

**Grade
12**

saving
investment
debt
banking
insurance

Managing my Finances

A Mathematical Literacy Resource for Teachers

**CAPS
Aligned**

inflation
rights & responsibilities
tax
interest
credit
currency
budget

Acknowledgements

This project is a consumer education initiative by the South African Insurance Association and the Financial Services Board.

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Project developed by the South African Insurance Association and funding provided by members of the South African Insurance Association.

Developed in collaboration with the:



basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

Department of Basic Education



Designed, developed and published by Bright Media.

ISBN 978-0-620-43706-6

MANAGING MY FINANCES

CONTENTS

Unit 1:	Looking back, moving forward (Term 1)	p.5
Unit 2:	Household budget (Term 1)	p.8
Unit 3:	Planning and my future (Term 1 and 2)	p.14
Unit 4:	My business (Term 1 and 2)	p.24
Unit 5:	Matters of interest (Term 2)	p.30
Unit 6:	Understanding banking (Term 2 and 3).....	p.36
Unit 7:	Consumer rights and responsibilities – understanding Taxation (Term 3) ...	p.42
Unit 8:	Insurance, risk and probability (Term 3)	p.55
Unit 9:	Grade 12 study and exam tips (Term 4)	p.63
	Answers	p.68

Introduction

The *Managing my Finances* resource gives you, the teacher, an exciting way to teach your learners about money and financial management skills whilst covering some of the content, skills, knowledge and values for Mathematical Literacy Grade 12. This resource has been aligned with the Curriculum and Assessment Policy Statement (CAPS) Grades 10–12 for Mathematical Literacy. We trust you and your learners will enjoy learning about financial literacy as you work through the units in this resource. This introduction gives you vital information about making the *Managing my Finances* resource part of your Grade 12 Mathematical Literacy programme.

What does the *Managing my Finances* resource aim to achieve?

We aim to assist learners to develop basic money management skills. Managing money better is not something any of us know how to do automatically and yet it is an important and necessary life skill for us all.

We aim to equip learners with the necessary mathematical knowledge and skills by giving applied examples of personal finances so that they are able to participate more effectively in the economy. Planning and managing your finances is one of the most important reasons for being able to use numbers and do calculations effectively. The CAPS document highlights the fact that Mathematical Literacy 'allows individuals to make sense of, participate in and contribute to the twenty-first century world'.

What's in the *Managing my Finances* resource?

• **Grade 10, 11 and 12 books:**

Each 64-page full colour book has 10 lesson plans using outcomes-based methodology. Each unit has a lesson plan of approximately one week in duration (used alongside the Mathematical Literacy textbook that you are using). All of the lessons have at least one accompanying worksheet, project or assignment sheet for learners to complete individually, in pairs, or in groups. The worksheets are varied and require learners to participate in discussions and debates, as well as complete research tasks and assignments. Although the worksheets are designed for photocopying, you can copy most of them onto the board. Worksheets could also be shared between pairs or amongst small groups of learners.

• **Links to CAPS:**

Links to the subject Mathematical Literacy in the CAPS document are clearly stated for each lesson unit. Suggestions for links with School-Based Assessment (SBA) are also provided throughout this resource.

- **Assessment assistance:**

- Suggestions for daily assessment are included together with each lesson plan.
- Suggestions for optional homework tasks are included with some of the lessons.
- The answers for the worksheet activities are provided on the last pages of this resource.

- **Full colour poster:**

This resource provides you with a **full colour poster** which aims to enrich and consolidate your resource content.

Using *Managing my Finances* with other resources

This is a supplementary resource for use with textbooks and other resources that you are using to deliver the Mathematical Literacy curriculum. Many of the calculations and concepts introduced in this resource require further demonstration and practice to consolidate learning.

Your Financial Literacy work schedule

We recommend you use the *Managing my Finances* resource in alignment with the suggested work schedule, as reflected in the CAPS document that outlines estimated time allocations per topic as well as the sequence of teaching throughout the year.

- The lesson units in this resource should be used as a portion of your weekly allocated Mathematical Literacy time. The CAPS allocates 4.5 hours per week to Mathematical Literacy.
- This Grade 12 resource consists of 10 lesson plan units. You should try to include a lesson a week along with the other Mathematical Literacy content that you are teaching.

Assessment

This *Managing my Finances* resource will assist you with your formal Programme of Assessment. As you are well aware, in Grade 12 the Programme of Assessment includes tasks during the school year and an end-of-year examination as set out in the CAPS document. The table below provides you with the number and forms of assessments required. Please refer to the School-Based Assessment document as provided to you by your province for further specific details regarding provincial assessment requirements.

The *Managing my Finances* resource has included the Grade 12 Work Schedule that you require to pace your curriculum throughout the year (see page 4 for the proposed Grade (DBE input) Work Schedule as found in the CAPS). In this resource, we have provided suggestions regarding what you could include in your Programme of Assessment. We have included suggestions for daily assessment tasks and evidence of learner performance tasks.

Example of Assessment for Grade 12 showing weighting of assessment tasks

	Continuous Assessment (25%)			Examination (75%)
	Term 1	Term 2	Term 3	
Grade 12	Assignment (10%) + Investigation (10%)	Assignment/ Investigation (10%)	Control Test (10%)	Nationally set examination
	Control Test (10%)	Examination (25%) Paper 1 (2 hrs) – 100 marks Paper 2 (2 hrs) – 100 marks	Examination (25%) Paper 1 (3 hrs) – 150 marks Paper 2 (3 hrs) – 150 marks	Paper 1 (3 hrs) – 150 marks <hr/> Paper 2 (3 hrs) – 150 marks

* In Grade 12, one of the tasks in Term 2 and/or Term 3 must be an internal examination.

Informal daily assessment tasks

The *Managing my Finances* resource provides suggestions for daily assessment together with each lesson plan unit. This informal daily monitoring of progress includes the marking and review of written tasks, responses to questions posed by yourself and learners, peer and group discussions, etc. These tasks could be marked by individual learners, groups of learners or by you. The results of the informal daily assessment are not formally recorded, unless you wish to do so.

Evidence of learner performance

Evidence of learner performance work is an important tool used in continuous assessment as a means of recording performance and progress. Different assessment instruments such as tests, projects and assignments need to be included as evidence.

Select a variety of types of learner performance evidence from the lesson units in this resource, i.e. you could use worksheets, assignments, investigations or even group work activities as part of your evidence.

How do I record assessment when using the *Managing my Finances* resource?

It is important to select and establish a way of capturing data collected during assessment. The following instruments for recording assessment for the CAPS have been incorporated into the *Managing my Finances* resource:

Codes and Percentages for recording and reporting

Marks or symbols are defined to link to a rating code, a score and a competence description. Seven levels of competence are described for each subject in the CAPS Assessment section. The various competence levels and their corresponding percentage bands are shown in the table below. Actual marks are recorded against the task by using a record sheet, and report percentages against the subject on the learners' report cards.

Rating code	Description of competence	Percentages
7	Outstanding achievement	80–100%
6	Meritorious achievement	70–79%
5	Substantial achievement	60–69%
4	Adequate achievement	50–59%
3	Moderate achievement	40–49%
2	Elementary achievement	30–39%
1	Not achieved	0–29%

Task lists or checklists

These consist of lists or checklists describing expected performance in a given task. When an item can be observed to have been satisfied by the learner, it is ticked off. These lists are useful, especially in individual, peer and group assessment. The *Managing my Finances* resource offers self and peer-assessment checklists to help learners assess whether they have learned the relevant skills.

Rubrics

These are rating scales with a written description of different levels of performance, as opposed to checklists. Rubrics make clear what criteria are being used to assess learner performance. They also link different levels of performance to a rating scale, in this case, the national seven-point scale.



Suggested teaching Plan for Grade 12

Grade 12: Term 1		Week Number								
		1	2	3	4	5	6	7	8	9
Topics	Contexts focusing on Measurement (Conversions; Time)									
	Contexts focusing on Finance (Financial documents; Tariff systems; Income, expenditure, profit/loss, income-and-expenditure statements and budgets; Cost price and selling price; Break-even analysis)									
	Contexts focusing on Data handling									
	Assignment + Investigation Control test (covering Measurement, Finance, and Data Handling, integrated with Numbers and Patterns concepts)									
Grade 12: Term 2		Week Number								
Topics	Contexts focusing on Finance (Interest; Banking; Inflation)									
	Contexts focusing on Maps, plans and other representations of the physical world (Scale and Map work)									
	Contexts focusing on Measurement (measuring length, weight, volume, temperature; Calculating perimeter, area and volume)									
	Revision Assignment/Investigation Mid-year examinations (2 papers; 2 hours each; 100 marks each) (covering Finance, Maps, and Measurement, integrated with Numbers and Patterns concepts)									
Grade 12: Term 3		Week Number								
Topics	Contexts focusing on Finance (Taxation; Exchange rates)									
	Contexts focusing on Maps, plans and other representations of the physical world (Scale and Plans)									
	Contexts focusing on Probability									
	Contexts focusing on Maps, plans and other representations of the physical world (Models) Revision Control test (covering Data Handling and/or Probability integrated with Numbers and Patterns concepts) Trial examinations (2 papers; 3 hours each; 150 marks each) (covering all topics in the curriculum)									
Grade 12: Term 4										
Topics	Revision									
Assessment	End-of-year examinations (2 papers; 3 hours each; 150 marks each) (covering all topics in the curriculum)									

* This table is taken from the Department of Basic Education CAPS document

Unit Title:

Looking Back, Moving Forward

UNIT CONTEXT: Revision & The Future

CAPS Link: Topics, Sections and Contexts

Basic Skills Topics with relevant Sections:

- Interpreting and communicating answers and calculations
- Numbers and calculations with numbers
- Patterns, relationships and representations

Application Topics with relevant Sections:

- Finance: (revision of concepts learnt in Grade 10 and 11)

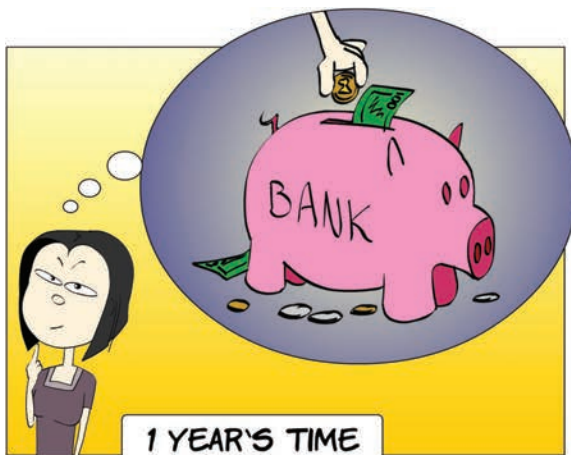
Contexts:

- Life planning
- The individual as part of an economy
- How certain skills are important for certain careers.

