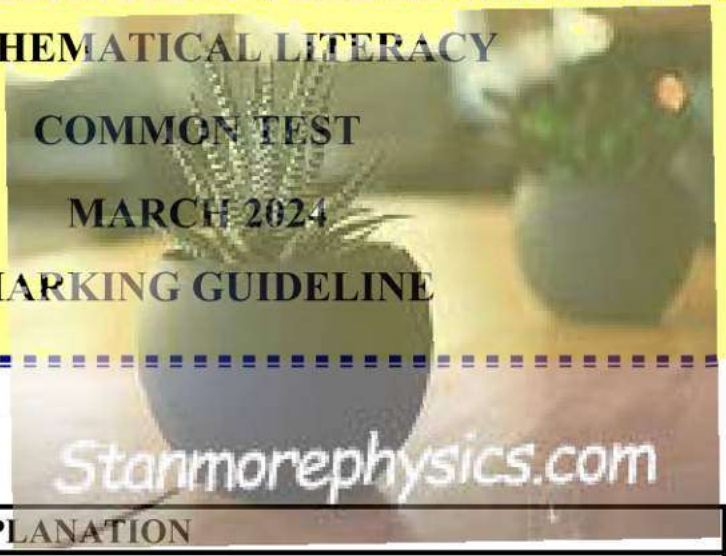
MARKING GUIDELINE

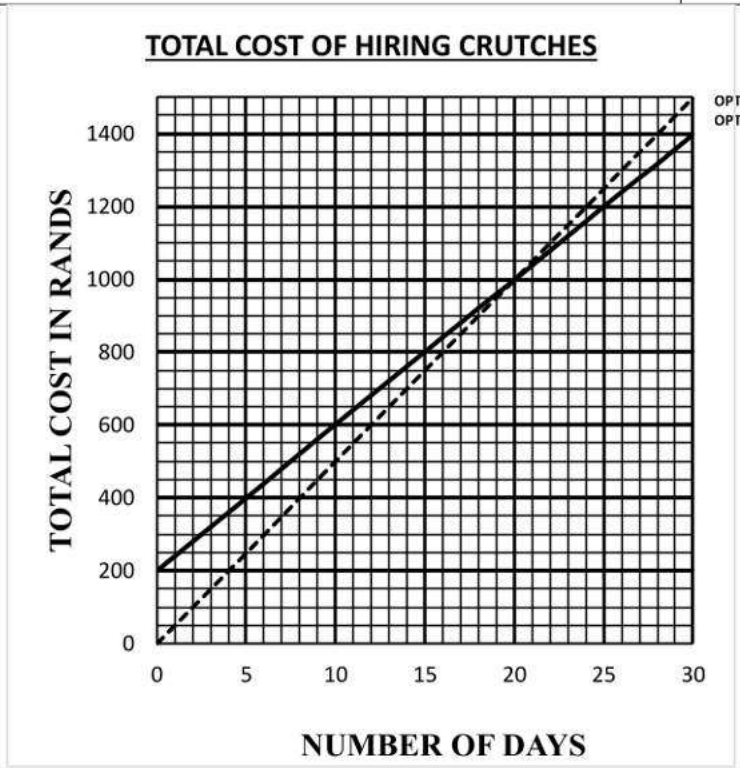


MARKS: 100

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	Correct Rounding
F	deriving a formula
E	Explanation
U	Units
AO	Answer only full marks

This marking guideline consists of 6 pages.

