education
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

MATHEMAYICAL LITERACY

GRADE 12

LAST PUSH

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1. **HOW TO USE THIS REVISION BOOKLET?**

- This revision booklet covers selected parts of the following Mathematical Literacy topics;
  - ✓ Finance,
  - ✓ Measurement,
  - ✓ Maps, plans and other representations of the physical world,
  - ✓ Data handling and
  - ✓ Probability integrated across the other topics
- The topics drawn are from the CAPS Grade 12 curriculum in the order they are usually taught during the year. The selected parts of each topic are presented in the following way:
  - ✓ What you should know and explanation of terms and concepts;
  - ✓ Model examination-type questions for you to answer; and
  - ✓ Model answers with tips for you to use to check your own work.
- Mathematical Literacy is naturally a highly contextualised subject. Whilst every effort has been taken to ensure that the skills and concepts you will be examined on are covered in this booklet, it is in fact the actual context that will be used in the examination that will determine how these skills and concepts are assessed.
- The booklet covers mainly cognitive levels 1 and 2 questions on a 50-50 basis, with a few questions pitched at cognitive level 3. Mastery of all the questions in the booklet will therefore guarantee a minimum pass of 60% in the subject as cognitive levels 1 and 2 in the two papers combined constitute 60% of the questions.
- Work out the solutions for the entire question on your own. Then check your answers.
- Read the tips in the textbox for further clarification.
- Reward yourself for things you get right.
- If you get any incorrect answers, make sure you understand where you went wrong before moving on to the next section.
- The booklet covers the examination tips, both generic and subject specific. You are therefore expected to read and understand the tips so that you are able to study effectively.
- The design of this revision booklet is to a large extent informed by challenges identified through the analysis of learner responses to the 2016 National Senior Certificate (NSC) examination papers.

2. KEY TOPICS COVERED

2.1 FINANCE

Make sure you are able to:

- Define (explain) the meaning of financial terms

- Calculate total income/ expenses from a given set of amounts and analyse the break-even point;

- Calculate profit/loss if income and expenses are both given;

- Substitute into a given formula;

- Rounding should be done according to the given context;

- Read information directly from a financial table;

- Calculate simple interest and compound interest without using a formula;

- Increase or decrease a given amount by a certain percentage;

- Calculate a one-step currency fluctuation and exchange rates;

- Identify exchange rates between two currencies from the table

- Show awareness of the significance of digits.

- Calculate PAYE/personal tax.

GLOSSARY OF TERMS FOR FINANCE

TERM	MEANING
A	
Account	A record of income and expenditure.
B	
Balance	This is the difference between debits and credits.
Bank statement	The details of all the transactions made from one bank account in a given time period.
Break-even point	Break-even point is where the business is at an activity level (doing business) at which **total cost = total sales,** i.e. you have made enough income to cover the costs. At the break-even point you are making neither a profit nor a loss; from that point on you will be making a profit with each sale (until new costs are incurred).
Budget	A plan of how to spend money. An estimate of income and expenditure.
Bursary	A sum of money given to you by an organisation for the purpose of covering your study costs.
C	
Capital	Money that is owned by someone for the purposes of investing or lending.
Commission	The sum of money paid to an agent (usually a salesperson) that is a percentage of the total value of goods sold by the agent.
Compound interest	Interest charged on an amount due, but including interest charges to date.
Consumption rate	The rate at which a commodity, such as water, electricity or fuel, is consumed.
Cost-effective	Best value for money.
Cost price	This is the amount that it **costs per unit** to either manufacture, purchase the item or to prepare for a service that will be delivered. This amount is pure cost, no mark up or profit added yet.

Cost rate	The price of a product per mass, volume, length or time unit.
Credit	This is an entry in an account showing a payment made to the account.
Credit balance	The amount in the account is your own.
Credit card	A credit card is a service bank's offer to allow you to buy goods and pay for them at the end of the month.
Credit limit	The maximum amount you can spend on your credit card.
D	
Debit	When someone or an organisation takes money out of your account. An entry in an account showing a payment made from an account.
Debit balance	The amount that you owe the bank for transactions made with borrowing money.
Debit order	It is an arrangement giving permission to a third party to withdraw money from a bank account on a regular basis.
Deposit	Payment made into a band account.
Disposable income	Income that is left over after all payments have been made.
E	
Exchange rate	The value of one currency in terms of the value of another currency.
Expenditure	How much money has been used on something.
F	
Fine print	The legal terms and conditions applicable to a transaction or account.
Fixed deposit	A single deposit invested for a fixed period at a fixed interest rate.
Fixed expenses	These are amounts that are the same every month like rent, school fees and transport costs.
Fund	A source of money.
G	

Gross Income	The **total** amount of **all** an individual's income before deductions.
H	
Hire purchase	Goods and products such as furniture can be purchased through a longer term lease or hire agreement (hire purchase), insurance is usually also added, until it is paid off.
I	
Inflation	That prices increase over time; that the value of money decreases over time. Increase in the price of a basket of goods or services that is representative of the economy as a whole.
Interest	Money paid regularly at a particular rate for the use or loan of money. It can be paid by a finance organisation or bank to you (in case of savings), or it may be payable by you to a finance organisation on money you borrowed from the organisation.
Interest rate value	This is the % rate of interest that will be charged on your loan amount, i.e. a percentage value of the original loan amount.
Interest value	This is the actual rand value amount of interest that will be added to your loan.
Invest	To put money into an organisation or bank (e.g. in buying shares) so as to gain interest on the amount at a higher rate.
Investment	Something in which you have invested money.
Invoice	A comprehensive document that details all the work done or items sold, and what costs are due.
L	
Lay-bye	Mostly clothes and linen – lay-bye is a form of credit where the buyer pays a deposit and pays the rest off in instalments while the shop keeps the item(s) until it has been paid off.
Loan	A loan is an agreed sum of money that is lent by a bank or moneylender (e.g. personal loan or home loan).
Luxury item or service	An item or service that is not essential for daily life, but which makes life easier or more convenient.

N	
Net Pay	The amount an employee "takes home' after income tax has been deducted.
O	
Overdraft	An overdraft is an arrangement with the bank allowing you to draw more money than there is in your account.
P	
PAYE	(abbr.) Pay as you earn, tax taken off your earnings by your employer and sent to the South African Revenue Service before you are paid.
R	
Remittance slip	A piece of paper that accompanies a payment and contains the most important details of the transaction.
S	
Salary	An amount of money paid for the year's work. (This is normally paid monthly.)
Selling price	This is the price that something is offered for sale.
Simple interest	Interest charged on the original amount due only, resulting in the same fee every time.
Statement	A summary of transactions (debits and credits, or payments and receipts) made on an account.
T	
Tariff	A charge rate for a service rendered, e.g. import duties, water consumption cost, etc.

Tax	A compulsory levy imposed on citizen's earnings or purchases to fund the activities of government.
Taxable	A service, purchase or item or earning that has tax applied to it.
Tax invoice	Printed record of what was bought, what it cost, what was taxable, the tax amount, method of payment, amount tendered and change, if any.
Trillion	One million million (a one followed by twelve zeros).
U	
UIF	(abbr.) Unemployment Insurance Fund. A government-run insurance fund which employers and employees contribute to, so that when employees are retrenched they can still collect some earnings.
V	
Variable Expenses	Expenses that change over time or from one week/month to the next. These are things that you usually pay or buy each month, but the amount changes – things like telephone and electricity costs.
VAT	**Value Added Tax (VAT)** is a tax that is levied at 14% (currently in South Africa) on most goods and services, also on the importation of goods and services into South Africa.
VAT exclusive price	Price before adding **VAT**.
VAT inclusive price	Price after adding **VAT**.
W	
Wages	A wage is an amount of money paid to an employee normally based on a fixed number of hours worked per week.
Withdrawal	Money taken from a bank account.
Z	
Zero Rated VAT items	These are goods that are exempt from VAT. When you buy groceries that are basic foodstuffs, e.g. brown bread, milk, mielie meal, samp, rice, etc., they are zero-rated in South Africa.

EXEMPLAR QUESTIONS ON FINANCE

QUESTION 1

Grade 12 learners from Mollo High School are selling apples during lunch to raise funds for their matric farewell function. They have asked the principal to use the school tuck-shop. They bought a crate for R255,00. They sold them at R3.00 each.

1.1   Explain what is meant by Break-even point?

1.2   Calculate the profit they made, if 116 apples were sold   (2)

1.3   If they made a profit of R120 per day, how many;   (2)

     1.3.1   apples were sold per day?   (2)

     1.3.2   apples did they sell to break even per day   (3)

     1.3.3   days did they take to raise an amount of R13 500.00 for the function?   (3)

1.4   A parent of one of the learners wants to hire a car for her child's matric dance farewell. Car hire companies have different tariffs and benefits to offer. Parents will always compare these companies and choose the one that will give them the best value for their money. The tariffs of two companies are given below:

AVIS CAR HIRE R6,50 per kilometer

BUDGET CAR HIRE R165 plus R3,50 per kilometer

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The table below shows the cost of the two options:

Kilometers travelled	10	20	40	**C**
Cost for Avis Car Hire	R65	**A**	R260	R455
Cost for Budget Car Hire	R200	R235	**B**	R410

1.3.1 Calculate the missing values A, B and C

(6)

1.3.2 The graph for AVIS CAR HIRE is already drawn on the **diagram sheet below** provided. On the same diagram sheet draw a graph for the cost of BUDGET CAR HIRE. (6)

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COST OF CAR HIRE

Avis Car...
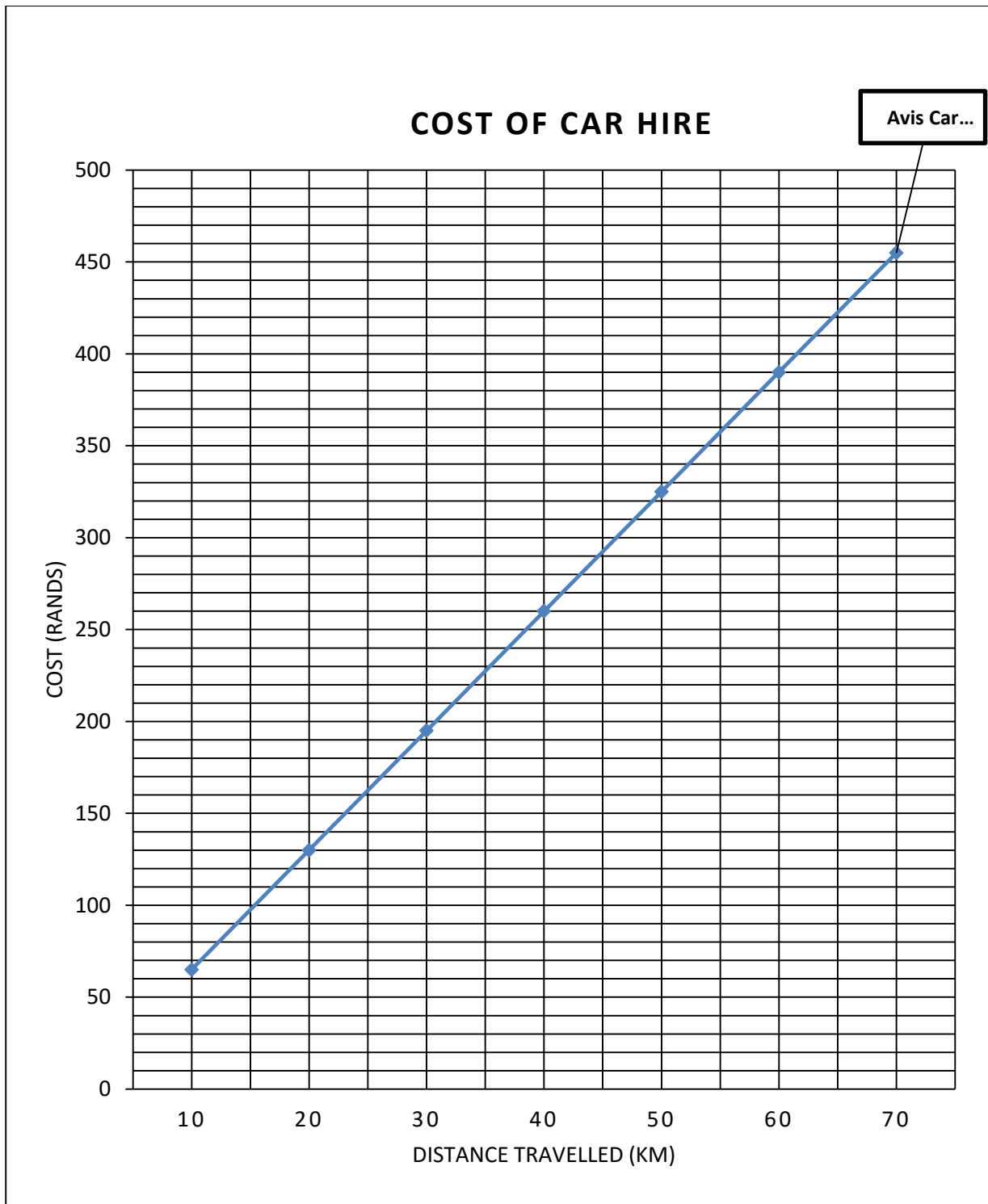
1.4 Use the graph or table to answer the following questions:

1.4.1 After how many kilometres will the cost of the two companies be the same? (2)

1.4.2 The child wants to travel 80km on a particular day. Which car hire company would be the cheaper for the parent, and by how much? Show all calculations. (3)

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QUESTION 2

Ms Mchunu is 56 year old general assistant at a Lindowake firm in Ikageng and earns a gross monthly salary of R9 857,30

The following amounts are deducted from her monthly salary:

- Union membership R28
- Pension fund 7,5 % of gross salary
- Medical aid : ⅓ of total medical aid subscription fee due as shown below

Sindisa medical aid membership subscription cost

Gross monthly salary			
	Main member	Wife/partner	Each child
R0 –R9 000	R1 345	R890	R475
R9 001 –R11 500	R1 449	R974	R519
More than R11 500	R1 643	R1 066	R559

2.1.	Calculate her annual salary.	(2)
2.2.	Calculate her monthly pension fund contribution	(2)
2.3.	Determine her annual UIF contribution.	(2)
2.4.	Ms Mchunu is a single parent with two children belonging to the medical fund. Use the table to calculate the monthly contribution to the medical aid.	(3)
2.5	Calculate all the monthly deductions from Ms Mchunu's salary.	(3)
2.6	Calculate her net salary.	(3)
2.7.	Determine her annual taxable income.	(2)
2.8	Ms Mchunu was promoted to a senior administrator in March 2015 and she earned a taxable income of R12 053.40 per month. Determine the percentage increase of her taxable income. You may use the formula:	

Percentage increase $= \dfrac{New\ taxable\ income - Previous\ taxable\ income}{Previous\ taxable\ income.}$ (3)

Tax rates (year of assessment ending 29/02/2016)

Tax brackets	Taxable income	Rate of tax (in rand)
A	0 – 181 900	18% of taxable income
B	181 901 – 284 100	32 742 + 26% of income above 181 900
C	284 101 – 393 200	59 314+31% of income above 284 100
D	393 201 – 550 100	93 135+36% of income above 393 200
E	550 101 – 701 300	149 619+39% of income above 550 100
F	701 301 and above	208 587 +41% of income above 701 300

Question 3

3.1   A photocopying company has three options for payment when using their photocopying machines to make copies. The three options are shown in the graph as ANNEXURE A below.