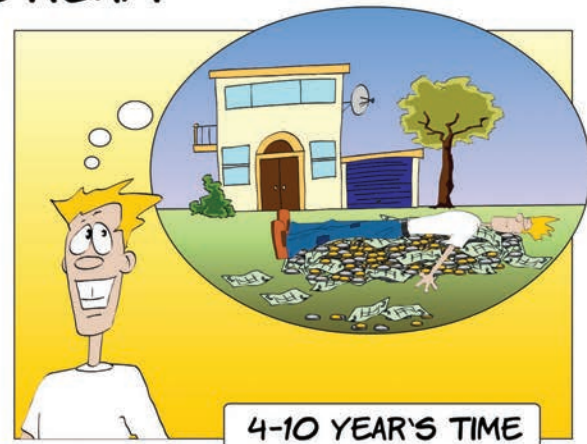
In this unit...

In this Unit, learners plan for the future, while revising concepts from Grade 11. The Unit is based on learners creating their personal money plans as a way to achieve their life objectives. The central concept is: taking personal responsibility—each of us is responsible for our own financial future. By the end of this Unit learners will be able to:

- revise money management concepts learnt in Grade 10 and 11;
- explain how an individual operates as part of an economy; and
- work with numerical data to draw and interpret a bar graph to show skills linked to careers



MY BIG DREAM



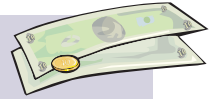
Sequence of activities

1. Life planning

- Ask learners to think about their dreams for the future, especially after finishing school. (The important thing about dreaming is that anything is possible). Ask the learners—“What is the difference between a dream and a plan?” (A dream is a future vision: vague and not clear on how to get there. A plan is clear and has steps.) Ask learners to develop a plan to achieve their dreams. This can be a personal vision statement for their future, with 10 steps needed to achieve it.
- Emphasise that financial success (money) is only one part of success: other factors such as personal values; self esteem; work choice; business ethics and life priorities are just as important. However, financial success can make it easier to achieve these other objectives. For example, a dream to help people with HIV/Aids—money will make it possible to fund research and provide health care. **Money that is not managed well, will however be lost.**
- Emphasise that securing your financial future is your responsibility and not that of anyone else.

MONEY MANAGEMENT RULE:

Spend wisely! First pay for the things you need, then buy the things you want.



2. Revision: Money Management concepts from Grade 10 and 11

- Photocopy the Money Management Rules on page 64, or rewrite this onto the chalkboard.
- In pairs, learners explain the basic money management rules to each other. Assist where the learners do not understand the concepts. They should be able to explain the rules using their own words and giving real-life scenarios where these rules apply.

3. The individual as part of the economy

- Ask learners what they think the term ‘Economy’ means. Answer: Any activities related to the production and distribution of goods and services in a particular geographic region.
- Explain how people and their activities are interrelated into our and the world’s economy. Simply stated, it is not something ‘out there’, but rather what we do and what we make.
- Draw circles similar to this illustration on the chalkboard to explain the different levels of the economy.



Sequence of activities

- Select learners to come forward and give examples of how they personally contribute to each level; emphasise how each and every person contributes to the global economy. (Leave this illustration on the chalkboard for further class activities.)
- **Activity:** Divide learners into small groups and ask them to explain the following concepts to each other. Each group should also answer the questions:
 - ◆ Inflation—what is it and how does it influence your life?
 - ◆ Compound interest—what is it and how does it differ from simple interest?
 - ◆ Pie chart—what is it and when would you use it?
 - ◆ Percentage—how does one calculate it and why is it a useful way to portray information?

4. Different skills are important for different careers

If you know your skill set you can choose a career or job that matches your skills. What are your skills and/or good qualities? List 10 personal skills/abilities/qualities/aptitudes. Link this list to business opportunities in the column below:

My skills	Work/money making possibilities
e.g. Artistic	Make wire baskets to sell, study fine art, work in art shop
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Select your 5 top skills. Allocate a percentage to each skill—based on how important you think your skill is for getting a job. For example:

- good with attention to detail—30%;
- work fast—20%;
- like working with words—20%;
- good with mathematics—10%
- listen well—20%

Draw a bar graph to show the relative importance of each skill.

Suggestions for daily assessment

Mathematical content	Activity/exercise	Type of evaluation/assessment
<ul style="list-style-type: none"> • Percentages • Basic mathematical concepts 	Define and explain basic money management concept; skills audit; work out percentages	Participation in class discussion; marking of written work; self-assessment
<ul style="list-style-type: none"> • Draw the self-assessment checklist below on the chalkboard. Learners use the checklist to assess their own knowledge. • Learners who experience difficulties with core concepts must practice until competent, or conduct revision of the Grade 11 work. • Self-assessment <ul style="list-style-type: none"> ✓ I know that managing money is important for everyone. (yes/no) ✓ I have assessed my skills to plan for my future. (yes/not yet) ✓ I understand the following concepts from Grade 11: simple interest; compound interest; personal budget; savings; inflation; graphs; data handling; probability; measurement; maps, plans and other representations of the physical world. (yes/mostly/not yet) My problem area is: _____ 		

Unit Title:

Household Budgeting

UNIT CONTEXT: Personal & Household Budgets

CAPS Link: Topics, Sections and Contexts

Basic Skills Topics with relevant Sections:

- Interpreting and communicating answers and calculations
- Numbers and calculations with numbers
- Patterns, relationships and representation
- Representations of relationships in tables, equations and graphs

Application Topics with relevant Sections:

- Finance:
 - Income, expenditure, profit/loss, income –and–expenditure statements and budgets
 - Identify and perform calculations involving income, expenditure, profit and loss values, including: fixed, variable and occasional income values and fixed, variable and occasional expenditure values from various sources
 - Manage finances by:
 - Analysing and preparing income-and–expenditure statements and budgets, with an awareness of the difference between these documents for: an individual

Contexts:

- Drawing up a personal budget taking personal income and expenses into account.

In this unit...

This Unit focuses on budgets and why it is important for a household to budget. The learners will explore budget items and apply guidelines for effective budgeting in their own household situation. They will also explore the budget needs of people in the different stages of life. The Unit highlights how everyone has a role to play and that 'needs' and 'wants' should be carefully considered. By the end of this Unit the learners will be able to:

- list the items in a budget;
- calculate the effect of changes in own income and expenditure as well as a household budget;
- devise ways to increase income/reduce personal expenses and indicate the effect on the household budget;
- calculate bulk discounts and decide on options to save money (best buys);
- make joint budget decisions within a household situation; and
- show change in variables on a bar chart.



Sequence of activities

1. Budgets

- Ask learners for their definitions of a budget (refer to Grade 11 content). Facilitate a discussion on the importance of drawing up a personal and household budget and then keeping to it. (Budget = a summary of your income and expenses)
- Talk about why it is necessary to budget (to reduce debts over time, to increase saving, control spending and to build wealth). Talk about examples of each situation and discuss which aspect of budgeting should be focused on in each case.
 - ◆ To reduce debts over time—pay what you owe, such as loans and credit cards. Pay off the largest debt first.
 - ◆ To increase saving—plan for future needs, put aside for unexpected needs, and save for specific needs and unexpected needs.
 - ◆ To control spending—plan, allocate your money to 'needs' first so that you are not tempted to spend on 'wants'; use debit orders to reliably pay monthly accounts.
 - ◆ To build wealth—set aside amounts for saving and investment.

2. Revise needs and wants

- As was dealt with in Grade 11. Ask learners to list all their needs and wants on three levels:
 - ◆ Current—current needs and wants for themselves personally. Household—the needs and wants of their household.
 - ◆ Future—needs and wants they expect to have in 5–6years' time.
- Note that some 'needs' are generic (apply to most people), but there will always be 'needs' and 'wants' that are specific to individuals. For example a wheelchair needed for a disabled person.

Current needs and wants		
	Personal	Household
Needs		
Wants		

Five to six years from now		
	Personal	Household
Needs		
Wants		

3. Fixed and variable expenses

- Discuss the following with the learners:
 - ◆ What are variable expenses? (Answer: Expenses that change over time, or from one week/month to the next.)
 - ◆ Discuss why expenses vary (Answer: Changing needs; inflation; amount purchased; choices of more expensive vs. cheaper brands).
 - ◆ How can variable expenses be reduced? (Answer: Better choices; consider if the expense is a 'need' or a 'want'; buy in bulk, share costs, always ask yourself, "How much is enough?")
- The idea is to reduce these expenses as much as possible.

4. Draw the budget framework on the board:

- **Activity:** Ask learners to draw up their own budget plans based on this framework (as seen on the right). Add or remove items to suit their own circumstances.

5. Supplement Income/Reduce Expenses

- Discuss the different ways to make more money and/or reduce expenses. Find creative solutions to increase income and reduce expenses (cut costs).

Budget Framework	Current	Future
INCOME		
Pocket money		
Money from part-time job		
Interest on savings account		
Student loan		
TOTAL INCOME		
FIXED EXPENSES		
Transport		
School fees		
Rent		
Savings account		
TOTAL FIXED EXPENSES		
VARIABLE EXPENSES		
Entertainment		
Food		
Clothes		
TOTAL VARIABLE EXPENSES		
TOTAL EXPENSES		
Total income – total expenses = SHORTFALL (deficit) or EXCESS (surplus)		

Sequence of activities

- Guidelines to cut costs

BUY IN BULK: Buying in bulk can mean lower costs per item: **Example:** Buying in bulk - Mrs Negota buys in bulk at Bulkstores Ltd—24 tins of fish @ R144,00 per box. Mrs Mokoena buys the same brand of fish at Saveshop (a retailer)—24 individual tins @ R6,20 each (this is a special offer, the normal price is R6,50). She pays R148,80 for 24 tins of fish.

Remind learners of the impact of other factors when working out the cost price of an item. Ask learners what other factors influence the cost, for example, transport costs—Savings of R4,80 by buying from Bulkstores might be cancelled out if you have to travel 20km further to get there, because the money you spend on petrol will be more than what you have saved.

SHARING TRANSPORT COSTS: Sharing transport is another way to save money (e.g. use only one car and drop off members of the household on the way to work), also consider walking/using public transport as ways to limit household expenses.

Example: It is known that Mr Smith uses R300 per month on fuel when he travels alone in his car to work. Transport costs: R300/month. Two of his colleagues however live in the same area and they could travel to and from work together and share the petrol costs. If 2 people were added to the lift club and costs were shared: $R300 \div 3 = R100/\text{month per person}$.

SPECIAL OFFERS: Use coupons and special offers to save costs.

Example: Bulkstores Ltd—24 tins of fish = R144,00. Saveshop—24 individual tins @ R6,20 each (special offer, usually R6,50) BUT Mrs Mokoena received coupons that entitle her to 10% off the price of each tin of fish. So $R6,20 - 10\% (= 62c \text{ discount per tin}); R6,20 - 62c = R5,58 \text{ per tin}$.