QUESTION 1 [22] ANSWER ONLY FULL MARKS			
QUE	**SOLUTION**	**EXPLANATION**	**L/T**
1.1.1	Total amount = R65×8 ✓M = R520 ✓A	1M, Multiplying by 8hours 1A, Amount received (2)	L1 F
1.1.2	No. of hours = $\frac{R325}{R65}$ ✓M =5 hours ✓A	1M, Dividing by correct rate 1A, No. of hours (2)	L1 F
1.1.3	✓✓M Overtime rate = 140% ×R65 =R91 **OR** ✓M Overtime rate = 40%×R65 + R65 =R26 +R65 ✓M =R91	1M, Sum of 140% 1M, Multiplying by correct rate **OR** 1M, Multiplying by 40% 1M, Adding R65 (2)	L1 F
1.2.1	Mbomvu MK ✓✓RT	2RT, Correct client name (2)	L1 F
1.2.2	Total due = R1300,00 ✓✓RT **OR** ✓M Total due = R300 +R300+R700 =R1300 ✓A **OR** ✓M Total due = R1130.44+R169,56 =R1300 ✓A	2RT, Correct amount **OR** 1M, Adding correct values 1A, Correct total due **OR** 1M, Adding correct values 1A, Correct answer. (2)	L1 F
1.2.3	Unit Price = R150✓✓RT **OR** Unit Price = $\frac{R300}{2}$ ✓M =R150 ✓A	2RT, Correct unit price **OR** 1M, Dividing R300 by 2 1A, Correct unit price (2)	L1 F
1.2.4	Saleesmac ✓✓RT	2RT, Correct Name (2)	L1 F
1.3.1	142g :156g ✓M 71:78 ✓CA	1M, Correct ratio and order 1CA, Simplified ratio form (2)	L1 M
1.3.2	3.6min ×60 ✓M 216 seconds ✓A	1M, Multiplying by 60 1A, Correct answer (2)	L1 M
1.3.3	Number of balls = 6 × 90 overs ✓M =540 balls ✓A	1M, Multiplying by 90 1A, Correct No. of balls (2)	L1 M
1.3.4	11:00 am ✓✓A	2A, Correct time format (2)	L1 M
			[22]

QUESTION 2[32]			
QUE	**SOLUTION**	**EXPLANATION**	**L/T**
2.1.1	Option A rental cost = R50 ×No. of days ✓✓A	2A, Correct formula (2)	L2 F
2.1.2	R1320 = R200 + R40 x No of days ✓SF Number of days = $\frac{R1320-R200}{R40}$ ✓M =28 days ✓CA	1SF, Correct Substitution 1M, Changing subject of the formula 1CA, No. of days (3)	L3 F
2.1.3	Option A cost = R50 ×25 =R1250 ✓CA Option B cost = R200 +R40×25 =R1200 ✓CA Valid statement. ✓J	1CA, Option A cost 1CA, Option B cost 1J, Correct opinion (3)	L4 F
2.1.4(a)	Cost in Rand ✓✓A	2A, Correct variable **Accept Option A OR Option B** (2)	L1 F
2.1.4(b)	**A** = $\frac{R900}{R50}$ ✓M =18 ✓A **OR** **A** = $\frac{R920 - R200}{R40}$ ✓M =18 ✓A **B** = R50×26 ✓MA =R1300 ✓A	1MA, Dividing by correct rate 1A, Correct no. of days OR 1MA, Subtracting R200 &dividing byR40 1A, Correct answer 1MA, Multiplying correct values 1A, Correct answer (4)	L3 F
2.1.4(c)		1A, Correct starting point 1CA, TWO correct pints 1CA, Joining point (straight line) 1A, Labelling the graph (4)	L3 F

QUE	SOLUTION	EXPLANATION	L/T
2.2.1	consumption is the number of litres of fuel the truck uses to travel a certain distance. ✓✓E **OR** 6,9ℓ of petrol used by the truck to travel 100km. ✓✓E	2E, Correct explanation **OR** 2E, Correct explanation (2)	L1 F
2.2.2	No. of litres = $\frac{800km}{100km} \times 6,9\ell$ ✓M =55,2ℓ ✓CA =53ℓ ✓R	1M, Multiplying by correctly rate 1CA, Answer 1R, Correct Rounding (3)	L3 M
2.2.3	Total distance = 440×2 =880km ✓A Number of litres = $\frac{880km}{100km} \times 6,9\ell$ =60,72ℓ CA Invalid statement, 60 litres won't be enough. ✓O	1A, Total distance 1CA, No. of litres 1O, Justification. (3)	L4 M
2.3.1	Combination relationship ✓✓A	2A, Correct answer (2)	L1 F
2.3.2	C ✓✓A	2A, Correct answer (2)	L1 F
2.3.3	R700 ✓✓RT **OR** Cost = R200 +R10×50 ✓MA =R700 ✓A	2RT, Correct amount **OR** **CA from 2.3.2** 1MA, Correct substitution into the correct formula 1A, Answer (2)	L2 F
			[32]