3.1.1   Give the value of the coordinates of the point where the costs of hiring the machines of the contracts 2 and 3 are the same.   (2)

3.1.2   Write down the formula that must be used for calculating the cost (in Rand) for contract 1.   (4)

3.1.3   Use the graph to determine which contract will be the cheapest option, if a company makes 1 500 copies in one month?   (2)

3.1.4   A second company charges a rate of R0,70 for their copying machine. Draw a graph on ANNEXURE A, to show this option. Provide a label for the graph.   (3)

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ANNEXURE A:

GRAPH SHOWING MONTHLY COST ACCORDING TO NUMBER OF PAGES COPIED
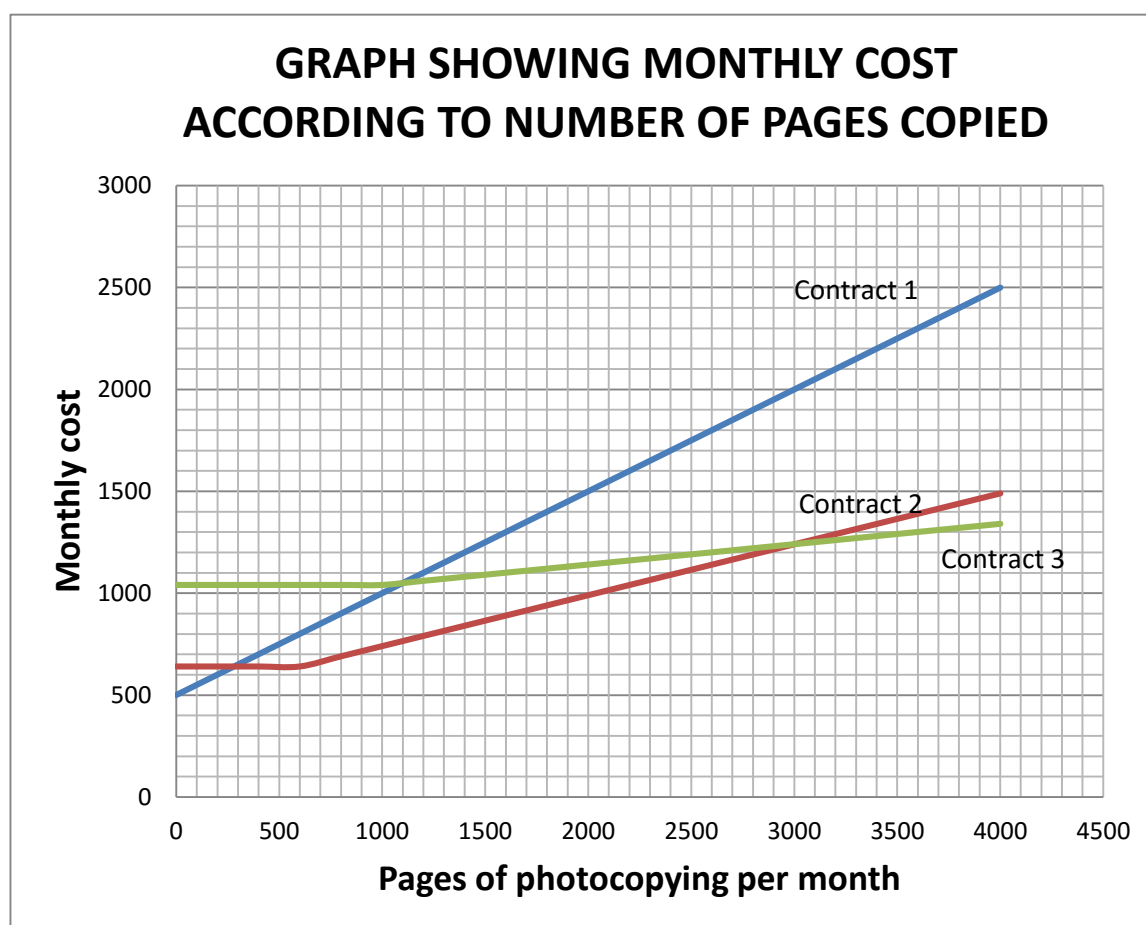
QUESTION 4

4.1 Study the Eskom statement issued to Mr Mojalefa for the consumption of electricity for October 2014 on ANNEXURE A.

    4.1.1   Identify the security held amount as reflected in the statement? (2)

    4.1.2   Which unit of measurement is used for electricity consumption on the statement? (2)

    4.1.3   Show how the monthly consumption of 150,00kWh by the Mojalefa household was calculated.

        Use the formula:

        Monthly Consumption = Current reading – Previous reading (2)

    4.1.4   Show how the total charges for billing period of R137,93 was calculated. (2)

    4.1.5   How was the VAT of R19,31 calculated on the statement? (2)

    4.1.6   TABLE 1 below shows the standard sliding scale tariffs per month for prepaid electricity for another municipality.

NUMBER OF UNITS	TARIFF (INCLUDING 14%VAT)
The first 500 kWh	R1,1391 per unit
501 to 1 000 kWh	R1,2074 per unit
1 001 to 2 000 kWh	R1,2799 per unit
2 001 to 3 000kWh	R1,3567 per unit
More than 3 000 kWh	R1,4381 per unit

[Source: citypower.co.za]

(4)

1 unit = 1 kWh
Use TABLE 1 above to calculate how much would Mr Mojalefa have paid if 563kWh was consumed per month, including VAT.

4.2 Gerald, Allen and Themba are triplets. They are in Grade 12 this year and plan on studying at the University. Gerald wants to study BA at the university of Stellenbosch, Allen wants to study LLB at the university of Witwatersrand and Themba wants to study BCom at university of Pretoria.

TABLE 2

Tuition fees

University	BCom	BA	BSc	LLB	Beng
University of Cape Town (UCT)	R54 000	R41 500	R45 000	R42 000	R47 500
University of the Witwatersrand (WITS)	R38 400	R35 580	R37 340	R29 050	R38 500
Stellenbosch University (SU)	R29 093	R30 125	R37 218	R36 074	R40 637
University of Pretoria (UP)	R36 610	R30 750	R41 260	R31 800	R42 270
University of Kwa-Zulu Natal (UKZN)	R31 226	R36 557	R32 358	R29 098	R34 798

4.2.1 Themba wants to study BCom at one of the Universities. Which university offers the cheapest study option. (2)

4.2.2 Calculate the difference between the study fees where Gerald and Allen intend to study. (2)

8.3 Mr Sebelebele decided to purchase laptops for his sons. He got the following laptop adverts.

HP LAPTOP	LENOVO LAPTOP
New selling price R8 999 SAVE R400	Selling price R8499. Get 6% discount for cash
Hire-purchase Option Deposit R500 **R403.70 x 30 months** **Total cost R….** **At 17% interest per annum**	**Hire-purchase Option** **15% Deposit** **R … x 24 months** **Total cost R9 102. 30 (excluding deposit) at 13% interest per annum**

4.3.1 Write down the annual interest rate charged for Lenovo laptop. (2)

4.3.2 Calculate:

    (a) The monthly instalments for the Lenovo laptop (2)

    (b) The original selling price of the HP laptop before the price was reduced (2)

    (c) The deposit amount if they purchase the laptop from Lenovo. (2)

    (d) The total cost of the HP laptop if the hire-purchase option is chosen (4)

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QUESTION 5

5.1 | Tyrone buys chocolates in bulk to make gift baskets containing different chocolate bars to sell. He buysboxesthat contain bars of Peppermint Crisp, Bar-One, Kit Kat and Cadbury 80 g chocolate slabs.
|
| **Picture of a gift basket with chocolate bars**
|
|

5.1.1 Determine the total price ofa box with Peppermint Crisp bars if there are 40 bars in a box and the unit priceof a bar is R8,70. (2)

5.1.2 Explain the term *profit*. (2)

5.1.3 A boxwith Kit Kat bars costs R435,04. To determine the selling price,Tyrone increases the cost price by 40%. Determine the amount that he adds to the cost price. (2)

5.1.4 Tyrone makes a gift basket containing the following items:

ITEMS	UNIT COST PRICE
Bar-One	R10,04
Peppermint Crisp	R8,70
Kit Kat	R20,66
Cadbury 80 g chocolate slab	R6,73
Empty basket	R29,99

(a) Determine the total cost price of the gift basket. (3)

(b) He sells230 of these gift baskets and receives a total income ofR22 770.

Determine the selling price of each gift basket. (2)

5.2 | Mr Piedt earns an annual taxable income of R542 096,76.

TABLE 1 below is a tax table that shows how much personal income tax he needs to pay.

TABLE 1: INCOME TAX RATES FOR INDIVIDUALS
2017 TAX YEAR (1 MARCH 2016–28 FEBRUARY 2017)

TAX BRACKET	TAXABLE INCOME (R)	TAX RATES (R)
1	0–188 000	18% of taxable income
2	188 001–293 600	33 840 + 26% of taxable income above 188 000
3	293 601–406 400	61 296 + 31% of taxable income above 293 600
4	406 401–550 100	96 264 + 36% of taxable income above 406 400
5	550 101–701 300	147 996 + 39% of taxable income above 550 100
6	701 301 and above	206 964 + 41% of taxable income above 701 300

Adapted fromwww.SARS.gov.za]

5.2.1 What does the acronym *SARS*stand for? (2)

5.2.2 Write down the minimum amount of tax payable for tax bracket 3. (2)

5.2.3 Calculate Mr Piedt'saverage monthly taxable income. (2)

5.2.4 Identify the tax bracket applicable to Mr Piedt's taxable income. (2)

POSSIBLE ANSWERS FOR FINANCE

	QUESTION 1
1.1	Break – even point is point where the income and expenses are the same. i.e. inome = costs, no profit is made✓✓
1.2	Cost price = R255.00 Selling price = 116 × R3.00 = R348.00✓ Profit = R348 – R255 = R93.00✓
1.3 .1	Income = R255 + R120 = R375.00✓ Apples sold = $R375/R3$ = 125 ✓
1.3.2	Number of apples to break-even = $R255/R3$ = 85✓
1.3.3	Number of days = $R13\ 500/R120$ = 112,5 ✓ ≈ 113✓

1.2.1	Cost = 6,50 × 20✓
	   A = R130✓
	
	Cost = 165 + 3,5 × 40
	     = 165 + 140
	   B = R305✓
	
	455 = 6,5 × C✓
	455 ÷ 6,5 = C
	        C = 70km✓

1.3 Cost in Rand	Comparison of Car hire

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1.4.1	After 55 km✓✓
1.4.2	Avis $= (6,5 \times 80)$ $= R520,00$✓ Budget $= 165 + 3,5 \times 80$ $= R445,00$✓ $= R520 - R445$ $= R75,00$ Budget car hire will be cheaper by R75,00✓

QUESTION 2	
2.1.	Annual salary = R9 857,30 X 12 ✓ =R118 287.60✓
2.2.	Monthly pension fund contribution = 7.5% of R9 857,30✓ = R737.30✓
2.3.	Annual UIF = R118 287.60 ×1% ✓ = R1 182,88✓
2.4.	Medical aid contribution $= \frac{1}{3}$ of [R1 449+ (2 x R519)] ✓✓ = R829✓
2.5.	Total deductions = R737.30 + R120.00 + R920.33+ R28✓ = R1795.63✓
2.6.	Net Salary = R9 857,30- R1795.63✓ = R8061.67✓

2.7.	Taxable income= R9 857,30-(R737.30 +R10) ✓
	     = R9110.00✓
	 Annual taxable income=R9110.00 x 12✓
	      =R109 320✓

2.8.	Percentage increase $= \frac{\text{New taxable income} - \text{Previous taxable income}}{\text{Previous taxable income.}}$ X100% $= \frac{144636 - R109320✓}{R109320✓}$ x 100% = 32.3%✓

QUESTION 3	
3.1.1	(1 240;3000)✓✓
3.1.2	Monthly cost = 640 ✓ + (pages of photocopying per month - 600) ✓ x 0,25 ✓
3.1.3	Contract 2 ✓✓
3.1.4.	See graph below

GRAPH SHOWING MONTHLY COST ACCORDING TO NUMBER OF PAGES COPIED
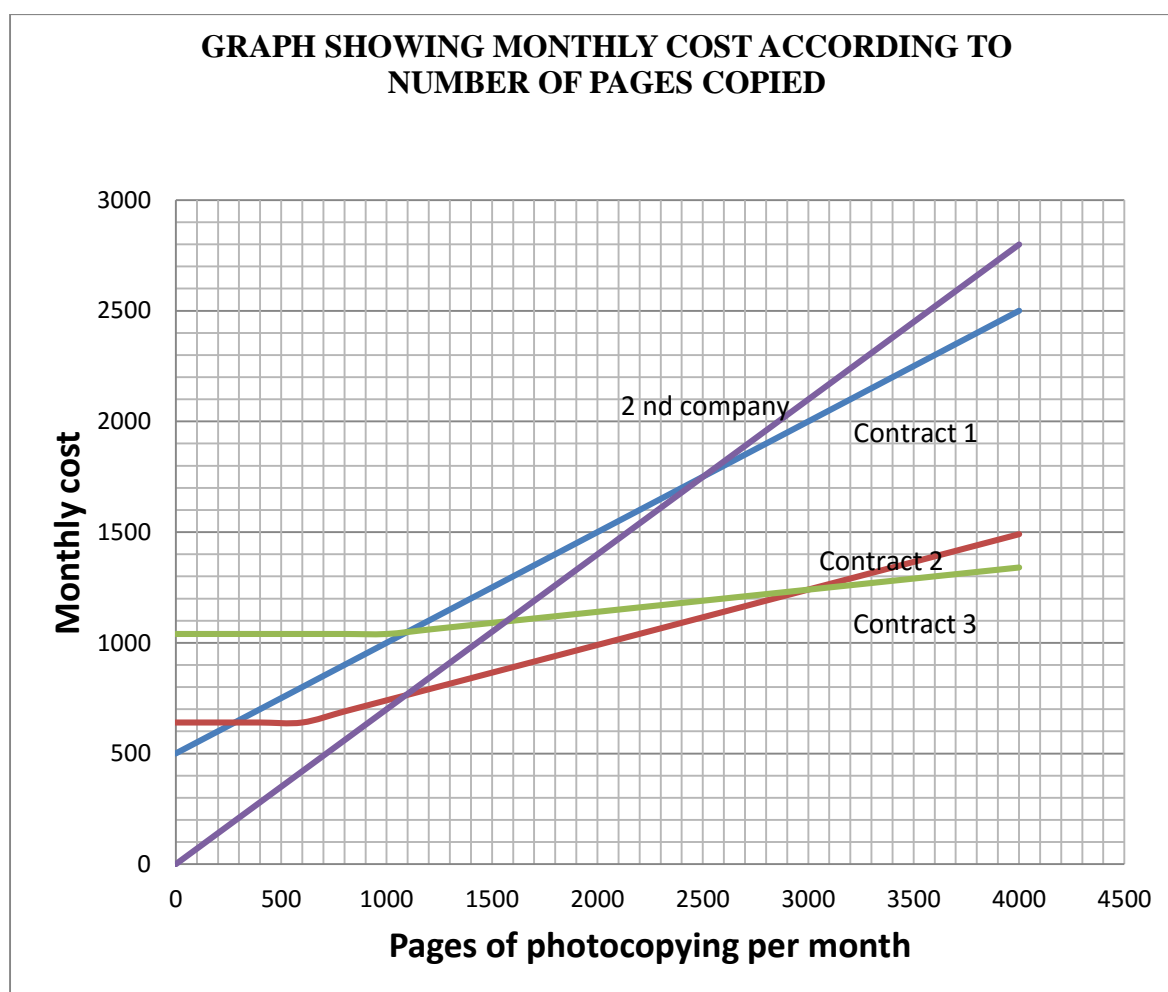
(0; 0) ✓

(1000; 700) ✓

Straight line with constant gradient ✓   (3)