- Activity:** Ask learners to collect coupons from magazines/supermarket and calculate the possible savings they can make. Small things can make a big difference.
- Talk about how items that seem to be small and cheap, such as one packet of cigarettes, cup of coffee or a chocolate bar a day, do add up! Do calculations to demonstrate the effect of this.

Example: You pay R6,00 for a chocolate. You buy 1 chocolate per day for 4 days of the week: every week = R24,00 per week = R96,00 per month = R1 152 per year! 'Do not confuse necessary expenses with desires.' Have the learners work out the same calculation with a 'want'-item which they buy regularly—see how shocked they are when they realise how much they spend per year on the 'unnecessary' item!

Ask learners for examples to illustrate the difference between needs and wants.

- How to save more:** Ask learners about ways to save money in the household (e.g. how to save electricity and water; pay less interest when paying bills or credit cards on time). Talk about seeking 'cheap thrills'. You don't have to spend a lot of money to have fun. Could you perhaps hire DVDs instead of seeing the movies in a cinema? Take out books from the library instead of buying them? Go on a picnic instead of eating out? Challenge yourself to have more fun for less money!
- Activity:** List 5 ways in which you can save on fun expenses. (For example. choose cheaper brands, compare cost per kilogram, free activities and events, home-made presents.)

DID YOU KNOW: The golden budgeting rule is: First plan for your needs so that you are not tempted to use money for wants. Therefore, pay your bills, your debts, and your needs: transport costs, water and electricity first. Luxuries such as chocolates—later!



6. Budgets

- Write the following guidelines for effective budgeting on the chalkboard.
 - STEP 1: Discuss: As a household, have a discussion about money. Get everyone to talk about their financial needs and goals; savings plans and practical steps.
 - STEP 2: Find out: Where are you financially? Find out and consider: How much do you earn? How much do you spend? How much do you owe? How much do you own? What are your financial goals?
 - STEP 3: Setting priorities: Firstly list your needs, then list your wants. Then prioritise in order of importance.
 - STEP 4: Write up a Budget: Your income and expenses. Remember to plan for the unexpected and emergencies too.
 - Create a 'what if' fund—Money to be used in case of sickness, accidents or any other unplanned emergencies.
 - Provide learners with copies of **Learner Worksheet 1**. Learners complete the worksheet in pairs.



Sequence of activities

HOUSEHOLD FINANCE QUIZ

Do this quiz. Mark each question using the following scoring system:

5 = Agree strongly

4 = Agree partly

3 = Not sure

2 = Disagree partly

1 = Disagree strongly

Add up your total and multiply it by two to arrive at a percentage. This represents your household's score out of a possible 100, i.e. a percentage score. This can be shown in a pie chart.

1. Each family member feels happy with the way the household's finances are being managed.
2. I trust my family to be sensible about money matters and could safely leave things to them.
3. Meetings to discuss household finances occur regularly and are an accepted part of our household routine.
4. Discussions about money take place in a calm and reasoned atmosphere where issues can be resolved.
5. Family members with an income feel comfortable sharing details of their earnings and expenditure.
6. Someone in the household is tasked to keep financial records, analyse them and report back to everyone.
7. We recognise different priorities in household spending, from necessities to luxuries, and budget for them.
8. We have a 'what if' fund, separate from our insurance, for unplanned emergencies.
9. I know what my financial flaws are and try hard to avoid making mistakes.
10. When considering financial matters I think of the whole household and not just of myself.

The results ... and what it means:

0–9 Danger! There could be serious financial trouble soon, if not already. You need to start making changes and quickly!

10–19 Failing. This family is failing financially, but you can improve with financial plans, honesty, arithmetic and saving discipline.

20–25 Just a pass. There are financial mistakes, but some things are right in the way your family handles money. Analyse what's wrong and put it right.

26–29 Fair. Finances need to be healthier, but you are trying hard.

30–39 Good! Money management is successful for you but you are still slipping up here and there. Identify weak points and get rid of them!

40–50 Excellent. If every family were like yours, banks and jails would be out of business. Now educate extended family and friends.

• **Activity: Household Budget**

Look at the following Mills family budget for the month of August:

	Mr Mills	Mrs Mills	Rose Mills	James Mills
Income	Salary R6 000 Investment R150	Salary R7 000	Part-time work R500	Part-time work R200
Fixed expenses				
Rent	R4 000			
Car payment	R1 800	R2 000		
Insurance policies	R400	R500		
School fees for children	R300	R300		
Variable expenses				
Groceries		R3 000		
Movies & entertainment	R50	R50	R100	R100
Clothes		R100	R200	R140
Fuel/transport	R100	R120	R150	R120
Water & electricity		R700		
Credit card payment	R430	R800		
Clothing account		R300		

Sequence of activities

1. List the household's 3 largest expenses.
2. What is the total household income?
3. What are the total household fixed expenses?
4. Which variable costs would be the easiest to reduce?
5. List 2 ways to reduce the variable expenses.
6. Calculate the effect of inflation on this family's budget. Assume annual inflation is 8%.
7. How can this household increase their income?

Answers: 1. Groceries, rent and car payments; 2. R13 850; 3. R9 300; 4. Movies and entertainment, water and electricity and/or travel costs; 5. Go to movies fewer times a month, use less water and electricity; 6. In one year their fixed expenses will increase to R10 044 ($R9\ 300 \times 8\% = R744,00 + R9\ 300 = R10\ 044$) and their variable expenses will increase to R6 976,80 ($R6\ 460 \times 8\% = R6\ 460 + R516,80 = R6\ 976,80$) which means that their total expenses (R17 020,80) would be substantially more than their income (R13 850,00); 7. (Any relevant answer.) They could let the second bedroom for R1 200 but if they do other costs must be taken into account (eg. higher electricity and water accounts as a result of usage by tenant). They could try to get part-time work that pays more.

MONEY MANAGEMENT RULE:



First pay for the things you need. Then buy the things you want, if you can afford it.

MONEY MANAGEMENT RULE:

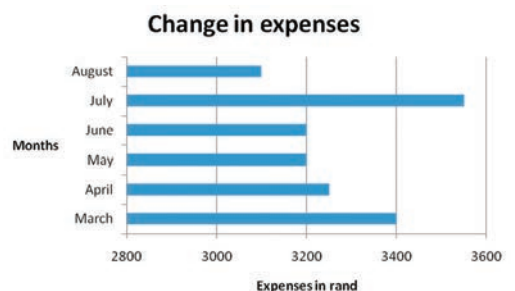
Write down your monthly budget and stick to it.

7. Bar graphs

- One possible method of illustrating change graphically is by way of a bar graph. Remember a bar graph should have:
 - ◆ Both axes must be labelled and the diagram must have a heading.
 - ◆ Equal spaces between bars.
 - ◆ The vertical axis must have a scale.
 - ◆ The height or length of the bar represents the data.
 - ◆ The bars can be drawn vertically or horizontally.

Example:

- ◆ Our household's expenses changed as follows over the past 6 months:
 - ◆ March – R3 400
 - ◆ April – R3 250
 - ◆ May – R3 200
 - ◆ June – R3 200
 - ◆ July – R3 550 (because of the cold weather we used more electricity)
 - ◆ August – R3 100
- Look at the data displayed in the vertical and horizontal bar graph:
 - ◆ X-axis = horizontal (left to right) axis
 - ◆ Y-axis = vertical (up-down) axis
 - ◆ One variable is shown on the vertical axis (months) and the other on the horizontal axis (expenses in Rands).
- **Activity:** Ask learners to write up their monthly expenses for a few months this year. Then ask them to draw their own bar graph to show the changes in their expenses as shown in the example.



Suggestions for daily assessment

Mathematical Content	Activity/exercise	Type of evaluation/assessment
<ul style="list-style-type: none"> • Percentages—bulk discounts • Calculate income & expenditure • Calculate total costs based on variable information 	Class discussions; Household finance quiz; Worksheet 1	Participation in class discussion; completion of quiz; marking of written work; self-assessment
<ul style="list-style-type: none"> • After completing Worksheet 1, you could write the following self-assessment checklist on the chalkboard. Learners use the checklist to assess their own knowledge. Learners who experienced difficulties may need to revise the Grade 11 work. • Self-assessment <ul style="list-style-type: none"> ✓ I can draw up and explain budgets ✓ I can assess financial income and expenses ✓ I can distinguish between 'needs' and 'wants' and budget accordingly ✓ I can devise creative ways of supplementing income or reducing expenses 		

Budget Worksheet

1. Answer the following questions:

- What is a budget?
- Why is it good to budget?
- What are the main items in your personal budget/household budget?
- Define fixed and variable expenses and give 3 examples of each in your budget. Give your opinion as to why they are variable? How will these expenses change over the short, medium and long term?

2. Draw up 2 budgets in the table format as shown here for: yourself now; yourself in 1 year's time as per your plan.

3. Ask a family member to share their budgeting plans, and assist them to reduce costs and track their expenses over the following month—they must complete the following table; let them add their own expenses as applicable to them.

	Now	Future
Income		
Expenses		
Fixed		
Variable		
TOTAL		

MONTHLY BUDGET – DATE:/...../.....					
Variable expenses in Rand (R) per month			Fixed expenses in Rand (R)		
Household	Food / Kitchen supplies		Monthly Expenses	Rent/Mortgage Bond	
	Electricity			Car Repayment	
	Water			Appliances/Furniture	
	Garbage/Sewer Fee			Fixed Savings	
	Telephone/Internet			Emergency fund	
Transport	Car expenses (petrol/oil)			Other	
	Taxi Fare			Education fees	
	Parking			Medical Aid	
	Train fare			Life Insurance	
	Bus fare			Household insurance	
Personal Costs	Clothing/toiletries		Other		
	Credit Card Payments				
	Personal allowances				
	Reading material				
	Medical / Dental				
Entertainment	Eating out				
	Cultural events				
	Sporting events				
	Other				
Total monthly expenses					
Monthly net income					
Monthly expenses					
Balance (own/owe)					

Unit Title:

Planning & My Future!

UNIT CONTEXT: Plan, Measure, Implement

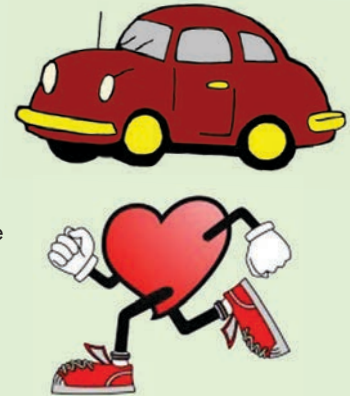
CAPS Link: Topics, Sections and Contexts

Note: This Unit focuses on 'Planning' and 'My Future' in a variety of contexts and incorporates two assignments which cover broad sections of the work and can be used to assess the learners' understanding and application of the relevant topics, sections and contexts or as preparation for tests or examinations. The relevant CAPS information for the Lesson Unit as well as Assignment A and B is reflected below.