	QUESTION 3 [22]		
QUE	**SOLUTION**	**EXPLANATION**	**L/T**
3.1.1	✓SF ✓C Volume = 20cm ×18cm ×10cm = 3 600cm^3 ✓A	1SF, Correct substitution 1C, Conversion 1A, Answer (3)	L2 M
3.1.2	Price of ONE tea bag = $\frac{R47,95}{100}$ ✓M = R0,48 ✓CA	1M, Dividing correct values 1CA, Answer **AO** (2)	L2 F
3.1.3	Number of slices = 150 ×4 ✓M =600 Number of breads = $\frac{600}{20}$ ✓CA =30 Number of dozens = $\frac{30}{12}$ ✓A =2,5 dozens ✓CA	1M, Multiplying by 4 1CA, No. of bread 1A, Dividing by 12 1CA, Number of dozens **NPR** (4)	L4 F
3.1.4	No. of white bread = $\frac{2}{5}$ ×30 ✓M ✓M =12✓CA	**CA from 3.1.3** 1M, Dividing by 5 1M, Ratio concept 1CA, Number of bread (3)	L2 M
3.2.1	✓RT 450°F ✓U	1RT, Correct reading 1U, Unit (2)	L2 M
3.2.2	°C= (450-32) ÷1,8 ✓SF = 418÷1,8 ✓S =232.22 ✓CA	**CA from 3.2.1** 1SF, Correct substitution 1S, Simplification 1CA, Answer. (3)	L2 M
3.2.3	✓RT Ounces = $\frac{700g}{28,3495g}$ × 1oz ✓C = 24,6917 ✓CA Correct statement ✓O, the mass can be rounded to the nearest ounces ✓J	1RT, Correct mass 1C, Conversion 1CA, 24,69ounces 1O, Opinion 1J, Reasoning. (5)	L4 M
			[22]

	QUESTION 4 [24]		
QUE	**SOLUTION**	**EXPLANATION**	**L/T**
4.1.1	Diameter = 27inch – 24,3inches ✓M = 2,7 inches ✓A 2 ✓M = 1,35inches	1M, Subtracting inner diameter 1A, Difference 1M, Dividing by 2 (3)	L4 M
4.1.2	Radius is the half of the diameter of the button wall mirror. ✓✓E	2E, Explanation (2)	L1 M
4.1.3	Radius = 27inches 2 ✓M = 13,5inches ✓A	1M, Dividing diameter by 2 1A, Correct radius **AO** (2)	L2 M
4.1.4	✓SF C = 2× 3,142 ×13,5inches ✓S =84,834 inches × 2,54cm ✓C =215,48cm ✓CA **OR** ✓C Radius = 2,54 ×13,5inches = 34,29cm ✓SF ✓S C = 2×3,142×34,29cm =215,48cm ✓CA	1SF, Correct substitution 1S, Simplification 1C, Conversion 1CA, Circumference in cm **OR** 1C, conversion 1SF, Correct Substitution 1S, Simplification 1CA, Circumference in cm (4)	L3 M
4.2.1	12 months ✓✓A	2A, Correct months (2)	L2 F
4.2.1	Sales ✓✓A	2A, Correct source of income (2)	L1 F
4.2.3	Monthly bank fees = R1 080 ✓M 12 months =R90 ✓CA	**CA from 4.2.1** 1M, Dividing by 12months 1CA, Correct amount (2)	L2 F
4.2.4	✓A Rent, the rent stays the same for a long period/and is the type of expense that does not change ✓J	1A, Answer 1J, Reason (2)	L4 F
4.2.5	✓A Percentage = R520 500 × 100% ✓M R1 702 420 =30,57% ✓CA	1A, Correct total salaries 1M, Percentage concept 1CA, Percentage (3)	L3 F
4.2.6	✓M Time = 9:24+6hrs10min =15:34 ✓A	1M, Adding correct times 1A, Correct times **Accept 3:34 pm** **AO** (2)	L2 M
			[24]
		TOTAL MARKS:	**100**