QUESTION 4   31 MARKS

Ques	Solution	Explanation	Level and topic
4.1.1	R776,53✓✓RT	2 RT reading value from table (2)	L1 F
4.1.2	Kilowatt hour (KWh) ✓✓RT	2RT reading from table (2)	L1 F
4.1.3	Monthly consumption = 38 000,00 – 37 850,00✓ A = 150,00✓A	1A reading correct values 1A simplification Answer only full marks (2)	L1 F
4.1.4	R157,22 – R19,29 ✓MA = R137,93✓A	1MA subtraction 1A simplification Answer only full marks (2)	L1 F
4.1.5	$\dfrac{14}{100}$ × R137,93✓✓M/A OR 0.14 × R137,93✓✓M/A	2MA method with accuracy (2)	L1 F

4.1.6	First 500kWh × R1,1391✓
	R569,55✓
	The next (563kWh – 500kWh) ✓
	= 63kWh × R1,2074
	= R76,07✓
	Total cost = R569,55 + R76,07
	        = R645,62✓
	                OR
	
	✓✓M/A ✓M/A ✓M
	(500kWh × R1,1391) + (563kWh – 500kWh) × R1,2074
	= R645,62✓
		1MA Multiplying
		1A Accuracy
		1M subtraction
		1A answer
		
		1A simplification
		
		1M/A multiplying with correct tariff
		1M subtraction
		2 M/A multiplying with correct tariff
		1A answer
			L3 F

			(5)	
4.2.1	Stellenbosch✓✓RT	2Reading values from the table If the learner wrote R29 093 (max 1 mark) (2)		L1 F
4.2.2	R30 125 – R29 050✓RT R1 075✓A	1 Reading correct values 1A Answer (2)		L1 F
4.3.1	13%✓✓RD OR 0,13✓✓ RD	2 RD reading from diagrams Max 1 mark for 13 (2)		L1 F
4.3.2 (a)	$\frac{R9102,30}{24}$ ✓M/A = R379,26✓CA	1M/A division by 24 1CA only for using R8 499 Answer only full marks (2)		L1 F
(b)	R8 999 + R400✓M/A = R9 399✓	1M/A adding 1A simplify (2)		L1 F
(c)	15% × R8 499✓MA OR 0,15 × R8 499 = R1 274,85✓CA	1MA multiplying 1CA simplify Answer only full marks (2)		L1 F

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Question 5			
Ques	**Solution**	**Explanation**	**T/L**
5.1.1	$R8,70 \times 40 = R348$ ✓MA ✓A	1MA multiplying with 20 1A box price **AO** (2)	F L1
5.1.2	A profit is made when the selling price is more than the cost price. ✓✓O **OR** A profit is the amount added to the cost price ✓✓O	2O explanation **OR** 2O explanation (2)	F L1
5.1.3	Amount $= 40\% \times R435,04$ ✓MA $= R174,016$ $\approx R174,02$ ✓A	1MA 40% 1A VAT amount **AO** (2)	F L1
5.1.4 (a)	Total cost $= R10,04 + R8,70 + R20,66 + R6,73 +$ ✓M ✓RT R29,99 $= R76,12$ ✓CA	1RT all correct values 1M adding 1CA total **AO** (3)	F L1
5.1.4 (b)	Selling price $= \dfrac{R22\,770}{230}$ ✓M $= R99,00$ ✓A	1M dividing 1A selling price **AO** (2)	F L1
5.2.1	South African Revenue Services ✓✓A	2A full name (2)	F L1
5.2.2	R61 296 ✓✓RT	2RT correct amount (2)	F L1
5.2.3	$\dfrac{R542\,096,76}{12}$ ✓M $= R45\,174,73$ ✓A	1M dividing by 12 1A monthly salary **AO** (2)	F L1
5.2.4	Tax bracket 4 ✓✓RT **OR** $406\,401 - 550\,100$ ✓✓RT	2RT correct tax bracket (2)	F L1

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2.2 Maps plans and representation of the physical world

Make sure you are able to:

- Use given scale to determine distances on given maps or plans
- Determine a scale for a given plan or map;
- Use grids and maps in order to determine locations in a familiar context, applying routine procedures;
- Locate positions on maps or plans
- Describe routes using plans or maps
- Draw simple scale drawings where the scale is given and based on the application of simple routine procedures in a familiar context;

Glossary of terms for Maps plans and representation of the physical world

2-D models

: A diagram or picture having length and width only.

2-dimensional plans

: A plan or design having length and width only, but possibly

representing three dimensional objects.

3-D models

: A dimensional construction of a real life objects.

Bar scales

: Presented as a picture, it means that if you placed a ruler

next to this scale, you could determine how many centimeters

represent the specified kilometers.

Compound bar graphs

: Graphs that contain multiple bars for each category of data,

with each bar representing a different component of each category of
the data.

Elevation map

: Information about the profile of a route as seen from the side.

Elevation plans

: Show the design and dimensions of the outside of a building

from a side view.

Floor plans

: Shows the design and dimensions of the inside of a building,

from a top view.

Highway	: A major road that links major cities.
Line graphs	: A diagram used to display data with a consistent trend.
National road map	: Shows major roads linking major cities to each other.
North elevation plan	: Shows the side of the building that is in front of you when you are facing the compass direction 'North'.
Number scale	: A number scale such as 1 : 50 000 means that 1 unit on the map represent 50 000 units in real life.
Route map	: Shows a specific route, for instance for an event, as seen from above.
Scale	: Determines how many times smaller an object shown on a plan or map is that its actual size.
Scale drawing	: A diagram of a real life object drawn in proportion.
Scaled elevation plans	: Show the design and dimensions of the outside of a building from a side view using a specific scale.
Street map	: A map of a small area such as a town or city.
Strip map	: A map of a section of a travelling route.

Exemplar Questions for Maps plans and representation of the physical world

QUESTION 1

A floor plan for offices is given below. The length of the building on the plan is 11.70 cm and the width is 10.40 cm. An electrical plan is also attached to the floor plan. Use the information on **the floor plan** to answer the following questions
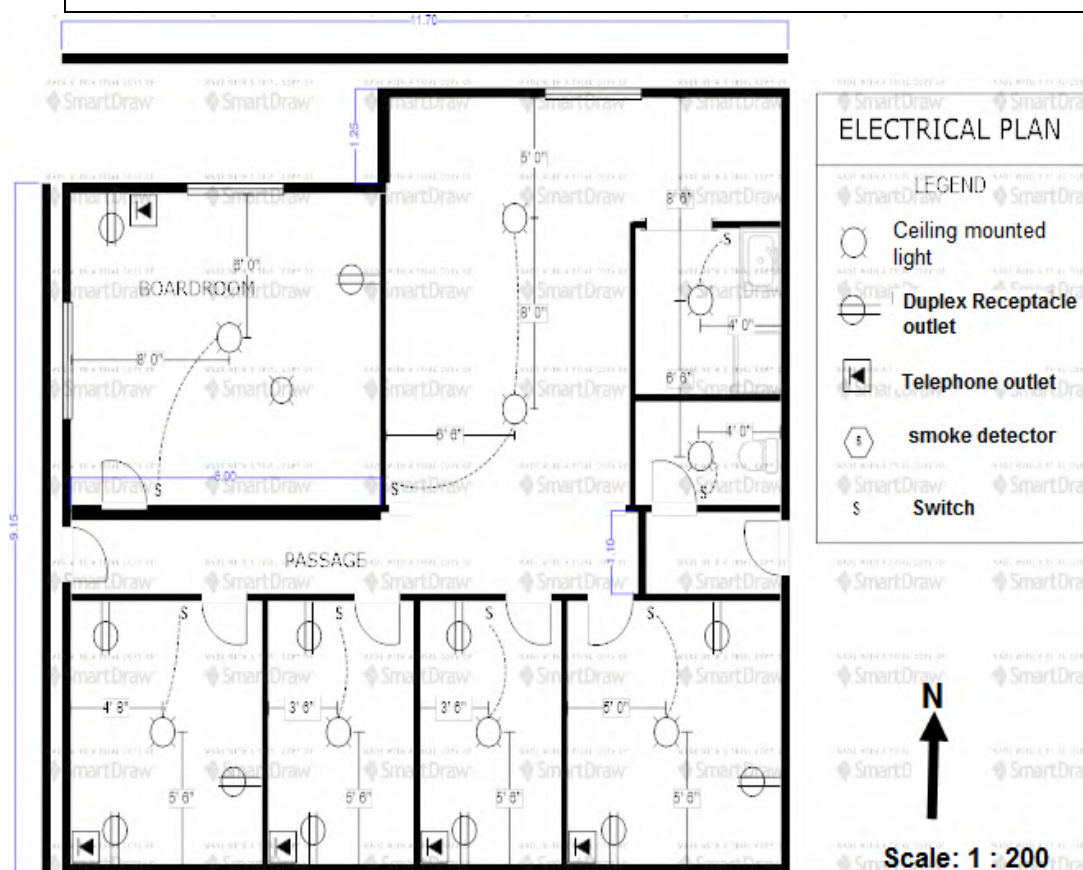
| 1.1 | How many telephone outlets are in the building? | (2) |
1.2	Write down the ratio of the outside doors to the inside doors in simplest form.	(3)
1.3	Explain the meaning of the scale 1:200 on the plan.	(2)
1.4	Use the given scale to determine the actual dimensions of the building.	(3)
1.5	What is the probability of finding a window on the eastern wall of the offices?	(2)

QUESTION 2

Below is a layout of a plan of a mall. Study it carefully to answer the questions below.
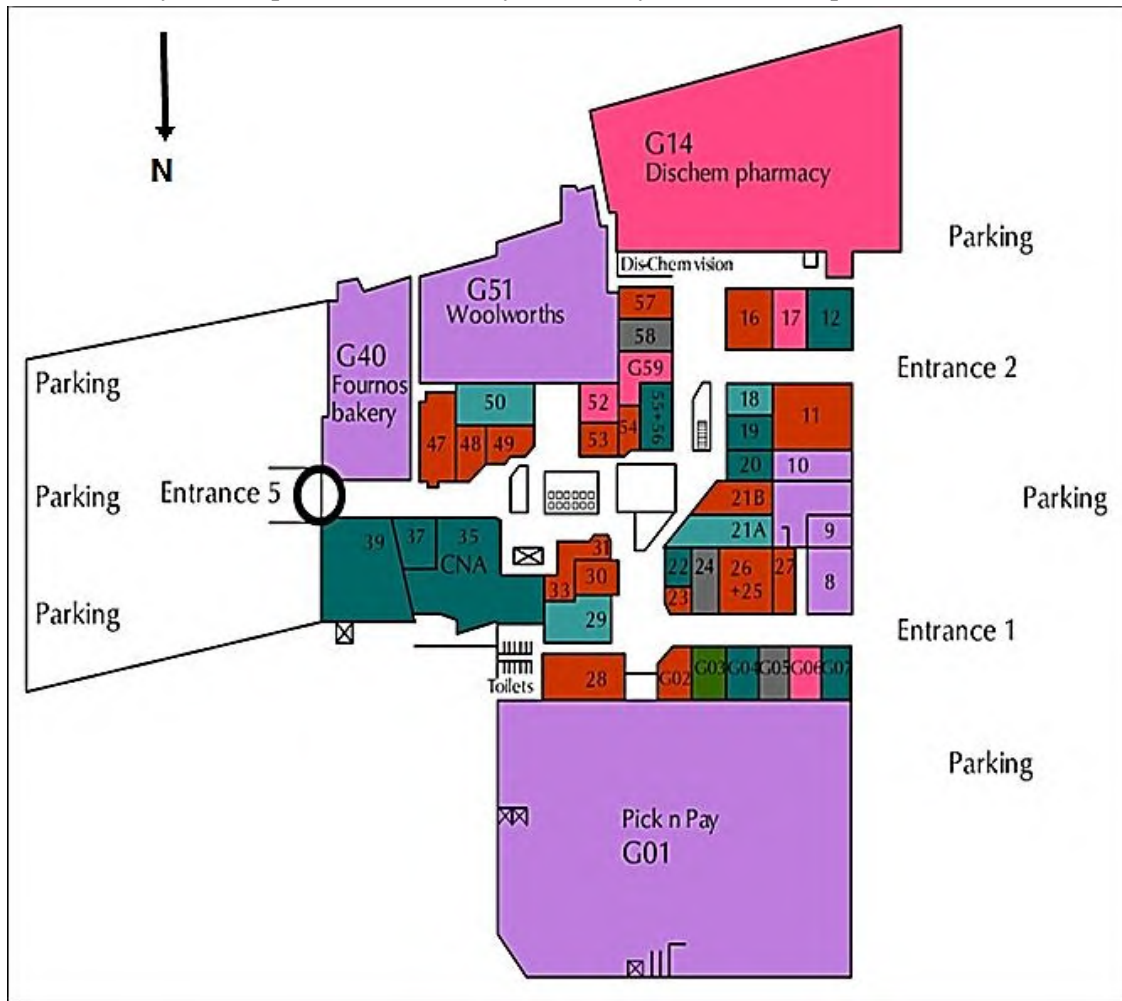
2.1   Name the biggest shop that you will pass first if you enter the Mall through Entrance 1.

(2)

2.2   Name the entrance point(s) situated on the west side of the mall.   (2)

2.3   What is the general position of shop G14 with reference to shop 35?   (2)

2.4   You are a car guard on the parking where there is Entrance 5 assisting a customer with directions to the toilet facilities. Give him directions to the toilets if he enters through Entrance 5. Include compass directions in your explanations.   (5)

QUESTION 3

Below is a floor plan of an RDP house which can be used to answer the question below.
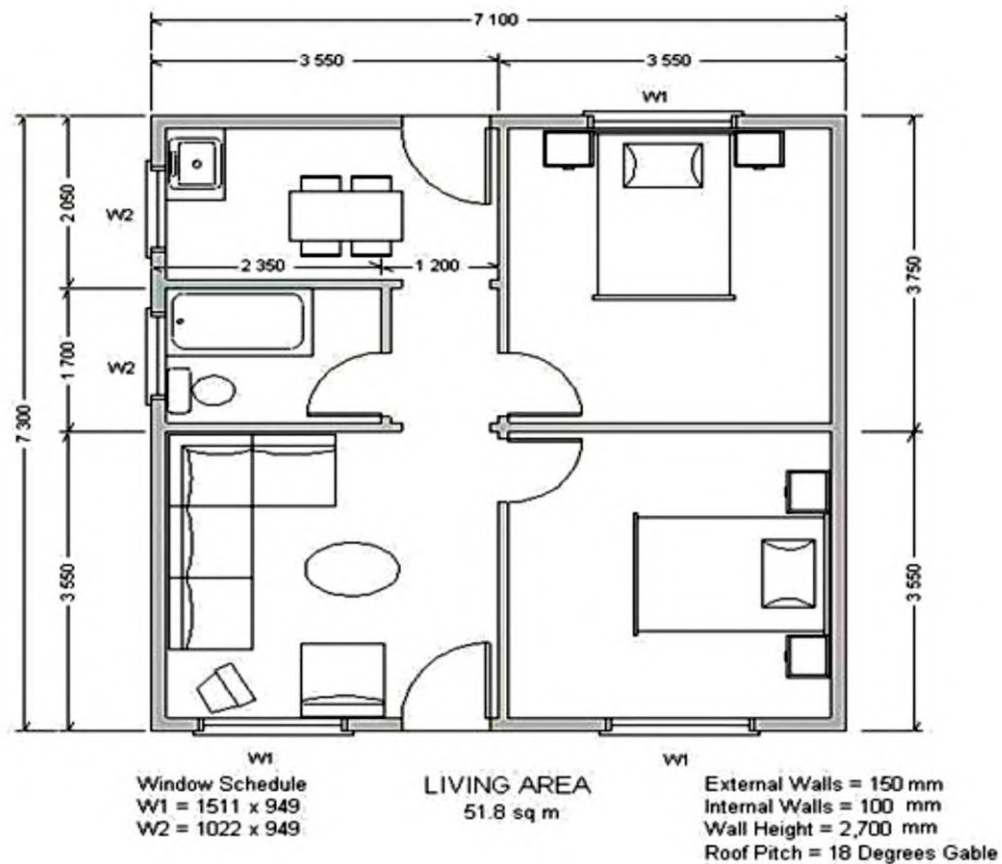
[Source: moladi.com/Lightweight-Construction-Method.htm]

3.1   How many windows are shown on the plan?   (2)

3.2   How many doors are shown on the plan?   (2)

3.3   What is the probability of finding a door that opens towards the left in the plan from outside?
       Give your answer as a decimal.   (3)

3.4   If the outside wall of the bathroom measures 34mm on plan, determine the scale of the RDP
       floor plan.   (3)

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QUESTION 4

Kate lives in Mokopane in Lompopo and plans to visit her relatives in Volkrust, Mpumalanga. She used the map below to plan the trip.