In Summary:

Assignment A: Planning a road trip to college with your 'new' used car. This assignment includes the topics Finance; Measurement: Length, Weight, Time and Volume; Maps, plans and other representations of the physical world: Scales and Maps.

Assignment B: Planning 'A Healthier Me' lifestyle change. This assignment includes Measurement: Length, Weight, Volume and Temperature.



Sequence of activities

Basic Skills Topics with relevant Sections:

- Interpreting and communicating answers and calculations
- Numbers and calculations with numbers: Rates
- Patterns, relationships and representation
 - Representations of relationships in tables, equations and graphs

Contexts:

- How to plan events or projects and adjust when necessary
- Planning for inflation

CAPS information relevant to ASSIGNMENT A: Taking a road trip to start college

Basic Skills Topics with relevant Sections:

- Interpreting and communicating answers and calculations
- Numbers and calculations with numbers
- Representations of relationships in tables, equations and graphs

Application Topics with relevant Sections:

- Finance:
 - Tariff systems
 - Work with transport tariff systems
 - Calculate costs using given tariffs and/or formulae
 - Compare two different options for a tariff system to determine the most appropriate option for individuals with particular needs
 - Exchange rates
 - Work with exchange rates presented in foreign exchange tables for different currencies
- Measurement
 - Measuring length and distance:
 - Determine the length and/or distance using appropriate measuring instruments: Scale and odometer
 - In order to estimate and/or measure distance accurately between objects/positions in space using appropriate maps and scales
 - Calculate:
 - cost associated with travelling a certain distance
 - time taken to complete the journey
 - speed (distance travelled in terms of time taken)
 - Measuring volume:
 - Calculate consumption rate
- Maps, plans and other representations of the physical world
 - Scale:
 - Work with the following types of scales on maps: bar scale
 - Calculate actual length and distance when map and/or other measurements are known
 - Maps:
 - Working with maps:
 - national and provincial road and rail maps
 - Estimate:
 - distance using measurement and a given scale
 - time it will take to travel between two locations
 - amount and cost of fuel that will be used in travelling between two locations
 - average speed travelled during a trip (i.e. distance travelled in terms of time taken)



Sequence of activities

CAPS information relevant to ASSIGNMENT B: A Healthier Me**Basic Skills Topics with relevant Sections:**

- Interpreting and communicating answers and calculations
- Numbers and calculations with numbers
- Representations of relationships in tables, equations and graphs

Application Topics with relevant Sections:

- Measurement:
 - Length: Determine length and/or distance using appropriate measuring instruments, including:
 - measuring tape
 - odometer
 - pedometer
 - Mass (Weight): Determine mass (weight) using appropriate measuring instruments, including:
 - Bathroom scales in the context a larger project in the familiar contexts of school
 - Monitor and manage mass (weight) including the use of recorded mass (weight) data, recorded length (height) data, calculated Body Mass Index (BMI) values and appropriate BMI charts for men and women
- Temperature: Measure, monitor and interpret temperature values using appropriate instruments and/or resources, including: weather reports



In this unit...

This Unit briefly revises formulae and concepts from Grade 11, while introducing a number of new concepts. In this Unit we discuss how learners can turn their dreams into reality by planning, recording and measuring their progress. By the end of this Unit learners will be able to:

- define, apply and calculate inflation as studied in Grade 11;
- draw up a simple project plan, with or without the use of a Gantt chart;
- explain the notion of the time value of money;
- draw graphs to illustrate concepts learnt; and
- prepare assignments A and B by applying the concepts of time, length/distance, weight, volume, temperature, tariffs, maps and scale within the context of these two assignment scenarios, i.e. Planning a road trip to college in a car; Planning towards starting a programme for 'A Healthier Me'. These assignments focus on planning a task or project which leads to a positive future (i.e. starting with a future career and starting with a healthier lifestyle).



Sequence of activities

Talk about the need to plan and implement steps to achieve the dream identified in Unit 1.

1. Planning

- Discuss the need to have a concrete plan to achieve dreams—to DO something concrete. Ask learners about possible benefits of planning (growing in confidence; having clear, practical steps to follow; saving time and money; feeling motivated and enthusiastic and creating results).

A Harvard study in 1952 showed that 3% of the graduates had WRITTEN career goals. Twenty years later, the same 3% were worth more than the OTHER 97% of that 1952 class. That's the power of goal-setting!

- Write the following steps to successful financial planning, in a flowchart format, on the board:
 - Step 1:** Identify and write down your financial goals—e.g. go to college; pay off debt.
 - Step 2:** Break down each financial goal into several short-term (less than 1 year), medium-term (1 to 3 years) and long-term (5 years or more) goals.
 - Step 3:** Measure, evaluate and adjust.
- Talk about short, medium and long term planning. For example: Short term planning—within the next 6 months; Medium term planning—the next 2 years; Long term planning—next 5–20 years.

MONEY MANAGEMENT RULE:

With proper planning you can break down even the biggest goal into small steps that are easy to achieve.

MONEY MANAGEMENT RULE:

Use all the many tools that are available to help you achieve your financial goals.



2. How to develop a plan

- Project plans and Gantt charts are useful tools when planning to achieve your dreams. A project plan is a list with steps, milestones and dates for completion. A Gantt chart is a project planning tool that can be used to represent the timing of tasks required to complete a project.
- Gantt charts are quite simple to understand and very easy to develop which makes them a popular tool used by most project managers. It can also be used effectively to achieve your own life goals. There are many ways to create a Gantt chart, e.g. by hand (manually), on Microsoft Excel or Microsoft Project.

3. Explain a Gantt Chart

- Draw this Gantt chart on the board.
- Discuss how Gantt charts work. In a Gantt chart, each task takes up one row. Dates are written along the top and are indicated in periods of days, weeks or months. The expected time for each task is shown by a horizontal line (see shaded areas in the diagram). The left end marks the expected beginning of the task and the right end marks the expected completion date.

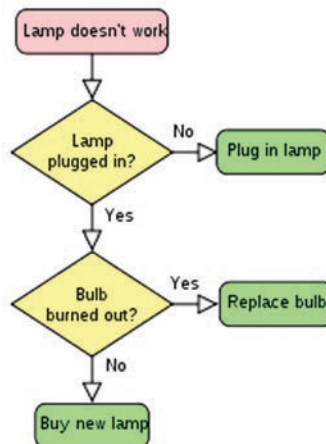
	8/7	15/7	22/7	29/7	4/8	11/8	18/8	25/8
Task 1	◆							
Task 2		◆						
Task 3			◆					
Task 4				◆		◆		
Task 5							◆	

- As the project unfolds, the chart is updated by filling in the bars to indicate the period that has been completed. At the end of a section of a task, a milestone is inserted to mark the completion of one segment towards the overall goal. Milestones can be indicated by a symbol, such as ◆. Milestones are important events indicating that you have achieved something or completed a task or part of a task.
- Learners draw up a Gantt chart showing examples of milestones in their life, particularly with regard to their financial plans. For example, they may wish to highlight when they have saved R500, or decided on a pension plan. Their task will be 'Saving R500', which might take 2 months—they will shade 8 blocks of one week each. At the end of the period, they will indicate their milestone by inserting a ◆ symbol.

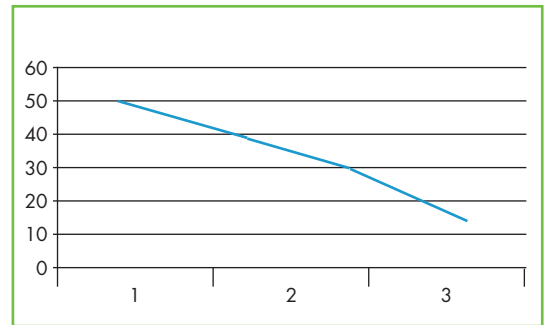
Sequence of activities

4. Measure, evaluate and adjust

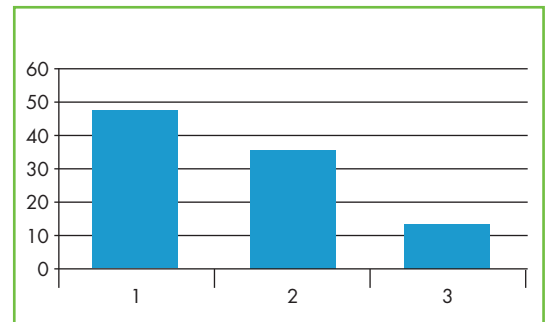
- Ask the learners why they think it is necessary to measure progress on tasks (e.g. it gives you a better idea of where you are at; for better planning; to make necessary adjustments; to assess where you are on the road to achieving your goals; to plot (show) change over time). For example, review your financial plan monthly or quarterly; although it is recommended to do a review at least twice a year. If there is not satisfactory progress, make the necessary changes.
- Discuss the various types of measurement systems such as simple tables, Excel spreadsheets and graphs.
- Information can be displayed visually on different types of graphs, e.g. pie charts, line graphs, bar graphs, flow charts etc.



Flow charts show possible processes



Line graphs show change over time



Bar graphs compare data sets

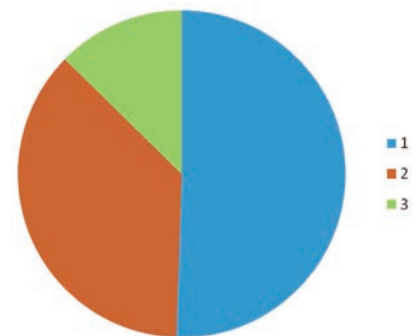
5. Graphs

- Discuss the vertical and horizontal axes and how to plot data:
 - A graph is a visual representation of a relationship between two variables, X and Y.
 - A graph consists of two axes called the horizontal (X) and vertical (Y) axes. Different aspects are shown on each axis, e.g. price on the X-axis and quantity on the Y-axis.
 - The point where the two axes intersect (meet) is called the origin. The origin is also identified as the point (0, 0).

Horizontal-axis (X) = left-right axis
Vertical-axis (Y) = up-down axis

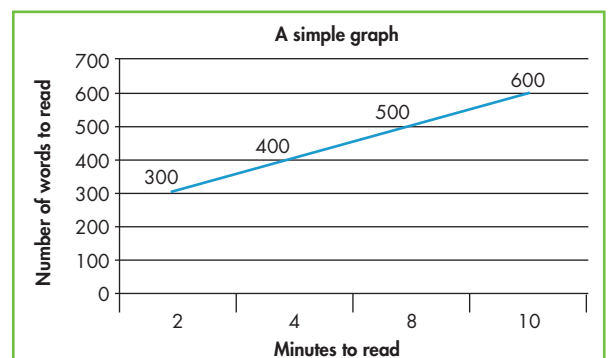
- Examples of how data changes on the horizontal (X) and vertical (Y) axes.**

Example 1: Say X is the number of minutes it takes to read the words and Y is the number of words you have to read. As X changes, so Y changes (minutes and words are the variables).