[Source: Google Maps]

4.1 (a) Write the national route she can use to travel to Volkrust. (2)

(b) Write down three possible major towns where Kate can stop on her journey to Volkrust. (3)

4.2 (a) Explain what the bar scale on the map indicates. (3)

(b) Use the bar scale to determine the straight distance from Mokopane to Volksrust.

(4)

QUESTION 5

5.1 A group of tourists drove from Johannesburg to the Madikwe Game Reserve and planned to enter the game reserve at the Abjarterskop Gate.

Below is a map indicating the routes, cities or towns and distances (in kilometres) between the places.

ROUTE MAP FROM JOHANNESBURG TO THE MADIKWE GAME RESERVE

[Adapted from http://www.infomap.co.za/wp-content/uploads/2016/02/SA-NP-Map]
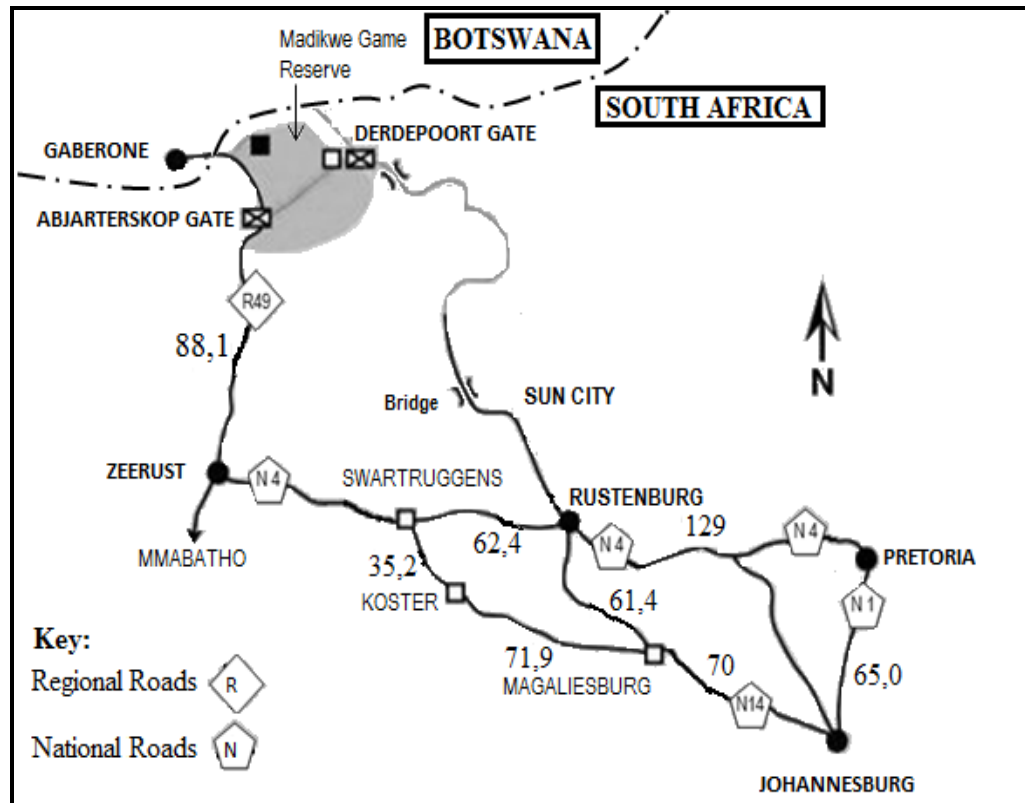
Use the information and the route map above to answer the questions that follow.

5.1.1 Give the general direction of the Madikwe Game Reservefrom Johannesburg. (2)

5.1.2 State what the broken line (⁻ · ━ ·) represents on the map. (2)

5.1.3 Name the shortest route that could be used to drive from Johannesburg to the Abjaterskop Gate. (3)

5.1.4 Calculate the distance between Zeerust and Swartruggens if the total route distance from Rustenburg to the Abjaterskop Gate is 221,2 km. (3)

5.1.5   Determine the shortest route distance from Johannesburg to Swartruggens. Show ALL calculations.   (3)

5.2 | The group of tourists also visited the Kgalagadi Transfrontier Park. The layout plan of the Twee Rivieren Camp is given in ANNEXURE C.

This camp offers two types of accommodation:

- Camping facilities (for tents)
- Cottages

Use the layout plan on ANNEXURE C and the information above to answer the questions that follow.

5.2.1   Identify on which side of the road they will find the reception building after they entered the gate.   (2)

5.2.2   If each of the cottages can accommodate 3 guests, calculate the maximum number of guests that can be accommodated in ALL the cottages in the camp.   (3)

5.2.3   Explain in detail the route a person should follow to walk from the picnic site to the swimming pool.   (3)

5.2.4   The visitors booked a drive activity. Determine the probability that the activitybooked wasNOT a night drive.   (2)

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ANNEXURE C

QUESTION 5.2

LAYOUT PLAN OF THE TWEE RIVIEREN CAMP

[Adapted from https://www.sleeping-out.co.za/ftp/Maps]
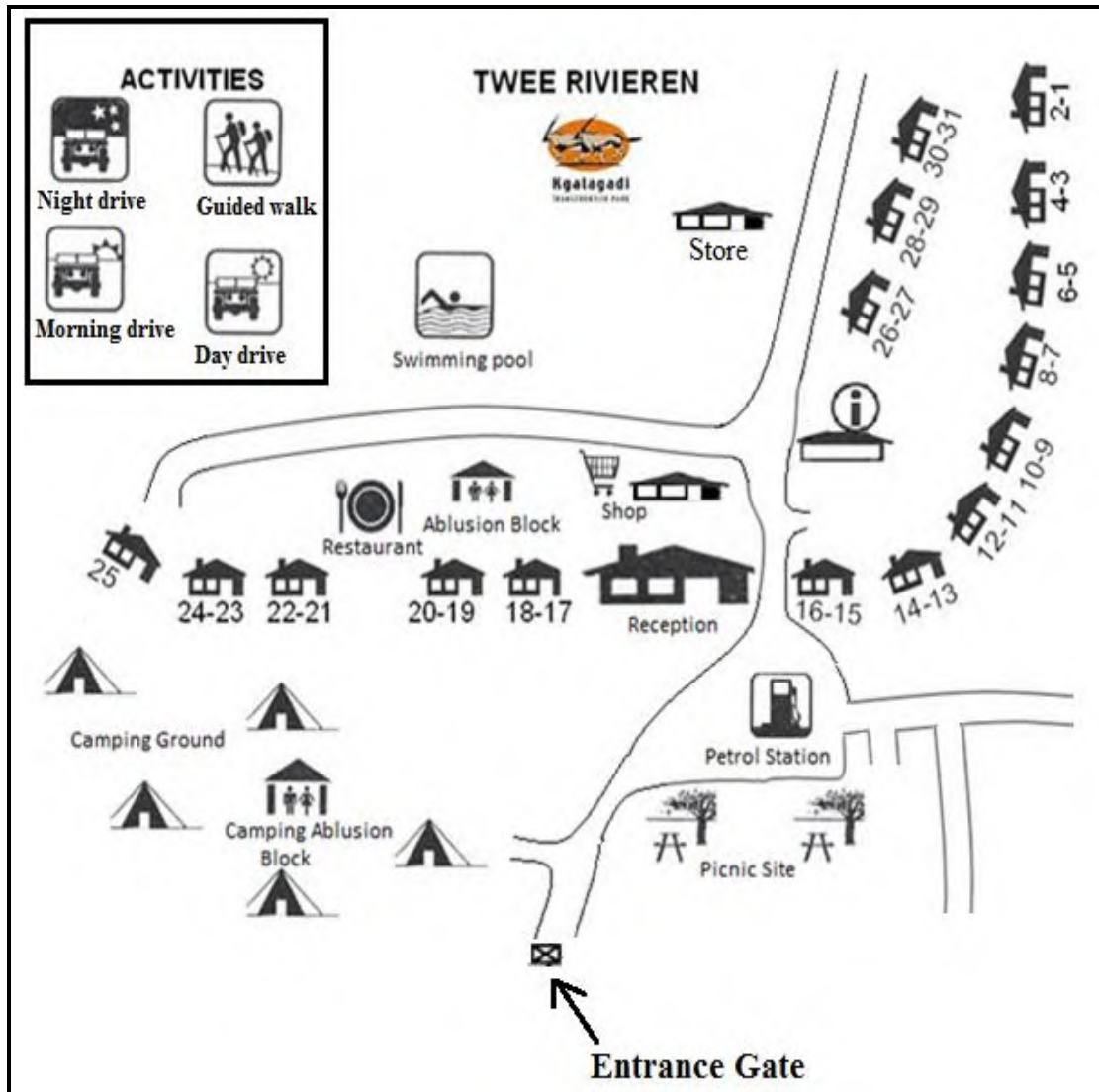
NOTE:

means cottage number 1 and cottage number 2 are located next to each other

	Possible Answers for Maps plans and representation of the physical world
	QUESTION 1 (ANSWERS)
1.1	Five telephone outlets✓✓() *Fully drawn floor plans have legends/key i.e. symbols representing where the various items in the house are. The symbol for the telephone appears in the Boardroom and the four office spaces*
1.2	2 ✓ $: 6$✓ $= 1 : 3$✓ *Ratio is for comparing values. The number of the outside door to the number of the outside doors in that order*
1.3	1 unit on the plan equals 200 units in real life. ✓✓
1.4	Length : 11,70 : ? $\qquad$ 1 $\quad$: 200 $\qquad$ $11{,}70 \times 200$✓ $= 2\ 340$ cm✓ Width : $10{,}40 \times 200 = 2\ 008$ cm✓
1.5	P = 0✓✓

	QUESTION 2 (ANSWERS)
2.1	Pick 'n Pay✓✓
2.2	Entrances 1 and 2✓✓
2.3	South West / SW✓✓ *An arrow indicating North or compass direction is given which must be used as reference to determine the correct position. Please ensure that you check where your arrow is pointing to determine the correct direction or position.*
2.4	Enter through entrance 5 and moving west✓,take a slight right proceeding north westerly direction✓. Take a right turn North just after shop 31 proceed✓ and turn right just after shop 29✓. Move to the west between shops 29 and 28, toilets will be in front. ✓ *When giving directions land marks, general directions and compass should be mentioned. In maps even the roads that are used.*

	QUESTION 3 (ANSWERS)
3.1	Five (5) ✓✓
3.2	Five (5) ✓✓
3.3	3✓$/5$✓ $= 0{,}6$✓
3.4	34 : 1700 $1700/34$ ✓ $= 50$✓ Scale : 1 : 50✓

	QUESTION 4 (ANSWERS)
4.1 (a)	N11✓✓
4.1 (b)	Groblersdal✓, Middelburg✓and Ermelo✓
4.2 (a)	The bar scale measures 2 cm✓, hence 2cm on the map represents 100 km in real life. ✓✓
4.2 (b)	Straight distance: 8 cm✓ Scale : 2 cm : 100 km✓ $8 \times {}^{100}/_{2}$ ✓$= 400$ km✓

Ques	Solution
5.1.1	North West or NW ✓✓A
5.1.2	It indicates the border between South Africa and Botswana ✓✓O
5.1.3	Travel from Johannesburg to Zeerust via Koster, ✓A then then from Zeerust to ✓A Abjaterskop Gate **OR** ✓A ✓A Take the N14, turn on to the N4, then turn on to the R49
5.1.4	✓A Distance = 221,2 km – (62,4 km + 88,1km) ✓RT = 70,7 km ✓M ✓CA
5.1.5	✓A ✓M ✓CA Via Koster: 70 km + 71,9 km + 35,2 km = 177,1 km
5.2.1	Left-hand side ✓✓A
5.2.2	✓MA ✓RT $3 \times 31 = 93$ ✓CA
5.2.3	Walk towards reception and pass between reception and cottage number 17. Continue pass the ablution block✓A Cross the road to the swimming pool✓A ✓A **OR** Turn right into the road Pass the petrol station Pass the reception and shop ✓A Turn left into the road ✓A Continue straight, the swimming pool is on your left-hand side

5.2.4	✓A
	           ✓A
	 $P_{(not\ a\ night\ drive)} = \dfrac{2}{3}$
	           ✓A

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2.3   MEASUREMENT

Make sure you are able to:

- Calculate and estimate values using basic operations that involve length and distance, where each of the required dimensions is readily available.

- Understand and use formulae such as: perimeters and areas of polygons, volumes of right prisms, right circular cylinders, surface areas of right prisms and right circular cylinders, where the dimensions and formulae are readily available;

- Understand and use appropriate vocabulary such as: equation, formulae, Cartesian plane, area, surface area, perimeter, radius, diameter, length, breadth, height, base, circumference, volume, circle, cylinder, polygons, right prisms, triangular, rectangular and square.

- Read information directly from a table and use some given information and simple operations to complete a table of values;

- Measure values which involve length, distance, weight and time using appropriate measuring instruments sensitive to levels of accuracy in a familiar context;

- Describe relationships between input and output values in a table of data concerning space, shape and measurement;

- Convert units of measurement between different scales and systems using provided conversion tables,

- Converting to a smaller unit of length, time, weight, etc;

- Converting to a bigger unit of length, time, weight, etc;

- Converting units of area; and

- Converting units of volume.

GLOSSARY FOR MEASUREMENT

TERM / CONCEPT	DEFINITION/ EXPLANATION
Analogue	An analogue measuring instrument, such as an analogue clock or scale, displays values by the position of a needle or hands on a dial
Approximating **Approximation**	To round a value to the nearest convenient value A stated value of a number that is close to the true value of that number
Area	The amount of two-dimensional (2-D) space occupied by a 2-D shape Area of a shape is the sizeof its surface. It is measured in square units.
2-D drawings	A diagram or picture having length and width only
2-dimensional plans	A plan or design having length and width only, but possibly representing three dimensional objects
3- dimensional models	A dimensional construction of a real-life object. It is a solid, it has length, breadtt/ width and height
Body mass index (BMI)	A number calculated from an adult's weight and height, expressed in units of kg/m^2
Bearing	Direction
Bisect	To cut or divide into two identical parts
Calculate	Work out
Capacity	The amount of space available to hold something OR Measure of the volume a hollow object can hold. Usually measured in litres
Circle	A closed curve that is everywhere at the same distance from a fixed point
Circumference	Distance around a circle / perimeter of a circle
Context	A real life situation
Conversion	A change from one system /unit to another
Conversion factor	Values used to convert/ change quantities from one measuring system to another.
Cylinder	Three dimensional object with congruent parallel circles s bases that are joined by a curved surface
Degrees Celsius	Units in which temperature is measured in most countries.
Diameter	A straight line passing through the centre of a circle and touching the circle at both ends thus dividing the circle into two equal halves.
Digital	A digital measuring instrument , such as a digital clock or scale, displaying values by means of numbers or digits
Distance	How far it is from one place to another, e.g. from one town to another.

	Usually measured in kilometres, and does not have to be in a straight line.
Elapsed time	Time that has passed since the start of an event.
Estimate	To make an educated guess about what the answer of a calculation will be without actually calculating accurately, or what the value of a measurement e.g. length will be without actually measuring.
Express	Write as
Grid	A network of parallel and perpendicular lines that form rectangles.
Growth charts	Graphs consisting of a series of percentile curves that show the distribution of growth measurements of children
Hexagon	A polygon with six sides
Horizontal	In the x-axis, i.e. across the page in a left-right orientation; lying down
Hypotenuse	The side of a right angled triangle that is opposite the right angle.
Imperial System	A system of measurement using inches, pounds, feet, gallons, miles
Indigenous measurement	Traditional informal methods of measuring used by our ancestors.
Investigate	Examine; look into; study
Length	The measurement between two points, in a straight line, e.g. the length of a room
Literacy	The ability to read and write
Mass	An indication of how heavy an object is. Also known as weight
Measure	Using an instrument to determine size
Measuring	Determining the value of a quantity directly, e.g. reading the length of an object from a ruler or the mass of an object from a scale.
Metric System	A system of measurement that uses e.g. metres, litres, kilograms,
Modify	Change; adapt
Perimeter	The total distance around the boundary or edge that outlines a specific shape.
Perpendicular	Two lines that cross each other at right angles
Pi	The value obtained when dividing the circumference of the circle by its diameter.
Polygon	A two dimensional shape enclosed by three or more straight sides.
Prism	A three dimensional object, such as a cylinder with two identical faces at opposite ends. There are triangular, rectangular and circular prisms.
Quadrilateral	A polygon with four sides
Radius	The distance from the center of the circle to any point on the circumference of the circle

Regions	Specific areas
Result	Something that follows from an action
Revolution	360º turn
Rotation	A transformation under which a point or shape is turned around a fixed point
Rounding off	To decide to cut off a number at a certain digit to minimise errors
Rule of thumb	A handy, generally accepted rule
Scale	An instrument that is used to measure the mass(weight) of an object
Spread rate	The conversion ratio for converting from area to liquid volume
Substitution	To replace a variable by a specific value
Surface area	The areas of all the faces/ surfaces of an object added together
Tide table	A timetable that shows the times when the level of the sea reaches high and low tide.
Travel timetable	A document showing transport arrival and departure times and destinations
Thermometer	An instrument used to measure temperature
Unit of measurement	A standard amount of a physical quantity
Undefined	Cannot be written down; division by zero
Vertical	The y axis; i.e. down a page in a top-bottom orientation; standing up
Vertex	Point or corner at which edges of a polygon meet.
Volume	The amount of 3-D space occupied by an object. It is measured in cubic units

EXEMPLAR QUESTIONS FOR MEASUREMENT

QUESTION 1

Water is scarce in South Africa. The annual average rain fall is 446 mm. According to Statistics South Africa (www.statssa.gov.za) 88,6% of the South African population has access to drinking water. The measurements of a water tank are given in metres. The water tank's radius is 14 m and its height is 10m.

1.1	Explain the difference between diameter and radius.	(2)

1.2	Determine the diameter of the water tank.	(2)

1.3	The lid of the water tank must be painted on the outside in order for it to be clearly visible.	(2)

Calculate the area of the lid (in m^2) if it has a radius of 14 m.

Use the formula: **Area = $\pi \times$ (radius)^2** , where π = 3,14

1.4   A one litre tin of paint covers an area of 15 m². Calculate the area that can be

         covered with 17 litres of paint.   (2)

1.5   The inside of the tank must be sealed with waterproof paint. The lid does not

         get waterproofed on the inside. Calculate the interior surface area (in m²) by

         using the following formula.

         Inside area = (2 × π × r × h) + (π × r²), where π = 3,14, r = radius

         and **h** = height / depth of the water tank   (3)

1.6   Calculate the volume of water (in litres) that can be contained by the water

         tank.

         Use the formula: **Volume = π × r²× h,** π = 3,14

                                 r = radius

                                 h = height / depth of the water tank

         and 1 m³ = 1 000 litres

                                                              (3)

QUESTION 2

Mrs Mokoena is hosting a stokvel meeting and she plans on serving tea to the members during the meeting. There is Mrs Mokoena and twenty other members in the stokvel. Study the ingredients below and answer the questions that follow.

Ingredients of making tea in a three litre teapot

3 litre boiling water

10 teabags

15 table spoons of sugar

*Boiling water is at 212⁰ F

*3litre teapot serves 10 people (1cup per person)

*1tablespoon=2tea spoons
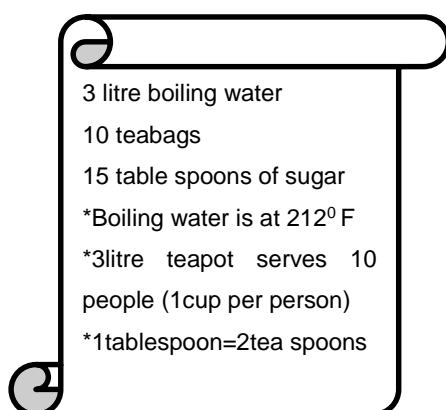
2.1   How many members does this stokvel have?   (2)

2.2   How many millilitres of water are needed for one teapot?   (2)

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2.3   If one teabag weighs forty grams, how many kilograms of teabags will be in
        one teapot?   (3)

2.4   How many teaspoons of sugar will be needed for one cup of tea, excluding Mrs
        Mokoena's cup?   (3)

2.5   How many tablespoons of sugar will be needed to make tea that will be enough
        for all of them? Note (Tea can only be made using the teapot)   (3)

2.6   Give the boiling point of water in Degrees Celcius.
           Use the formula: $^0C = (^0F - 32) \div 1.8$ (2)

2.7 | Mrs Mokoena boiled water for 27 minutes on the stove due to problem with   (2)
        her electrical kettle and she started making tea at the time shown on the watch. |

        At what time did she

2.8 | The day that they will be having a stokvel meeting is one of the stokvel members birthday.
        Mrs Mokeona plans to give her muffins as her gift. She will put them in a gift container that
        accommodates 9 muffins as shown on the model below. |
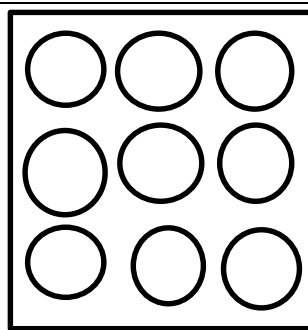
        Each muffin has a diameter of 4 centimetres and a height of 5.5 centimetres. The container
        has a space allowance of 1.5 cm around and a height allowance of
        1.5cm on top.

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2.8.1   Find the length, width and height of the container.   (3)

2.8.2   Calculate the surface area of the container.

     Use the formula SA=2 (ℓ× b + ℓ × h + b × h)   (3)

2.8.3   If it costs 4 cents per square centimetre (VAT excl.) to make the container,

     Calculate the cost of making this cake container (VAT incl.   (5)

QUESTION 3

Mrs. Mpanza runs a small business from her home. She buys different types of laundry baskets to cover the inside of the baskets with fabric. Then she resells them.

The dimensions are as follows:

b = 40 cm   l = 60 cm   h = 1 m

r = 35 cm   h = 1 m

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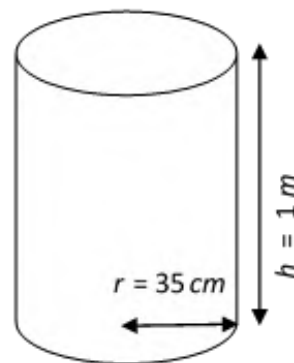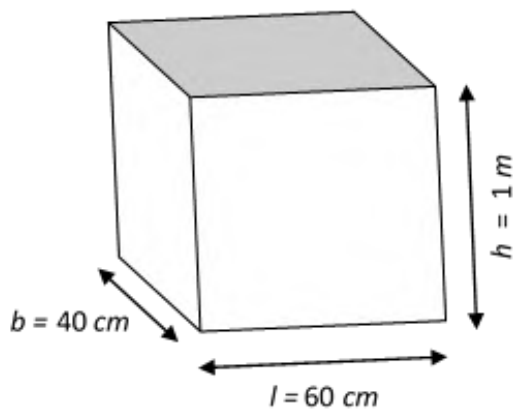
3.1 How much fabric will Mrs Mpanza need (in m²) to cover the sides and base on the inside (but not the lid) of a rectangular laundry basket?

   Use the following formulae: Surface area = (l × b) + 2 (l × h) + 2 (b × h)

                                         (4)

3.2 Calculate the amount of fabric needed to cover the base and sides of the inside of the cylindrical laundry basket? Round off your answer to the nearest m².

   Use the formula: Surface area = (π × r²) + (2 × π × r × h), use π = 3,14

                                           (5)

3.3 Mrs Mpanza also sews round tablecloths for tables with a diameter of 2,5 m. These tablecloths overlap the tables by 20 cm.
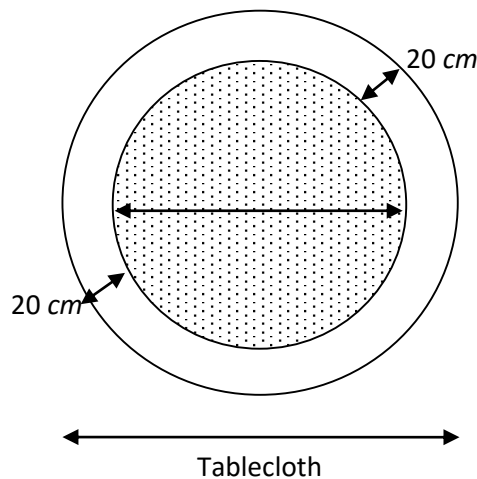
3.3.1 Mrs Mpanza adds a lace border to each tablecloth. If lace is only sold in full metres, how much lace will Mrs Thamane need to sew on the outside edge of the tablecloth? (7)

   Use the following formulae:

   Diameter of the tablecloth = diameter of table + *(2 × 20 cm)*

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Circumference of the tablecloth = 2 × π × radius (use π = 3,14)

3.3.2   She received an order for 10 tablecloths. If the price of the lace is R12 per metre, calculate the cost of all the lace needed.   (2)

3.4	Mrs Mpanza's intended profit margin is 25%

3.4.1   If her operating cost per table cloth is R135, what should the selling price be per tablecloth?   (2)

3.4.2   When a client orders 10 or more tablecloths, Mrs Mpanza gives a discount of 5%. Calculate the amount due for 10 tablecloths   (4)

QUESTION 7

Mr Rampedi is working as an intern at Cover company in Durban. The company designs boxes and other containers for dairy products. He is required to work on design for infant juice carton as shown in the diagram.
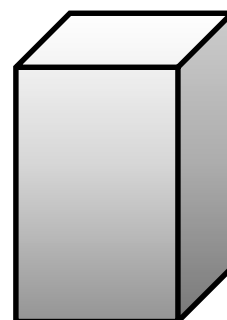
The Picture of the dairy juice product containers	The dimensions of the brick juice carton are length = 5cm, breadth = 0.05m and the height is 10cm

Note: the dimensions of the base are the same the dimensions of the top (lid).

Where **V= length x breadth x height, Area= length x breadth**

4.1   Determine the volume of each juice carton in cm^3.   (2)

Use the formula $V = l \times b \times h$

4.2   Determine how much cardboard (the surface area) is needed to make one juice carton   (5)
in cm², NOTE: $A = l \times b$

4.3   How many litres of juice can each carton fill?   (3)

Hint : **1ml = 1cm³**

4.4   Calculate the cost to fill up 100 cartons with juice, if juice costs R600 per kilolitre?   (4)
Assume that you can buy exactly as much juice as is needed(you don't have to purchase
a whole kiloliter if you only need 10 litres, for example)

4.5
A dairy truck has a cylindrical tank that is used to transport juice. The tank has a radius of 1.5m and a length of 3m

4.5.1   Calculate the volume of the tanker using the formula: $V = \pi r^2 h$, where r is the radius   (5)
and h is the height (in this case, length). Use the formula to calculate the capacity of the
tank in litres.Note *1m³= 1kl = 1000l*

4.5.2   Determine how many juice cartons can be filled from one tanker truck?   (2)

QUESTION 5

5.1

Rian has a factory that manufactures rectangular plant boxes with different sizes.

PICTURE OF RECTANGULAR PLANT BOXES	DIAGRAM OF THE BOX
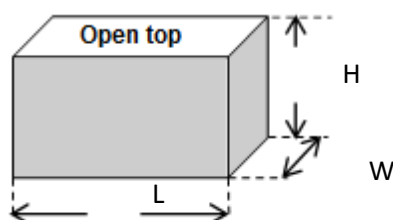
A table showing boxes with different sizes (all external dimensions in mm):

TYPE OF PLANT BOX	LENGTH (L)	WIDTH (W)	HEIGHT (H)
A	325	325	225
B	325	325	325
C	600	325	600
D	1 200	325	462,5
E	1 500	475	462,5

You may use the following formulae:

Area of a rectangle = length × width
Volume of a rectangular prism = length × width × height

5.1.1   Write down the letter (A–E) of the type of plant box that is a cube.   (2)

5.1.2   Calculate the area (in cm^2) of the base of box **D**.   (4)

5.1.3   The area of the base of box **A** is 1 056,25 cm^2.
Determine the total area (in cm^2) needed to store 24 of these boxes if they are stacked on top of each other in a double layer.   (3)

5.1.4   Determine, for box type **C**, the ratio of the length of the box to the width of the box in simplified form.   (3)

5.1.5   A municipality bought 148 type **E** boxes. The inside volume of a type **E** box is approximately 0,299 m^3. They also ordered compost to fill these boxes. The compost is delivered in 6 m^3 truckloads.