Pie charts show parts of a whole

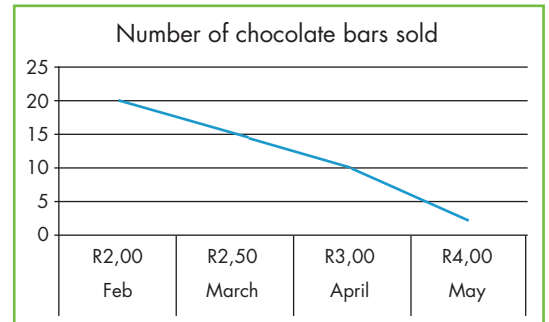
X (minutes)	Y (number of words to read)
2	300
4	400
8	500
10	600



Sequence of activities

Month (X)	Price (Y)	Number of chocolate bars sold
Feb	R2,00	20
March	R2,50	15
April	R3,00	10
May	R4,00	2

Example 2: Graphs can be useful to show how demand (the request for a certain product or service) changes in reaction to changes in price. KG Supermarket sells chocolate bars which start at a selling price of R2,00 each. Every month however, they increase in price. As the price increases, customers will buy fewer and fewer chocolate bars. The variables are the number of chocolate bars and the price.



6. Measuring Fuel Consumption

- Discuss fuel as a major expense for most people. Ask learners how the price of fuel impacts on their lives (whether they have their own car or pay for public transport).
- **Explain how to measure fuel consumption:** Two different measures could be used to determine fuel consumption: $\ell/100\text{km}$ or km/ℓ . (A modern fuel efficient car would run at under 8ℓ per 100km)
- **Write the following calculations on the board:**

To calculate fuel consumption figures for distance travelled:

- ◆ Divide the number of kilometres travelled into 100 and multiply by the number of litres used = this gives you litres per 100 kilometres
- ◆ Divide litres used, into distance travelled = this gives you number of kilometres per litre.

To convert the fuel usage from $\ell/100\text{km}$ to kilometres per litre:

- ◆ A car uses $8\ell/100\text{km}$; divide both sides by 8 to get the kilometres per litre—this gives you $12,5\text{km}/\ell$.

Show learners how to calculate fuel usage for their own car/parents' car/taxi:

- ◆ Determine tank size e.g. 35ℓ
- ◆ Measure kilometres travelled per tank (as on odometer)
- ◆ Divide kilometres by number of litres

- **Example 1:**
 - ◆ 200km travelled per tank; tank size $35\ell = 200/35 = 5,7\text{km}/\ell$
 - ◆ $280\text{km}/\text{tank}$; tank size $40\ell = 280/40 = 7\text{km}/\ell$
 - ◆ $264\text{km}/\text{tank}$; tank size $42\ell = 264/42 = 6,3\text{km}/\ell$
- Calculate the effect of an increase in the fuel price:

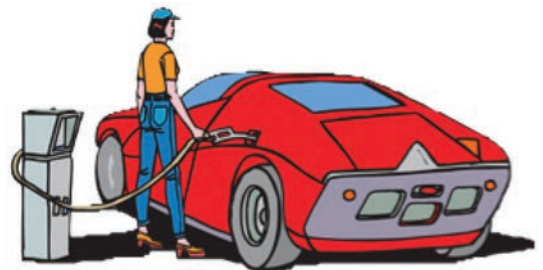
Example 2:

- ◆ If the fuel price is currently $R7,50/\ell$ and is increased by $13\text{c}/\ell$, how much more will it cost to fill up a car with a tank size of 40ℓ ?
- ◆ $R7,50 + 13\text{c} = R7,63/\ell$
- ◆ Old price to fill up the tank: $R7,50 \times 40 = R300,00$
- ◆ New price to fill up the tank: $R7,63 \times 40 = R305,20$
- ◆ It will now cost you $R5,20$ more to fill up the tank

Example 3:

- ◆ If the fuel price is currently $R7,00/\ell$ and it increases by 5% , what would the new fuel price be per litre?
- ◆ $R7,00 \times 0,05 = 0,35$; thus the new fuel price is $R7,35/\ell$.

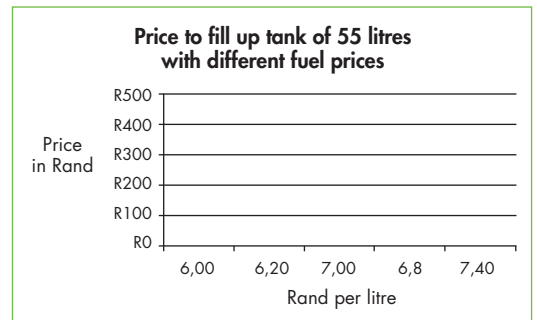
Activity: Draw up the following table on the board (leave the last column blank) and ask the learners, while working in pairs, to copy it down in their workbooks and to complete the table.



Sequence of activities

Month	Fuel Price	Answers: Total to fill up a 55ℓ tank
June	R6,00	R330
July	R6,20	R341
August	R7,00	R385
September	R6,80	R374
October	R7,40	R407

- If the price of fuel changes every month, for 6 months in a row (see details of change in the table), how much will it cost to fill up a 55ℓ tank each month?
- We can now also show the change over the 5 months on a graph. Draw the graph, as seen on the right, on the board and demonstrate how to plot the information found in the table above.



7. Planning for inflation

- Remind learners of the formula to determine inflation that was covered in Grade 11 by using the prices of products:
- Price index = $\frac{\text{New price}}{\text{Old price}}$
(100 = comparative base year)

• Example

Fruit juice: old price for 1ℓ = R6,00; new price = R7,00

Divide new price by old price and multiply by 100 (the base year): $R7,00/R6,00 \times 100 = 116,7$

Base year is 100 (the first 1 in 116), therefore the juice is now 16,7% more expensive than before.

- To calculate price change in reaction to inflation: multiply the old price by the inflation percentage;
- Eg. inflation of 6% = 0,06
- Let's see how inflation influences prices of some basic products and/or expenses relevant to the learners: Assume inflation is at 6%.

• Example

Product/expenses	Old price	Answers: New price
Cold drink	R6,50	$R6,50 + 39c = R6,89$
Taxi fare	R22,00	$R22,00 + R1,32 = R23,32$
Movie ticket	R12,00	$R12,00 + 72c = R12,72$
Study fees	R6 000/year	$R6\ 000 + R360 = R6\ 360$

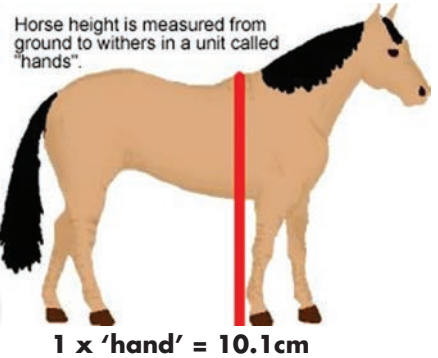
- Now do the calculations for an inflation rate of 12%.

Product/expenses	Old price	Answers: New price
Cold drink	R6,50	R7,28
Taxi fare	R22,00	R24,64
Movie ticket	R12,00	R13,44
Study fees	R6 000/year	R6 720

Sequence of activities

8. Measuring and how it relates to planning (see Assignment A and B in point 9 below)

- Recap the content relating to the measurement of length (distance), weight and volume as detailed in the Grade 11 *Managing my Finances* resource (see Grade 11 – Unit 8).
- Ask: How is measurement relevant to our context for this Unit, i.e. planning. (Most planning would be linked to an event, a project, purchases, etc. and would involve costing and measuring to some degree.)
- Recap the content relating to maps and scales (see Grade 11 – Unit 8)
- Ask: How do you think maps and scales are relevant in the context of planning? (Planning a trip, planning to buy property, etc.)
- Some interesting facts about measurements: research and discuss some interesting facts about measurements over the years, for example:
 - The average surface area of the human intestine is 200m².
 - Horse height is measure in 'hands': 1 hand = 10.1 cm
 - There are 45 miles (72 km) of nerves in the skin of a human body.
 - The earth weighs approximately 6 588 000 000 000 000 000 tons!



9. Assignments

- The two assignments which cover broad sections of the work and can be used to assess the learner's understanding and application of the relevant topics, sections and contexts or as preparation for tests or examinations.



9.1. Assignment A: Taking a road trip to college

- Learners work in pairs to complete Assignment A. The duration (timeframe allocated to this assignment) is at your discretion, depending on the level of comprehension of the learners as some might take longer than others. The emphasis is on them going through the process of understanding how to plan and budget carefully for a trip.



9.2. Assignment B: A Healthier Me

- Learners work in pairs to complete Assignment B. Timeframe: same as with Assignment A.

Suggestions for daily assessment

Mathematical Content	Activity/exercise	Type of evaluation/assessment
<ul style="list-style-type: none"> Revision of concepts from Grade 11 Use formulae to calculate inflation Use line graphs and interpret data Calculate fuel usage – ℓ/km; kilometres per litre Conduct financial planning Scales and maps Time-based planning of distance Body-Mass Index calculations 	Class discussions; Case study (resources and success factors); Calculate inflation; Develop a Gantt chart; Assignment A and B	Participation in class discussion; marking of written work; marking of Gantt chart; mark Assignment A and B