(a)   The inside volume of a box is 9,36% less than the outside volume. Show how the approximated inside volume was calculated.   (5)

(b)   Calculate the number of boxes that can be filled with 6 cubic metres of compost.   (3)

(c)   Determine the minimum number of truckloads of compost required to fill ALL the boxes.   (3)

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5.2

A 20 000 cm³ cylindrical bucket has a diameter of $10\frac{1}{2}$ inches. **NOTE:** 1 inch = 2,54 cm	
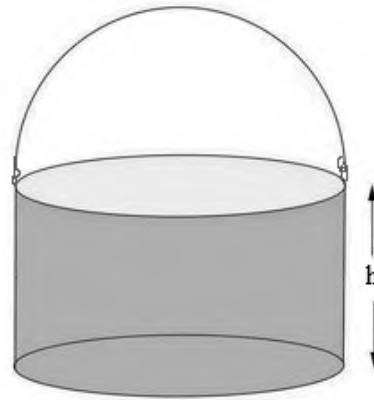
5.2.1   Determine the radius (in inches) of the cylindrical bucket.   (2)

5.2.2   Determine the height (in cm) of the cylindrical bucket.

You may use the following formula:

$$h = \frac{\textbf{Volume (in cm}^3\textbf{)}}{\frac{1}{4} \times \pi \times \textbf{(diameter in cm)}^2} \text{ using } \pi = 3{,}142$$

(3)

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	Possible Answer for Measurement
	QUESTION 1
1.1	Radius is half of diameter ✓✓
1.2	28m ✓✓
1.3	Area $= \pi \times (radius)^2$ $= 3{,}14 \times 14^2$ ✓ $= 615{,}44$ ✓
1.4	17×15 ✓ $= 255$ ✓ m^2
1.5	Interior surface area $= (2 \times \pi \times r \times h) + (\pi \times r^2)$ $= (2 \times 3{,}14 \times 14 \times 10) + (3{,}14 \times (14))^2$ ✓ $= 879{,}2 + 615{,}44$ ✓ $= 1\ 494{,}64$ ✓ m^2
1.6	Volume $= \pi \times r^2 \times h$ $= 3{,}14 \times (14)^2 \times (10)$ ✓ $= 6\ 154{,}4 m^3$ ✓ $1 m^3 = 1000$ litres $= 6\ 154\ 400$ litres ✓

In 1.3: Use the value of π given in the question

In 1.6: The volume is determined by multiplying 3 sides, therefore the units are always cubed.

	QUESTION 5

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2.1	21 members ✓
2.2	Water needed = 3 × 1000 ✓ = 3000 *ml*
2.3	Weight of teabags = 40 g x 10 = 400grams ✓ = 400 ÷ 1000 ✓ = 0.4 Kg
2.4	No. of teaspoons/teapot = 1 5 × 2 = 30 ✓ No. of teaspoons per cup = 30 ÷ 10 ✓ = 3 teaspoons ✓
2.5	No. of teapots needed = 1+1+1 = 3 ✓ No. of tablespoons needed = 3 × 15 ✓ = 45 ✓	Number of teapots needed is 3 since there are 21 members and 1 teapot serves 10 people
2.6	$^0C = (^0F-32) ÷ 1.8$ = (212-32)÷1.8 ✓ =100^{0}C ✓
2.7	*10:08 – 27 minutes = 09:41 ✓✓*
2.8.1	Length =1.5+4+4+4+1.5 = 15cm ✓ Width =1.5+4+4+4+1.5= 15cm ✓ Height =5.5+1.5= 7cm ✓
2.8.2	Surface Area = 2(15×15) +2(15×7) + 2(15×7) ✓ = 450+210+210 ✓ = 870 cm^2 ✓
2.8.3	Cost = (870×R0.04) ✓✓ = 34.80 + (34.80 ×0.14) ✓

QUESTION 3

3.1	SA = (0,6×0,4) ✓ + 2(0,6×1) ✓ + 2(0,4×1) ✓ = 2,24m² ≈ 3m²✓
3.2	35 cm = 0,35 ✓c SA = (3,14×0,35²) ✓ + (2×3,14×0,35×1) ✓ = 3,297m² ✓ ≈ 4m²✓
3.3.1	Diameter = 2,5 + 2 x 0,2 = 2.9 *m* ✓✓✓ Circumference = 2 x 3.14 x1,45 ✓✓ = 9,106 *m²*✓ Therefore, need to buy **10*m²*** for 1 tablecloth ✓
3.3.2	Cost = 10 x 10 x 12 ✓ = R1200 ✓
3.4.1	$135 \times \frac{125}{100}$ ✓ = R168,75 ✓ OR $135 + \frac{25}{100} \times 135$ ✓ = R168,75 ✓
3.4.2	168.75 x 10 ✓ = 1687,50 ✓ 1687,50 x $\frac{95}{100}$ ✓ = R1603,13 ✓
	= 34.80 + 4.872 ✓ = R39.67 ✓

QUESTION 4

4.1	V = 5cm x 0.05cm x 10cm V = 5cm x 5cm x 10cm✓ V = 250cm³✓
4.2	A = (5cm x 5cm) x 2 = 50cm²✓✓ A = (5cm x 10cm) x 4 = 200cm²✓ SA = 200cm²+50cm² = 250cm²✓✓
4.3	1ml = 1cm³ 250 ml= 250cm³✓ X = $\frac{250ml}{1000}$

	$= 0.25l$ ✓✓
4.4	No. of litres needed = 100 cartons x $0.25l$✓
	$= 25l$✓
	Cost of 100 cartons $= \frac{25l}{1000} \times R600$✓
	$= R\ 15.\ 00$✓
4.5.1	V = 3.142 x $(1.5m)^2$ x 3m✓
	$= 21.2085m^3$✓✓
	Capacity of the tanker = $21.2085m^3$ x 1000 ✓
	$= 21\ 208.5l$✓
4.5.2	No of juice cartons $= \frac{21\ 208.5l}{0.25l}$✓
	$= 84\ 834$ cartons✓

QUESTION 5	
Ques	**Solution**
5.1.1	B ✓✓A
5.1.2	Total Area = 1 200 ✓RT mm × 325 mm✓SF = 120 cm × 32,5 cm ✓C = 3 900 cm^2 ✓CA
5.1.3	Number of boxes on ground$= \dfrac{24}{2} = 12$ ✓M Area needed = 12 × 1 056,25 cm^2 ✓M = 12 675cm^2 ✓CA **OR** ✓M Total area = 1 056,25cm^2× 24 = 25 350cm^2 Area for single layer = $\dfrac{25\,350\,cm^2}{2}$ ✓M $= 12\,675cm^2$ ✓CA
5.1.4	600 : 325 ✓RT ✓A = 24 : 13 ✓S

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5.1.5 (a)	Volume = 1 500 mm × 475 mm × 462,5 mm ✓SF
	                = 1,5 m × 0,475 m × 0,4625 m ✓C
	                = 0,32953125 m³ ✓CA
	
	Inside volume = 0,32953125 m³ − 0,32953125 m³ × 9,36% ✓A ✓M
	                = 0,298687125 m³ ✓S
	                ≈ 0,299 m³
	
	OR

5.1.5 (a)	Volume = 1 500mm × 475mm × 462,5mm ✓SF
	                = 1,5 m × 0,475 m × 0,4625 m ✓C
	                = 0,32953125 m³ ✓CA
	
	100% − 9,36% = 90,64% ✓A
	Inside volume = 0,32953125 m³ × 90,64% ≈ 0,299 m³ ✓M

5.1.5 (b)	Number of boxes = $\dfrac{6\,m^3}{0,299\,m^3}$ ✓M ≈ 20,066 ✓A ≈ 20 ✓R

5.1.5 (c)	Volume needed = 148 × 0,299
	                = 44,252 ✓A
	
	Truck loads = $\dfrac{44,252\,m^3}{6\,m^3}$ ✓M
	                = 7,37
	                ≈ 8 ✓R
	
	OR
	
	Truck loads = $\dfrac{148}{20}$ ✓M
	                = 7,4 ✓A
	                ≈ 8 ✓R

5.2.1	$5\frac{1}{4}$ inches OR 5,25 inches ✓✓A
5.2.2	$h = \dfrac{\text{Volume (in cm}^3)}{\frac{1}{4} \times \pi \times (\text{diameter in cm})^2}$

$$h = \frac{20\,000\,\text{cm}^3}{\frac{1}{4} \times 3{,}142 \times (10\frac{1}{2} \times 2{,}54\,\text{cm})^2}$$ ✓C   ✓SF

$$= \frac{20\,000\,\text{cm}^3}{558{,}717431\,\text{cm}^2}$$

$$= 35{,}79\,\text{cm}$$ ✓CA

2.4. DATA-HANDLING

Make sure that you are able to:

- Understand terminologies like mode, mean, range, quartiles, etc;

- Arrange data in ascending order;

- Identify the mode;

- Determine the median when data is already arranged in ascending order and n is odd (*n = number of scores*);

- Construct frequency tables from arranged data;

- Read information from graphs and frequency tables;

- Construct tally tables;

- Calculate mean and the range of given scores, quartiles and analyse percentiles.

- Draw graphs from given data (these graphs include pie charts, single and compound

- bar graphs, line and broken line graphs, and histograms);

GLOSSARY FOR DATA HANDLING

TERMS	MEANING
Bar graph	90^0 graph using bars to show frequencies (horizontal and vertical graph), the vertical heights of a set of bars of equal breath represent the values of the dependant variable in a data set.
Box-and-whisker plot	Diagram that statisticians use to show the distribution of data along a number line divided into quartiles.
Certain	Definitely going to happen e.g. getting heads or tails when tossing a coin is certain.
Classify	Identify the type or class.
Compound events	Two or more events that happen; e.g. tossing a coin and rolling a dice.
Contingency table	A two-way table representing the outcomes of an event.
Continuous data	Numerical data (measurements like weight or age)
Data	Information, series of observations, measurements, facts; collection and recording of information for statistical investigation.
Data collection sheet	Two-column table showing what is observed and how many times it was observed; items of information.
Discrete	Separate; distinct; opposite of continuous.
Discrete data	Numerical data (fixed numbers like size of family); data that can have only certain values (quantities that can be counted, usually whole numbers)
Equivalent	Quantities that have the same value.
Estimate	Roughly work out; roughly calculate.
Even	Chances of any outcome happening are equal; if a normal six-sided dice is rolled, the chance that any one of the numbers 1,2,3,4,5 or 6 could show is the same.
Event	An activity e.g. rolling a single dice.
Fifty-fifty (even) outcome	Chances of something happening or not happening are the same.
Frequency (f)	Number of times a data value is recorded.
Frequency table	Table showing frequencies in organised form; table summarising the frequencies of all the data values in a data set.
Group	Put into classes, sort, arrange, organise.
Histogram	90^0 graph using adjacent bars to show frequencies of either continuous numerical data or discrete numerical data with many different values; areas of rectangles (continues; no gaps between them) show frequency of classes of data (breadth 5 class; height 5 frequency)

| Horizontal bar graph	90^0 bar graph using horizontal bars to compare or rank items like household sizes in a block of flats.
Impossible outcome	No chance of the outcome happening e.g. getting a 7 with an ordinary six-sided dice.
Interview	Record data by talking to someone face to face or over the telephone.
Investigate	Examine; look into; study.
Likely/likelihood	Chance of something happening is greater than the chance of it not happening.
Mean	Average of the values in a data set; 5 sum of all the observed values divided by the number of observations.
Mean [of a set of data]	Average; sum of all data values divided by the number of data values.
Measures of central tendency	Numbers that tell more about the balance (middle values) in a data set (mode; median; mean)
Measures of spread	Numbers that tell how far data values in a data set lie apart; spread of numerical data set (range, quartiles, percentiles)
Median	Middle value in an ordered data set.
Median [of a set of data]	Value that cuts an ordered data set in half.
Mode	value or values appearing most often in a data set.
Mode of a set of data	Most common data value in a data set.
Notation	System of figures/symbols to represent numbers, quantities or values.
Observation	Recording of data by watching someone or something closely.
Outcome	Result of a trial (experiment)
Outcome [fair]	All outcomes are equally likely to occur.
Outliers	Data value that lies an abnormal distance from the other data values in the data set.
Population	Entire source of data involved in an investigation; all the subjects included in a study or survey in order to draw conclusions about that population as a whole.
Possible outcome	The chance that the event will happen or occur.
Prediction	Statement describing the chance of an outcome to happen based on given information.
Probability [mathematical]	results of trial or experiment expressed as a fraction: number of favourable outcomes divided by number of all possible outcomes.
Probability [of an outcome]	likelihood of a particular outcome occurring, expressed as a number between zero and one.
Quartiles	The values that divide a list of numbers into four equal parts
Questionnaire	List of questions that can be used to collect data.

Range [of a data set]	Difference between the highest and lowest values in a data set.
Related [data sets]	Linked; connected.
Represent[data]	Draw; graph
Representative sample	Sample likely to give results similar to those obtained from studying the whole population.
Sample	Subset (small group) chosen from the population to represent the population.
Sampling	Choosing a representative sample
Sort	Put, organise into categories.
Survey	Collect data from a group of people or objects.
Survey [biased]	Survey containing factors that produce answers that do not represent a truthful picture of the situation.
Tree diagram	Diagram using branches to display all the outcomes of a seriesof trials
Two-way table	A contingency table representing all possible outcomes of two trials taking place together.
Unlikely	Chance of something happening is less than the chance of it not happening.
Variable	A quantity that can take different values in a situation.
Vertical bar graph	90^0 bar graph using vertical bars to show change over time at discrete times like absentees per day for three weeks.
Very likely	Chance of something happening is much greater than chance of it not happening.
Very unlikely	Chance of something not happening is much greater than the chance of it happening.

EXEMPLAR QUESTION FOR DATA HANDLING

Question 1

Study the pie charts below showing a municipality's service deliver for a particular period and answer the questions that follow:
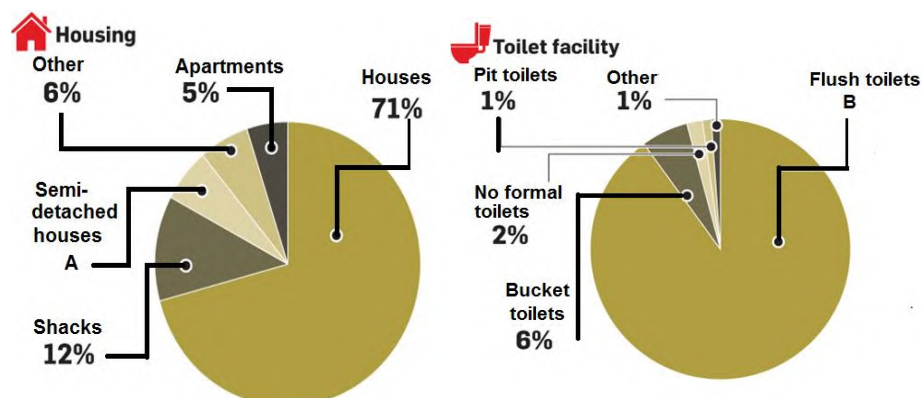
| 1.1.1	Calculate the missing values of A and B.	(4)
1.1.2	Determine the number of households using bucket toilets.	(3)
1.1.3	Determine the number of shacks in the municipality.	(3)
1.1.4	Is the data above an example of discrete or continuous data? Give a reason for your answer.	(3)
1.1.5	Write the number of houses as a ratio to the number of	(2)
	(a) Apartments.	(2)
	(b) Shacks	(2)

1.2   Study the box-and-whisker plots below representing the age of people who viewed three different films and answer the questions that follow:

Age of film viewers in years
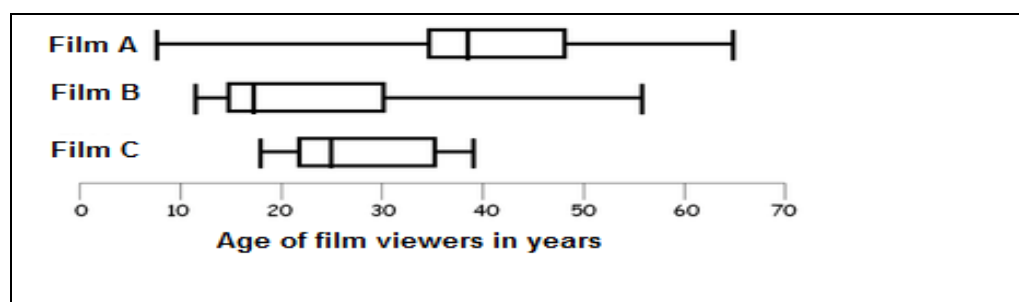
1.2.1   Write down the median age of a viewer who viewed Film A.   (2)

1.2.2   Determine the age of the youngest person who viewed Film B   (2)

1.2.3   Which film was viewed by a 65 year old person?   (2)

QUESTION 2

2.1   Below is a box-and-whisker diagram of the results (in %) of a Mathematical Literacy test written by 92 Grade 12 learners in a school. Use the diagram to answer the questions that follow:
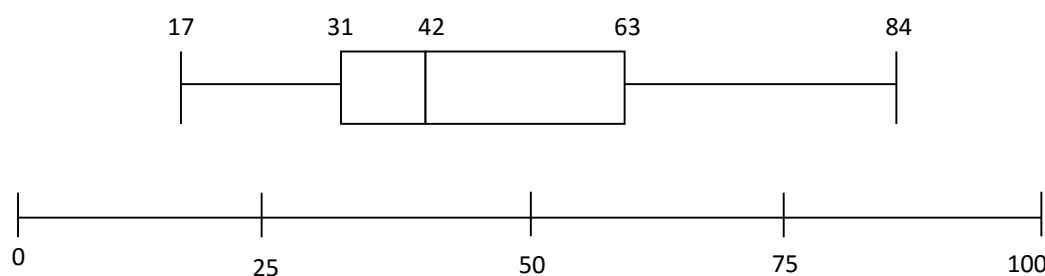
2.1.1	What is the highest mark obtained?	(2)
2.1.2	What percentage of learners obtained more than 42%?	(2)
2.1.3	How many learners obtained more than 63%?	(2)
2.1.4	Determine the inter-quartile range.	(2)
2.1.5	How many learners obtained between 31% and 63%?	(2)

2.2   A number of participants in a cycle race recorded their hours training as well as their 2014 results for the race in the following table:

Cyclist number	1	2	3	4	5	6	7	8	9

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Training time in hours	20	18	16	17	19	13	12	9	15
2014 results (minutes)	203	285	245	256	230	297	210	310	255

2.2.1   Display the information in a scatter plot on the answer sheet provided.   (2)

2.2.2   In the sample above, how many hours training did the cyclist who took the longest time to complete the race do?   (2)

2.2.3   Which cyclist had the best results amongst the nine cyclists in the race?   Explain your choice.   (2)

2.2.4   Identify the type of correlation between the training hours and the time taken to complete the race.   (2)

ANSWER SHEET

Question 2.2.1

Sample of Cyclists
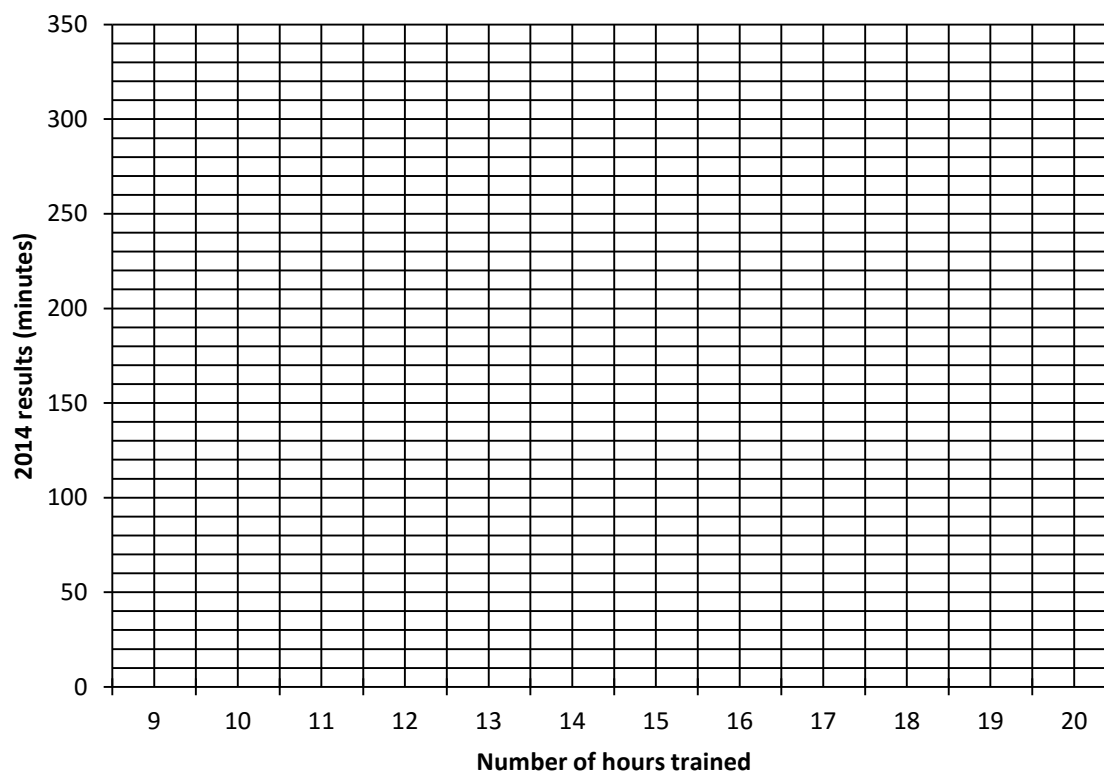
QUESTION 3

3.1 The table below shows information collected regarding a group of car accidents. The information was collected through the interviews with senior metropolitan policemen and policewomen.

Number of accidents in the past year	Age and gender of driver						Row totals
	18 - 28		**29 - 39**		**40 - 50**		
	Male	**Female**	**Male**	**Female**	**Male**	**Female**	
0	124	146	135	154	159	153	871
1	52	43	43	28	28	35	229
2	24	11	22	18	13	12	100
Total	**200**	**200**	**200**	**200**	**200**	**200**	**1 200**

3.1.1   How many people were interviewed?   (2)

3.1.2   How many of the people that were interviewed were males in the age group
        18 – 28?   (2)

3.1.3   How many of the people that were interviewed had been involved in two car accidents in

        the past year?   (2)

3.1.4   If a motor vehicle driver randomly selected from the interviewed group, what is the

        probability that the driver: (Give your answer as a percentages, rounded to one decimal)   (2)

        (a)   Had one motor accident in the past year?   (2)

        (b)   Is a male in the age group 18 - 28 and had one car accident in the past year?   (2)

        (c)   Is a male that had one motor accident in the past year?   (2)

3.2 | The following data was provided by Graphics 24 on traffic at Mall of Africa. |

Mall of Africa's foot traffic and vehicles

Day	Total foot traffic	Total vehicles
Thursday, April 28	122 884	16 108
Friday, April 29	75 058	17 159
Saturday, April 30	86 864	19 016
Sunday, May 1	74 894	17 003
Monday, May 2	75 612	18 237
Tuesday, May 3	42 158	No figures
Wednesday, May 4	38 320	No figures

Graphics24
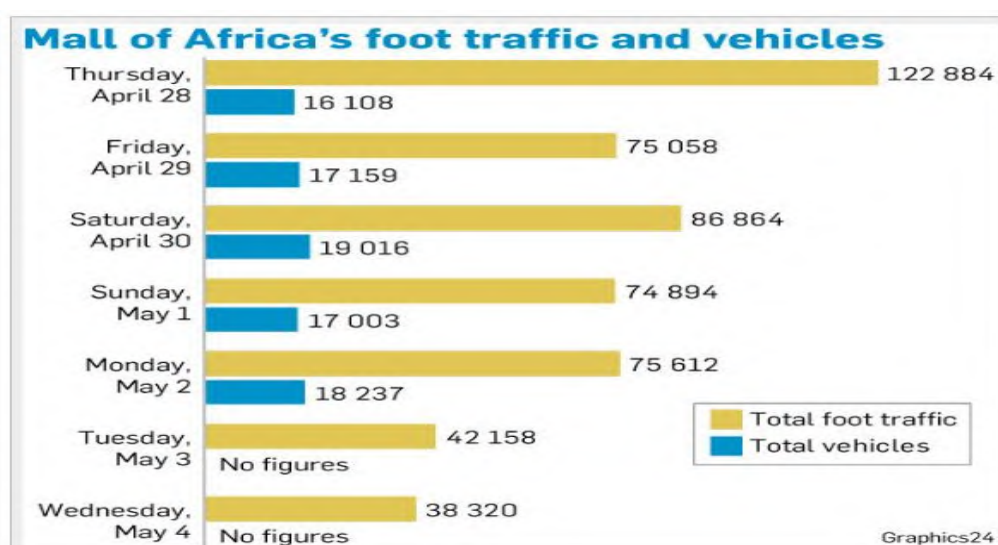
3.2.1   Name the type of graph being used above?   (2)

3.2.2   According to the graph above, on which day were there the most
        vehicles?   (2)

3.2.3   How many vehicles visited the Mall of Africa over the seven day
        period?   (3)

3.2.4   Determine the number of foot traffic the mall had over the week-end?

                                                                                    (2)

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QUESTION 4

4.1.
> The sports organiser of Mano secondary school conducted a survey on weight status of girls at school. He calculated the Body Mass Index (BMI) of a sample of girls' population at the school. There were 365 girls at the schools.

Table 1: The age, mass and height of surveyed learners				
Learner	**Age (years)**	**Height (m)**	**Mass (kg)**	**BMI**
Vuyo	14	1,65	65	23,9
Glynis	18	1,7	72	P
Doris	16	1,62	68	25,9
Yolanda	16	1,5	65	Q
Mpho	18	1,55	72	29,95
Tsakane	15	1,56	66	27,1
Refilwe	16	1,55	62	25,8
Norah	17	1,58	63	25,2
Siba	15	R	69	27
Noni	16	1,55	53	22,1
Yonela	17	1,66	81	29,4
Amanda	19	1,63	71	26,7

4.1.1   Determine the range of ages of the girls in the sample.   (2)

4.1.2   Use the formula: BMI $= \dfrac{Weight\ (kg)}{Height\ (m)^2}$ to calculate: (3)

    (a)   P   (2)

    (b)   Q   (2)

    (c)   R   (2)

4.2 | The BMI is used to determine the weight status of individuals. The sports organiser used the following BMI growth chart for girls to determine the weight status for this sample.

Use Table 1 above and the BMI age growth chart below to answer the following questions.
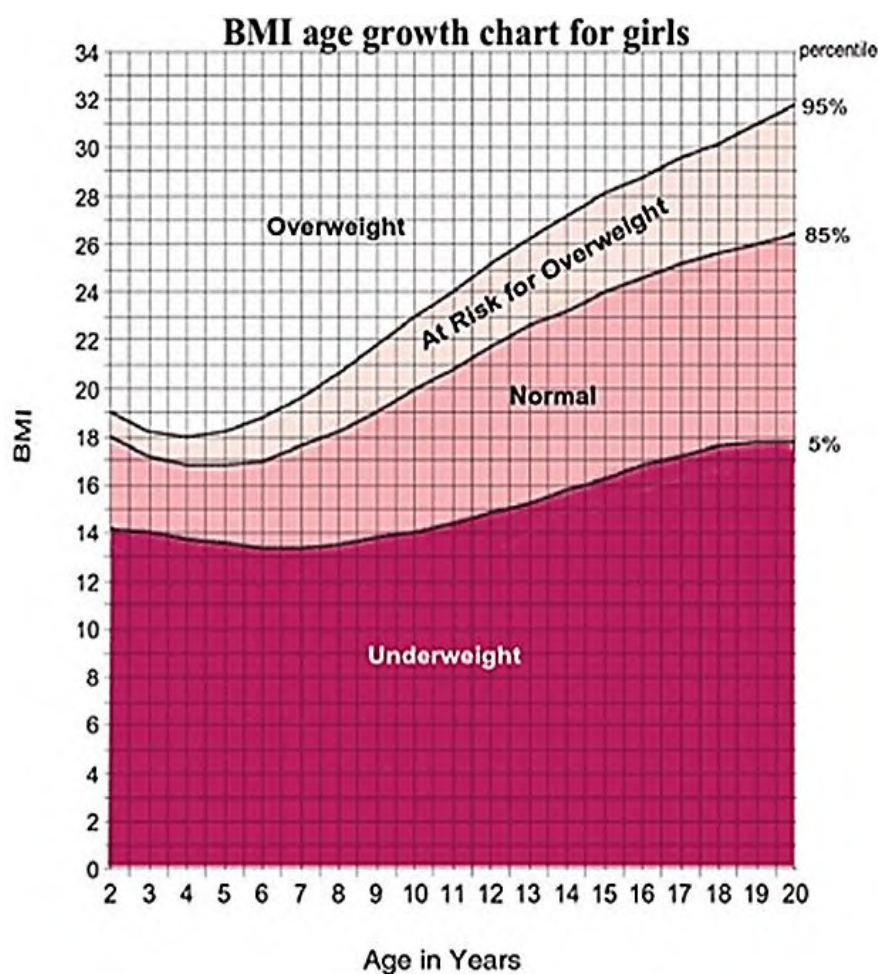
4.2.1 Determine Tsakane's weight status. (2)

4.2.2 Determine the number of 16 year old girl(s) whose weight status lies between the 5th and 85th percentile. (2)

4.2.3 What is the weight status of girl(s) in 2.2.2 above? (2)

4.2.4 Amanda is worried about her weight status. She wants her status to be normal.

   (a) What is Amanda's current weight status? (2)

   Calculate the minimum number of kilograms Amanda must lose to get a normal
   (b) weight status. (4)

QUESTION 5

5.1 | The stacked bar graph below shows the number of learners in each grade at Mama Lumka's aftercare.
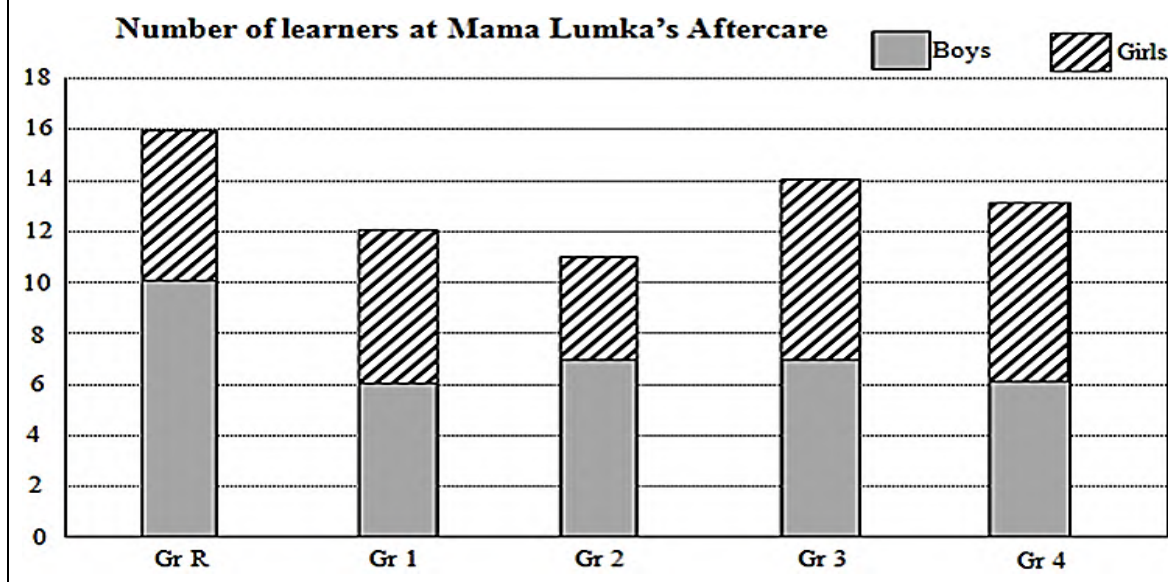
5.1.1 How many learners are there in grade 2 aftercare? (2)

5.1.2 How many more boys than girls are in grade R? (2)

5.1.3 What percentage of learners in Mama Lumka's is in grade 4? (4)

5.1.4 What is the average (mean) number of boys per grade? (3)

5.2 | Tshawe uses seashells to make ornament and he measured the widths, in millimetres, of a few seashells and recorded the findings as follows:

11	8	11	13	10	9	7	14
12	13	12	8	7	9	10	12
13	12	13	14	12	10	10	9
15	12	11	10	12	14	11	12
10							

5.2.1 Determine the modal width of the shells. (2)

5.2.2 Calculate the range of the width of the shells. (2)

Question 6

Kidi, Pelo and Tumi had enrolled for 12 months project management programme at Lumcet Varsity College. The students are required to write a test each month for nine months to be used as the year mark. The table below shows the record of the marks for the three students. Study the table and answer the following questions.