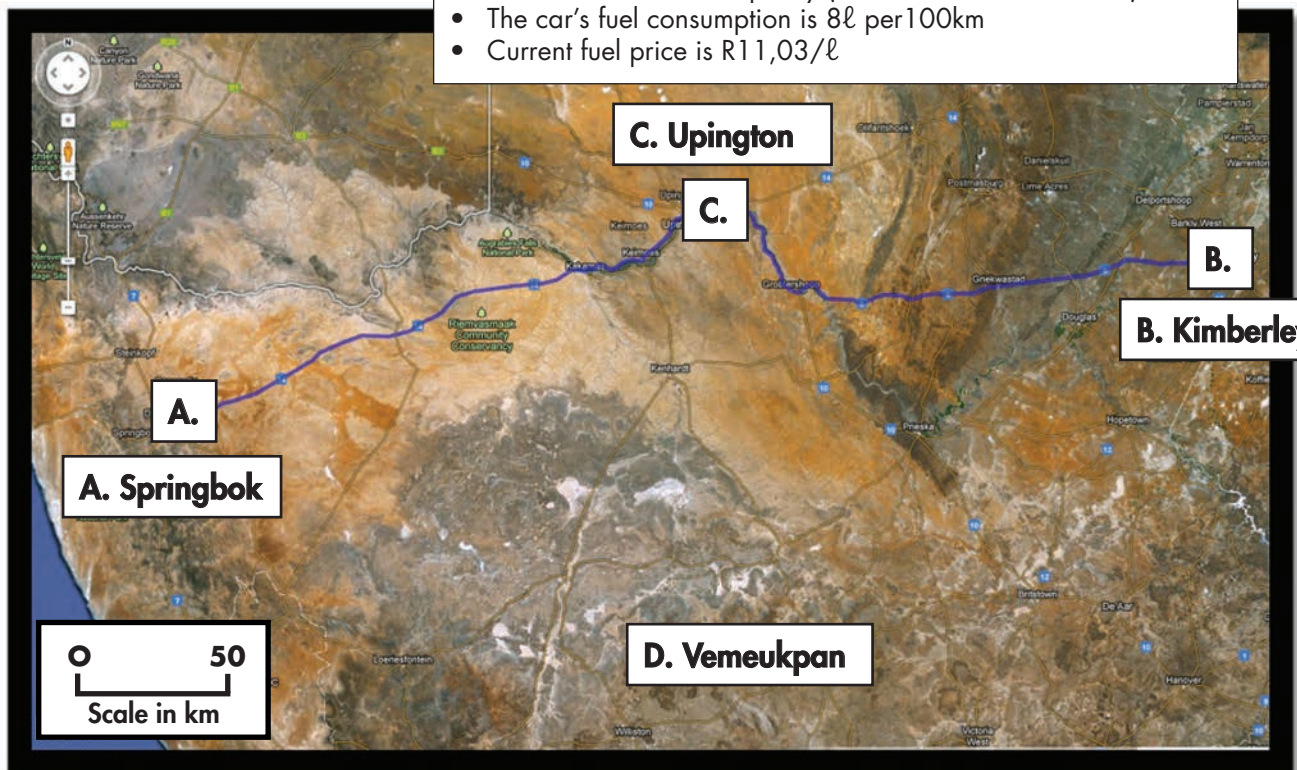
Taking a road trip to college

You are about to leave your Springbok hometown to start your studies at a college in Kimberley. Your parents have lent you their old car to drive to college and back between semesters. They gave you the following information:



Study the map below. Answer the following questions on separate sheets of paper and hand them in as an assignment with a cover page stating the names of the learners who completed this assignment.

- The car's fuel tank's capacity (amount of fuel it can hold) is 55ℓ
- The car's fuel consumption is 8ℓ per 100km
- Current fuel price is R11,03/ℓ



1. What is the approximate distance from Springbok to Kimberley, by road? (Hint: use a piece of string to measure on the map and then measure the string on a ruler.)
2. How much will you need to budget for fuel costs per trip?
3. Will your car be able to travel to Upington, from Springbok, before needing to re-fuel?
4. The speed limit on a national road is 120km/hour. How long do you think the trip will take?
5. Arrive Alive (a campaign promoting safety on the roads) recommends that you take a safety break every 2 hours or 200km. With this in mind, describe your safety break plan. Where will you take a break? What will you do on the break?
6. If you have an appointment with the hostel manager in Kimberley at 15h00, what time would you need to leave Springbok to make sure you are there on time if you travel at 120km/h?
7. If the fuel price goes up by 8%, how much more would you need to budget for the trip?
8. If your friend takes the same journey, in a newer car with a fuel consumption rate of 6ℓ per 100km, how much more or less would his/her trip cost?
9. Approximately 200km South West of Upington are some white patches on the map (D). This is where people from all over the world come to try to break land speed records. They reached the speed of 1 227km per hour in 1997. If they were to drive their special vehicle at that speed from Springbok to Kimberley in a straight line, how long would that journey take?
10. Make up one question of your own and answer it yourself.

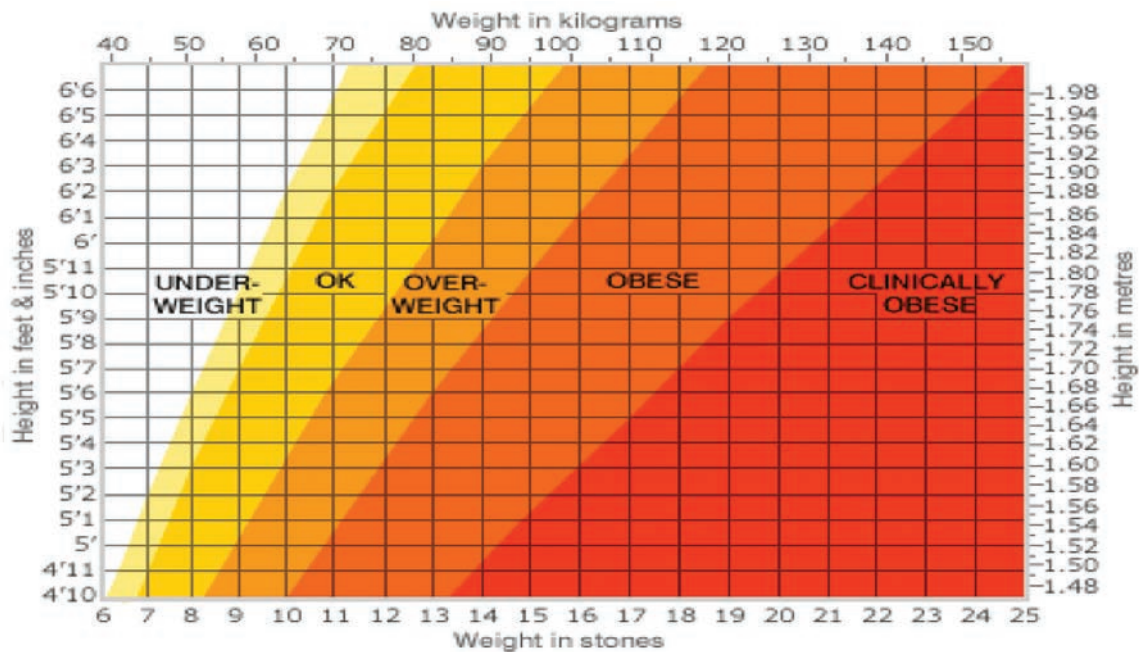
A Healthier Me

A group of Grade 12 learners have decided to start a 'Healthier Me' club at school. Starting in January, 15 girls and 10 boys sign up on the first day. All learners have their weight and height measured. They also attend a wellness session presented by the school's sports teacher, Mr Shabangu. He tells them the following:



Study the table below. Answer the following questions on separate sheets of paper and hand them in as an assignment with a cover page stating the names of the learners who completed this assignment.

- As a start they should try to do some form of exercise 3- 4 times a week.
- They should alternate (swap between) 20 – 30 minutes cardio exercises (e.g. jogging, brisk walking, cycling, swimming) and some light weight training (e.g. use dumbbells, bar bells or gym machines) on different days.
- Eat 3 meals a day as well as 2-3 healthy snacks in between.
- Drink 2ℓ of water per day.
- They should first check with their doctor if they are healthy enough to start this type of programme.
- Do not exercise during the hottest part of the day, especially in summer.



- The Body Mass Index (BMI) chart calculates the BMI by using this formula: $BMI = \text{Weight (kg)} \div \text{Height (m)}^2$. Jodie weighs 70kg and is 1.6m tall.
 - 1.1. What is his BMI?
 - 1.2. In which category would that place Jodie? See BMI table above.
- What would an ideal weight be for Jodie? Use the table.
- Our Healthier Me club's BMI results are as follows: 8 of the girls and 4 of the boys have a BMI classification of 'Clinically Obese'; 4 girls and 4 boys are 'Okay'; and the remaining 3 girls and 2 boys are 'Underweight'. Plot this data on a compound bar graph indicating both the boys and girls in separate bars on the same graph.
- Why, in your opinion, is it not healthy to be either over or under weight?
- Is it possible that a weight of 97kg can be regarded as a healthy weight for someone? Explain your answer.
- How many bottles of water should Mary drink per day if one bottle's volume is 250ml?
- If you are taking a brisk walk, approximately how many steps would you take in 20 minutes? (Time yourself while counting your steps)
- The "Healthier Me" club members do not have weight training equipment at home or at school, what could they safely use as alternative equipment to do some light weight training?
- Design a 7-day Wellness programme. Include water, food, exercise, etc. into one complete programme for the "Healthier Me" club to use as guidelines to start their journey to a healthier future.

Unit Title:
My Business

UNIT CONTEXT: Business Budgets

CAPS Link: Topics, Sections and Contexts

Basic Topic:

- Representations of relationships in tables, equations and graphs

Application Topics with relevant Sections:

- Finance
 - Income, expenditure, profit/loss, income –and-expenditure statements and budgets
 - Business income and expenditure items
 - Cost price and selling price:
 - Identify the costs associated with manufacturing / producing an item in order to determine the cost of production and/or cost price of an item (understanding the difference between these two)
 - Decide on an appropriate selling price for an item based on an expected percentage profit
 - Break-even analysis:
 - Understand the break-even point is made up of two values (the number of items that should be sold and the amount of money that should be made from the sale of those items)
- Measurement
 - Calculate /measure the perimeter and area of objects by:
 - Calculation of rectangles, triangles and circles using known formulae
 - Conversions
 - Convert units of measurement using given conversion factors

Contexts:

- Income and expense items for businesses
- Staff costs (and total cost to company) within a business and understanding payslips
- Cost price, selling price and break-even analysis within a business
- Sourcing business premises for particular business needs (analysing area and perimeter)

In this unit...

In this Unit, we focus on business budgets. Learners discuss the items specific to business budgets. In addition, they will be introduced to other financial documents which form part of budgeting, such as cash flow budgets and projections. The concept of exchange rates is revised and integrated with budgets. Rental of floor space and conversions of measurement units and exchange rates and how these relate to business budgets are also covered. At the end of this Unit learners will be able to:

- define staff costs as part of a business budget;
- read and interpret pay slips;
- list the items that are included in an employee's total cost to company;
- discuss options to reduce expenses in business budgets; and
- calculate area and perimeter for sourcing business premises (including conversions).



Sequence of activities

1. Business budgets

- Businesses need budgets too. Businesses employ people and they have costs and sales (income and expenses). To make a successful business, you need to ensure that you make a profit i.e. more income than expenditure. Talk about items that would be needed in a business budget. Discuss with the class that a number of specific items need to be included in business budgets.

Staff costs	This includes salaries, pension fund costs, medical aid, bonus allocation. (Salaries must increase annually at least at the rate of inflation, the reason being that because prices rise, the same salaries will not be able to buy as much with every passing year.)
Rent	This is the cost of space used for business and is calculated per square metre.
Stock	The number of items available for selling or to use in the production of other products. Stock which is recorded on an inventory are either manufactured or bought (locally or in other countries).
Equipment	This is equipment and/or tools needed to do your business (computers, furniture making tools, cooking pots).
Income	Income from services offered or goods/products sold locally or in other countries (exports).
Insurance	For buildings, equipment, unemployment insurance, etc. (more in Unit 8).

MONEY MANAGEMENT RULE:

Make sure that you consider all hidden costs in your business budget.



MONEY MANAGEMENT RULE:

Immediately take corrective action if your budget does not balance—if you wait too long, things will spiral out of control.

2. Calculating area & perimeter

- When a business uses space in an office or factory, rent is calculated based on square metre.
- Floor area is given in square metres, also written as m^2 .
- How do you calculate floor space and cost per m^2 ?
- Explain to the learners that any floor space can be calculated as an area by dividing it into basic shapes such as squares, rectangles and triangles.
- The border of a space is known as the perimeter (e.g. the fence around a property).
- Example:**

Siphiwe wants to rent a workshop. He needs to work out how much the rent of the shop will be. But, the workshop has a very strange shape—it is not square! The shop's floor area looks like this:



This shape looks a bit unusual and seems difficult to calculate, but you can see that this shape can be divided into 2 triangles and a rectangle.

- So, while it is difficult to work out the area of the shape as a whole, it is much easier to calculate the area of the separate shapes, and add these together.

Sequence of activities

• **Formulae:**

Write down these formulae on the board and have learners copy this into their workbooks:

- ◆ Area of a square or rectangle: Length x Width.
- ◆ Area for a triangle: $\frac{1}{2}$ Base x perpendicular height
- ◆ Perimeter is the addition of all sides to give a running metre answer:
e.g. $L + W + L + W$

- You must measure the area of the two triangles and the area of the rectangle separately and add them all together to calculate the total floor area:

- ◆ Let's start with the rectangle:
Length 5m x Width 3m
= 15m^2

- ◆ Now the two triangles:
Base 3m x Height 2m
= $6\text{m} \div 2$
= 3m^2 .

- ◆ There are 2 triangles, so the total area of both triangles is 6m^2 .
- ◆ Total area of the shop floor = $15\text{m}^2 + 6\text{m}^2$
= 21m^2 .

- Calculate how much rent is payable:

- ◆ Rent is usually given as cost in Rands per square metre (R/m^2).
- ◆ To calculate the rent: multiply the space in area (m^2) by the rent.
- ◆ For Siphwiwe's shop, the rent is $\text{R}600/\text{m}^2$. He will therefore have to pay $21 \times \text{R}600 = \text{R}12\,600$ per month.

• **Examples:**

Work through the following examples with the learners:

- ◆ Calculate $21\text{m}^2 @ \text{R}110/\text{m}^2 =$ how much rent per month? (Answer: $\text{R}2\,310$ rent per month)
- ◆ Calculate $300\text{m}^2 @ \text{R}82/\text{m}^2 =$ how much rent per month? (Answer: $\text{R}24\,600$ rent per month)
- ◆ Calculate $150\text{m}^2 @ \text{R}102/\text{m}^2 =$ how much rent per month? (Answer: $\text{R}15\,300$ rent per month)

DID YOU KNOW:

Imperial units: This old system came from Britain, and is based on measurements such as a foot or mile (length) and pound (mass) —also called British units.

Metric units: This internationally-used system is decimal measurement, based on increments in tens. (ie. centimetres and kilometres).



Sequence of activities

3. Converting units

- **Imperial and metric units:** Not all countries use the same units for measurement. For example, to measure distance certain countries use inches, yards and miles (Imperial system); while other countries use centimetres, metres and kilometres (metric system).

Copy the following table for learners to use and keep as an information resource:

Imperial/USA unit	Metric (SI) Unit	Imperial/USA unit	Metric (SI) Unit
Inch	2,54 centimetres	Centimetre	0,39 inches
Foot	30,48 centimetres	Metre	3,28 feet
Yard	0,91 metres	Metre	1,09 yards
Mile	1,61 kilometres	Kilometre	0,62 miles

Degrees Fahrenheit (°F)	Degrees Celsius (°C)
32°	0°
40°	4°
140°	60°
150°	65°
160°	70°
170°	75°
212°	100°
275°	135°
300°	150°
325°	165°
350°	175°
375°	190°
400°	205°
425°	220°
450°	230°
475°	245°
500°	260°

Lindiwe uses a recipe that states the following:

- ◆ Use a pan 8 inches wide.
- ◆ Bake at 177° Celsius.
- ◆ Use half an ounce of butter and 4 pounds of sugar.

Imperial/USA unit	Metric (SI) Unit
Ounce	28,35 grams
Pound	0,45 kilograms
Gram	0,035 ounces
Kilogram	2,21 pounds

Convert the following:

- ◆ Convert 8-inch pan into centimetres.
- ◆ Convert 177° Celsius into Fahrenheit (use the value closest to 177°C in the table).
- ◆ Convert half an ounce into grams.
- ◆ Convert 4 pounds of sugar into kilograms.

(Answers: 20,32cm; 350° Fahrenheit; 14,175 grams; 1,8kg of sugar)

- ◆ To explore points 2 and 3 in a more practical way, learners complete **Worksheet 2** in pairs.

4. Cost of production and cost price:

Cost price and selling price are core to any business as this sets the profit margins which allow the business to be successful or not. Recap this section (as was covered in Grade 11). Discuss and demonstrate on the board:

Cost of production:

- The costs related to **making or acquiring (getting) goods and services** that directly relates to generating an income for the business. Production costs combine raw material and labour.
- **How to work it out:**
 - Take all costs into account (including goods purchased, shipping costs, insurance during transit, import taxes (if applicable), direct labour costs, indirect costs (also called common costs) such as telephone and electricity) = cost of production.

Cost price:

- This is the amount that it cost per unit to either manufacture it, purchase it or to prepare for a service that will be delivered.
- This amount is pure cost, no mark up or profit added yet.
- **How to work it out:**
 - Cost of production divided by number of units = cost price

For example: A young man makes and sells wire cars in front of the local school. In order to make ten wire cars in a week he needs 30m of wire @ R2,50 per metre; 20 rolls of insulation tape (for decorating purposes), one red and one black per car @ R5,50 each and 4 plastic wheels per car @ R10,00 per set of 4. His total **cost of production** for the 10 cars for the week is $R75,00 + R110,00 + R100,00 = R285,00$.

His **cost price** is: $R285 \div 10$ wire cars per week = R28,50 per wire car

Sequence of activities

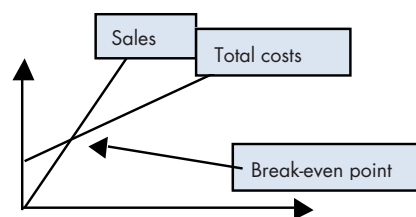
5. Selling Price: Discuss and demonstrate on the board:

Selling price:

- This is the price at which something is offered for sale.
- **How to work it out:**
 - Take the cost price + a percentage profit added = selling price (Add 1 to the profit percentage.
For example: 1 plus 25 percent profit = 1.25. This is the overall sales price percentage: i.e. R28,50 per wire car \times 1.25 = R35,63 selling price per wire car.

6. Break-even analysis

Break-even point is where the business is at an activity level (doing business) at which **total costs = 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). See Break-even figure.



For example: Our young man selling wire cars at the school gate needs to sell enough wire cars to cover the R285,00 cost price, thereafter each wire car he sells in that week, is profit, i.e. $R285,00$ (cost of production) \div $R35,63$ (selling price) = 8. This means that he must sell 8 wire cars to cover his costs—this is his break-even point.

- Divide the class into groups of 3–4 learners. Prepare ahead of time: Cut various strips of paper with different types of small businesses written on them e.g. Chinese take-away shop in a small shopping centre; a shoe repair person working from the street corner; a hairdresser working from her home; a sales person who buys goods from a large factory shop and resells the goods to motorists at traffic lights; etc.
- Each group works out a cost price of an item of that business; then they calculate the selling price (they can decide on any profit percentage they would like to charge) and lastly they work out the number of items they need to sell to break-even. This work is written up neatly and handed in for marking purposes.



Suggestions for daily assessment

Mathematical Content	Activity/exercise	Type of evaluation/assessment
<ul style="list-style-type: none"> • Percentages • Conversions of units of measurements • Calculating area and perimeter • Calculating cost price, selling price and break-even point 	Class discussions; Case study (business budgets); drawing up budgets and doing simple projections; Worksheet 2	Participation in class discussion; marking of written work; self-assessment, Worksheet
<ul style="list-style-type: none"> • After completing Worksheet 2, write the following self-assessment checklist on the chalkboard. Learners use the checklist to assess their own knowledge. Learners who experienced difficulties should revise the relevant Grade 11 work. • Self-assessment <ul style="list-style-type: none"> ✓ I can calculate area (m^2) and perimeter (m) ✓ I can convert data from one system to another (metric to imperial) ✓ I can calculate cost per m^2 ✓ I can make decisions regarding the most suited type of office space and environment according to the needs of that particular business 		

Learner Worksheet

1. Look at the following office spaces available to rent. Work out the monthly rental amount of each floor plan option.

A

R 100.00/m² per month rent.
Ground floor unit.
Cost per month: R _____

B

R 110.00/m² per month rent.
Ground floor unit.
Cost per month: R _____

C

R 80.00/m² per month rent.
1st Floor unit, no windows, air-conditioned.
Cost per month: R _____

D

£8/m² per month rent.
Kiosk in the middle of a shopping mall passage.
Cost per month: R _____

Information Box:

- Current Exchange Rate is: R (rand): £ (pound) = 10:1**
- Imperial/USA unit: 1 yard = 0.91m (round off your answer)**

2. Now decide which **type of business** best suits each **floor plan option** and complete the table below by filling in the correct letter (e.g. B) in the second column below.

Type of Business	Option A, B, C or D and state why?
i) Clothing Store	
ii) Call Centre Agency	
iii) Fast Food Take-away	
iv) Biltong and Nut Shop	

3. Answer the following questions using all the information above:

3.1. Which options offers the lowest rate per m² ? _____

3.2. Name 2 more types of businesses that would suit the store layout of option A:

3.3. Which option has the largest floor space? _____

3.4. Why would option D not be suited as office space? _____

Unit Title:

Matters of Interest

UNIT CONTEXT: Working With Interest**CAPS Link: Topics, Sections and Contexts****Basic Skills Topics with relevant Sections:**

- Interpreting and communicating answers and calculations
- Numbers and calculations with numbers

Application Topics with relevant Sections:

- Finance
- Banking, loans and investments (loans and investment)
 - Investigate the following types of loan scenarios:
 - Informal loan agreements between family members
 - Hire-purchase agreements

Contexts:

- Determining the real cost of a loan and the interest paid on a loan

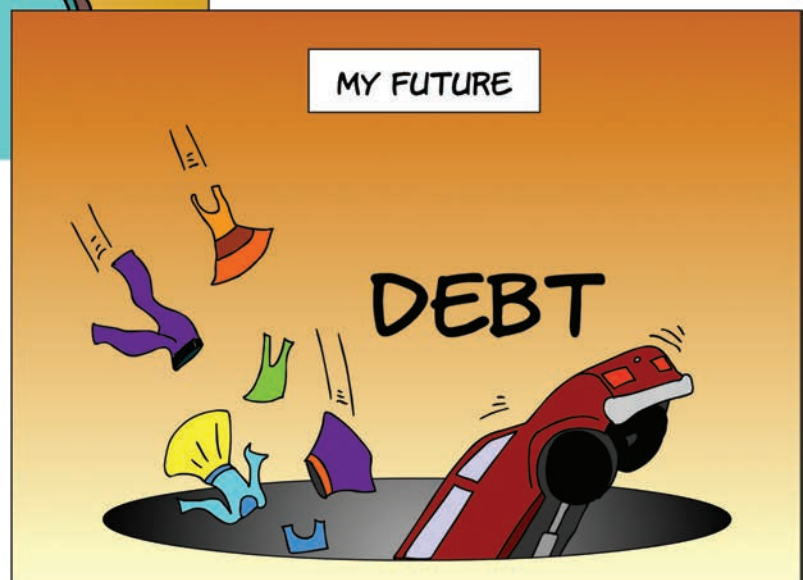
In this unit...