Test Scores in percentage								
Kidi	P	93	92	88	86	82	80	76	72
Pelo	68	Q	62	64	63	68	55	68	58
Tumi	60	64	76	R	76	66	68	80	62

6.1.   Determine the value of **P**, Kidi's maximum score; if the range of her scores is 24.

(2)

6.2.   What is the median for Pelo's readings if the total of the scores recorded was 562.

(5)

6.3.   If Tumi's mean score is 67. Calculate:

6.3.1. the value of **R** (3)

6.3.2. her range score (3)

6.4.   Write the combined modal scores for Kidi and Tumi. (2)

6.5.   Who is the best achiever? Justify your answer with calculations. (4)

6.6.   Determine the interquartile range for Tumi's recorded scores. (5)

6.7

Kidi

50   55   60   65   70   75   80   85   90   95   100   Scores
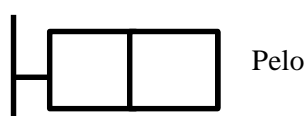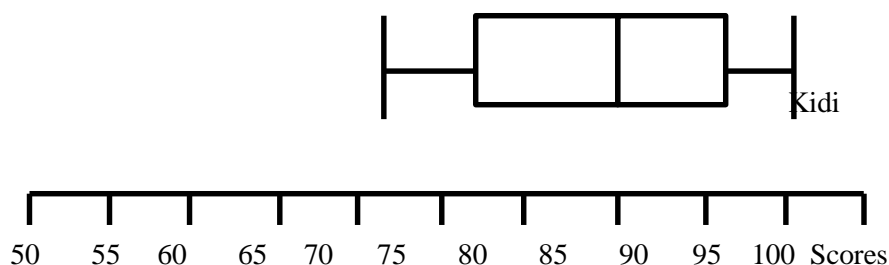
Pelo

6.7.1   Use the graph to write the Pelo's modal score. (2)

Possible Answers for Data Handling	
Ques	**Solution**

1.1.1	A = 100% − (71% + 5% + 6% + 12%) ✓
	
	   = 100% − 94%
	
	   = 6%
	
	The pie chart will always add up to 100 when expressed in %. So A will be the difference of the whole and the given items)
	
	B = 100% − (6% + 2% + 1% + 1%) ✓
	
	   = 100% − 10%
	
	   = 90% ✓
	
	Refer to the notes above

1.1.2	Number of households using bucket toilets = 324 292 × 6% ✓ *The Number of households using bucket toilets in this case will be the 6% of the whole. Note that the 6% is given in the chart* = 19 457,53 ✓ *The number cannot be in decimal because one cannot have a part of the household. Always read the instructions carefully.* ≈ 19 458 ✓ *Follow the instruction in the Question Paper: 'round off ALL final answers appropriately according to the given context,*

1.1.3	Number of shacks in the municipality
	
	   = 324 292 × 12 ✓
	
	   = 38 915,04 ✓
	
	   ≈ 38 915 ✓
	
	Refer to the notes in 1.1.2

1.1.4	Discrete. ✓✓ The number of houses cannot be expressed as fractions. ✓ *a similar question appeared in 2016 NSC paper 1, Q 4.2.1 and was poorly answered. Learners MUST be able to define the continous and discrete data)*
1.1.5	(a) 71% : 5% ✓✓ (b) 71% : 12% ✓✓
1.2.1	39 Years of age ✓✓ *the median is the vertical line that divides the box as read from the horizontal*

1.2.2	11 years of age✓✓	*The end of the left whisker*
1.2.3	Film A✓✓	

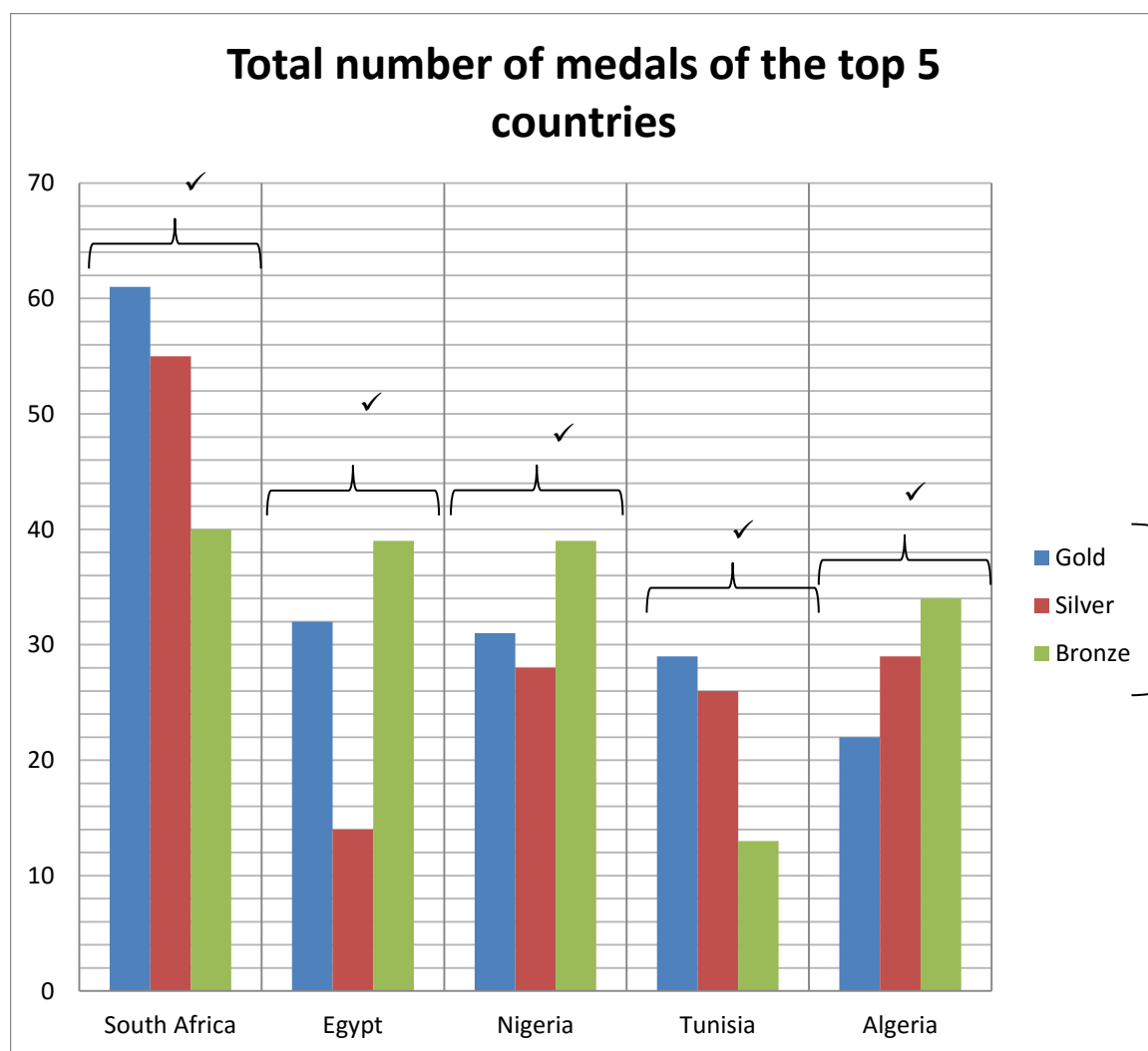|	
2.1.1	84%✓✓
2.1.2	50%✓✓
2.1.3	23 learners✓✓
2.1.4	IQR = Upper quartile (Q3) – Lower quartile (Q1) ✓ = 63% – 31% = 32% ✓ *it is important to know that the IQR is the difference of the upper and the lower quartile*
2.1.5	43 learners✓✓
2.2.1	
2.2.2	9 hours✓✓
2.2.3	Cyclist number 1 performed the best, because he/she completed the race in the shortest time. ✓✓
2.2.4	There is no correlation. ✓✓ *There is no pattern on the plotted points. Points are scattered all over* The more hours trained, the less time taken to complete the race.

Ques	Solution
3.1.1	1 200✓✓
3.1.2	200✓✓
3.1.3	100✓✓
3.1.4 (a)	$\frac{229}{1\,200}$ x 100%✓ = 19,1%✓ *When using a calculator enter fraction and multiply by 100 and do not multiply by 100%. When calculating percentages the % symbol must be in the final answer*
3.1.4 (b)	$\frac{52}{1\,200}$ x 100%✓ = 4,3%✓
3.1.4 (c)	$\frac{123}{1\,200}$ x 100%✓ = 10,3%✓
3.2.1	Horizontal Bar Graph ✓✓ *Know the names and shapes of ALL the types of graphs*
3.2.2	Thursday✓✓
3.2.3	Number of vehicles = 122 884 + 75 058 + 86 864 + 74 894 + 75 612 + 42 158 + 38 320✓ = 515 790✓
3.2.4	Week-end foot traffic = 19 016 + 17 003✓ = 36 019✓

4.1.1.	Range = 19 – 14✓ = 5✓
4.1.2	(a) BMI $= \frac{72}{1,7^2}$✓ P = 24,9✓ (b) BMI $= \frac{65}{1,5^2}$ ✓ Q = 28,9✓ (c) BMI $= \frac{weight\ (kg)}{height^2}$ $27 = \frac{69}{R^2}$ $R^2 = \frac{69}{27}$ ✓ = 2,55555555 R = 1,60✓
4.2.1	Overweight✓✓
4.2.2	1✓✓
4.2.3	Normal✓✓
4.2.4	(a) overweight✓✓ (b) For normal weight: BMI = 26✓ BMI $= \frac{weight\ (kg)}{height^2}$ Weight $= 26 \times (1,63)^2$ = 69,1 kg✓ Minimum weight loss = 71 – 69,1✓ = 1,9 kg✓
5.1.1.	11 learners✓✓
5.1.2	4 more boys than girls✓✓

5.1.3	Total number of learners
	$= 16 + 12 + 11 + 14 + 13\checkmark$
	$= 66$
	Percentage grade 4 learners
	$= \dfrac{13}{66}\checkmark \times \dfrac{100}{1}\checkmark$
	$= 19{,}7\%\checkmark$
5.1.4	$\text{Mean} = \dfrac{10+6+7+7+6}{5}\checkmark\checkmark$
	$= \dfrac{36}{5}$
	$= 7{,}2\checkmark$
5.2.1	$\text{Mode} = 12l\checkmark\checkmark$
5.2.2	$\text{Range} = 15 - 7\ \checkmark$
	$= 8\checkmark$

Total number of medals of the top 5 countries

6.1.	Range = Max –Min	
	24= P-72✓	The data must always be sorted. Range =Highest value less the lowest value. Also practice the reverse calculation. Similar question appeared in the 2016 NSC P2, Q 3.2.1
	P = 96✓	
6.2.	68 + 68 + 68 + 64 + 63 + 62 + 58 + 55 + Q = 562✓	
	Q = 562 -506✓	
	∴ Q= 56✓	
	Arranged data	
	68;68;68;64;63;62;58;56;55✓	
	∴ The median is 63. ✓	

6.3.1	$63 = \frac{80+76+R+76+62+68+66+64+60}{9}$
	$657 - 552 = R$ ✓
	$\therefore R = 51$ ✓
6.3.2	80;76;76;68;66;64;62;60;51 ✓
	Range= 80 – 51 ✓
	$= 29$ ✓
6.4.	76 ✓✓
6.5.	Range for Kidi is 24 ✓✓
	Range for Pelo is 95-68= 27 ✓✓
	Range for Tumi is 80-51=29 ✓✓
	$\therefore$ Tumi is the best achiever ✓
6.6	$Q_1 = \frac{64+60}{2}$ ✓
	$= 62$ ✓
	$Q_3 = 76$ ✓
	$IQR = 76 - 62$ ✓
	$= 14$ ✓✓

CONCLUSION

The material has been developed with the purpose of assisting learners in preparation for the NSC examination. To assist learners with practice after each section, questions as well as their model answers are provided.

It is important to note that the questions in this revision booklet are meant to be a guide and not to replace any study material or textbook. It is therefore envisaged that the effective utilisation of this revision booklet with other resources such as Mind the Gap and previous question papers will translate to better performance in the subject during the examination.

Good luck!

3.   **Study and Examination Tips**

Paper 1: This paper is 3 hours long and it is out of 150 marks. It will consist of between five questions. Basic content knowledge will be required to answer the questions i.e. even the context will be restricted to what is in the CAPS document. Four of the questions will be topic specific and one question will be an integrated question.

Paper 2: This paper is also 3 hours long and out of 150 marks. It will consist of between four and six questions. These questions will require more interpretation and application of the information provided. It context is not restricted to that which is in the CAPS document.

ASSESSMENT IN GRADE 12

Time and mark allocation

TABLE 1 below indicates the time and mark allocation for the two question papers for Mathematical Literacy in Grade 12:

TABLE 1: Time- and mark allocation of question papers in Grade 12

PAPER	TIME	MARKS
Paper 1	3 hours	150 marks
Paper 2	3 hours	150 marks

Format of the question papers

The table below shows a summary of the differences between Paper 1 and Paper 2.

TABLE 2: Summary of the differences between Paper 1 and Paper 2 PAPER 1		PAPER 2
Intention	'Basic skills' paper → assesses proficiency of content and/or skills	'Applications' paper → assesses ability to use both mathematical and non-mathematical techniques/ considerations to explore familiar and unfamiliar contexts.
Structure and scope of content and/or skills	**5 questions** Four questions deal with contexts relating to each of the topics: • Finance • Measurement • Maps, plans and other representations of the physical world • Data handling Fifth question integrates content from across all of these topics. Likelihood will be examined in the context or one or more of the other questions. Each question can contain more than one context.	**4 or 5 questions** Each question deals with contexts drawing integrated content from across all of the topics: • Finance • Measurement • Maps, plans and other representations of the physical world • Data handling Likelihood will be examined in the context or one or more of the other questions. Each question can contain more than one context.
Taxonomy levels	**Level 1**	60%
Level 2	35%	25%
Level 3	5%	35%
Level 4		40%
Contexts	'Familiar', i.e. limited to the contexts listed in the CAPS document.	Both 'familiar' and 'unfamiliar', i.e. not limited to the contexts listed in the CAPS document.

4. **Thank you**

Various resources materials have been used in compiling this revision booklet, verbatim or adapted. In that regard the Department of Basic Education wishes to acknowledge the following provincial departments;

- Eastern Cape Department of Education
- Free State Department of Education
- Gauteng Department of Education
- KwaZulu-Natal Department of Education