In this Unit the focus is on money owned and owed, credit, the dangers of 'bad' debt and how to handle debt responsibly. Learners will work with percentages and revise simple and compound interest in a practical scenario. The focus will be on how to calculate debt repayments and how much can be saved by paying off debt quicker. Implications of buying on credit versus buying on cash are also discussed. At the end of this Unit learners will be able to:

- calculate loan repayments;
- work out and explain the concept of simple interest;
- work out and explain the concept of compound interest (maximum of 3 years' calculations using a year-on-year table);
- explain how paying off debt quickly can save you interest; and
- display relevant interest data on graphs.



**BEWARE
THE TRAP!**



Sequence of activities

Money management means being aware, responsible, controlling your spending and managing debt.

1. What is credit?

- Ask learners what they understand 'credit' to be and to give examples.
- Forms of credit and what each is used for:

Home loan	House, flat, townhouse, etc. You must usually pay a deposit.
Vehicle financing	Car, bike—you are usually required to pay a deposit.
Instalment Sales Agreement	Large purchases such as furniture, televisions, music centres etc—with or without deposit.
Clothing accounts	Clothes, cosmetics, etc—no deposit
Lay-by	Mostly clothes and linen—lay-by 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 in full.
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.

- Revise the work covered in Grades 10 (Unit 9) and Grade 11 (Unit 4 and 6).
- Talk about credit and where you can get credit; a good example is clothing stores.
- Deposits: This is an initial amount customers must pay when purchasing goods and services on credit. The deposit is deducted from the total amount and the rest of the credit is paid off in monthly instalments. The bigger the deposit, the smaller the instalments and the shorter the repayment period.
- It is ALWAYS more expensive to buy on credit than to buy CASH, because interest is charged on the outstanding amount (remind learners of work covered in Grade 11).
- REMEMBER: Everything borrowed or bought on credit will have to be repaid eventually!

2. How to estimate the cost of an item purchased on credit

- Real cost = monthly payments x number of months. Remember to include any additional insurance or interest costs.
- Compare this amount to the cash price of the product that you want to buy; the difference is the finance cost you will pay to finance the debt as opposed to paying cash.
- **Example:** Lionel wants to buy a new sound system. The cash price is R16 000. He can also buy it on credit on an Instalment Sales Agreement. The Instalment Sales Agreement requires R4 000 deposit and instalments of R400 per month, over 3 years. What is the difference between the cash price and the credit price?

Instalments = $R400 \times 36 \text{ months} = R14\,400$

Credit price: deposit R4 000 plus total instalments of R14 400 = **R18 400**

Cash price = **R16 000**

Lionel will pay R2 400 more if he buys the sound system on credit than if he buys it cash.

- **Conclusion:** It is definitely better to buy cash!

MONEY MANAGEMENT RULE:

Only use credit to buy things that last longer than it takes for you to pay for them. Make sure your budget shows that you can afford the monthly payments.

MONEY MANAGEMENT RULE:

Cash is king – always look for discount deals when paying cash.

MONEY MANAGEMENT RULE:

"Own, don't owe."



Special Offer!

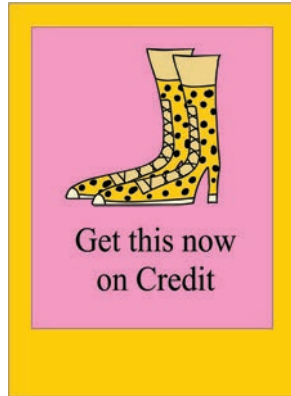


Only R800 per month (24 Months)
Cash R16000

Sequence of activities

3. When to use credit

- Talk about needs and wants again—credit should only ever be used for things that are needs, and not for luxuries.



- Not all credit is bad—sometimes it is necessary to use credit. Ask learners to list examples of good and bad credit, also in a business environment (good—e.g. as start-up capital for starting your own business). An advantage of using credit is that you can immediately get whatever you need; the biggest disadvantage is that you pay more than what you would have paid if you waited, saved, and paid cash.
- **Activity:** Ask learners to find advertisements in newspapers and magazines, or even on TV, where businesses are tempting consumers to buy luxury goods on credit.

4. Simple interest

- The cost, or the price, of credit is called interest. This is the amount you pay for the privilege of not paying the total amount of the debt in one payment.
- Simple interest: when interest is paid only on the principal sum (the amount borrowed).
- **Example:** John borrows R4 000 from his father to fix his bike. His father charges 5% simple interest per year. John must pay back the money over 3 years.

Year	Amount borrowed	Interest rate	Interest value	Total
1	R4 000,00	5%	R200,00	R4 200,00
2	same R4 000,00	5%	R200,00	R4 400,00
3	same R4 000,00	5%	R200,00	R4 600,00
Totals			R600,00	R4 600,00

John pays R600 in interest—He repays a total amount of R4 600.

5. Compound interest

- Remember: Compound interest means the interest is added to the principal debt or investment: you pay or earn 'interest on interest'. It may be calculated weekly, monthly or a few times in a year.
- **NB:** You can save money by paying off credit faster or earn great interest on investments.
- Let's use the year-on-year calculation of compound interest to further investigate this form of interest.
- **NB:** According to the CAPS document (page 54), 'Learners are **not** expected to work with any formulae here. The focus is on developing an understanding of the concept of a compounding calculation, that is, where the values used in a calculation draw on answers/values from a previous calculation.'

Sequence of activities

- **Example:** Calculating compound interest on a bank loan

You take out a loan of R50 000 from SmartBank to pay for your studies. SmartBank charges 18% compound interest per year for 3 years (36 months). You only need to start paying back the loan after you finish your studies after three years. Determine the following:

- Your total loan amount, including the interest.
- The total amount of interest that you will pay. (Hint: Deduct the original loan amount of R 50 000 from the total loan amount—see a) above—to determine the total amount of interest that will be paid on this loan agreement.)

Detailed Calculations:

Year	Amount borrowed	Interest rate	Interest value	Total
1	R50 000,00	18%	R9 000,00	R59 000,00
2	R59 000,00	18%	R10 620,00	R69 620,00
3	R69 620,00	18%	R12 531,60	R82 151,60
Totals			R32 151,60	R82 151,60

- Total loan amount is: R82 151,60.
- Total amount of interest: $R82\ 151,60 - R\ 50\ 000 = R32\ 151,60$ total interest.

7. Getting help

- In small groups, have learners brainstorm solutions for people who are experiencing debt problems.
- Discuss 2 possible solutions to use when having debt problems:

♦ **Pay off loans with highest interest rate first.**

Read and discuss the following case study with the learners.

Example:

Lindi has the following debts:

- A bank loan of R20 000 @ 16% interest – she still owes R15 000.
- House bond of R300 000 @ 18% interest – she still owes R270 000.
- Credit Card @ 22% interest – she still owes R8 000.
- Clothing account @ 18% interest – she still owes R4 572.

Which card/loan should Lindi try to pay off first? (Highest interest rate and balance = house bond)

Lindi receives an annual bonus of R25 000. What would be the wisest way to use this money? (Pay into bond or pay off all her 3 small debts and then use the money she would have paid on these 3 debts every month to pay her bond.)



Sequence of activities

◆ Debt counselling

There are currently more than 2 300 registered debt counsellors in South Africa.

Q: What do they do? **A:** *The purpose of a debt counsellor is to ensure that a consumer's income is used efficiently and that the debt will eventually be paid off. A debt counsellor will go through your finances and decide whether you are over-indebted (expenses are higher than income). The counsellor will then work out a debt management plan.*

Make sure the debt counsellor used is registered with the National Credit Regulator.

8. Frequently asked questions

- **Q:** How many credit card/clothing account payments may I skip on my credit?

A: *None, if you did not arrange it with the credit provider!*

- **Q:** What happens if I do not pay my debt for a month or more?

A: *If you have a bad credit history, it has a negative effect on your credit profile. When you apply for credit, the credit provider will check your credit history through a credit bureaux, and if you have a bad credit history, they will refuse to give you credit. This is referred to as 'negative listing'. You can avoid this by talking to the credit provider and making an arrangement to repay your debt, or by using a debt counsellor.*

- **Q:** What are Credit Bureaux?

A: *Credit Bureaux are companies that keep a record of all consumers who use credit as well as details of their credit record. All credit bureaux are registered with the National Credit Regulator.*

- **Q:** How can I get my credit information?

A: *You can get a copy of your credit information from any registered credit bureau free of charge every 12 months.*

Suggestions for daily assessment

Mathematical content	Activity/exercise	Type of evaluation/assessment
<ul style="list-style-type: none"> • Percentages—interest rates; compound and simple interest over varied time periods • Graphs • Calculations—total costs cash vs. credit; cost savings by paying debt over a shorter period of time 	Class discussions; Case study (debt problems); calculating compound and simple interest; Worksheet 3	Participation in class discussion; marking of written work; self-assessment
<ul style="list-style-type: none"> • After learners have completed Worksheet 3, you could write the following self-assessment checklist on the board. Learners use the checklist to assess their own knowledge. Learners who experienced difficulties should be encouraged to revise the Grade 11 work from last year to consolidate their knowledge and skills: • Self-assessment <ul style="list-style-type: none"> ✓ I can use the year-on-year table to calculate simple interest on loan options. (yes/not yet) ✓ I can use the year-on-year table to calculate compound interest on loan options. (yes/not yet) ✓ I can show how paying off loans quicker saves money. (yes/not yet) ✓ I know that credit should only be used for necessities and that all options must be carefully considered. (yes/not yet) ✓ I can draw a graph to show the effect of paying off debt quickly as well as the effect on monthly instalments. (yes/not yet) 		

Learner Worksheet

1. Calculate the loan repayments in the following cases:
 - 1.1. Jenny bought a lounge suite for R18 000 on an Instalment Sales Agreement. She paid 10% deposit, and agreed to pay off the debt over 24 month at 15% simple interest. Calculate the total loan repayment amount. (Use a year-on-year table.)
 - 1.2. You take out a student loan from Bank SA of R15 000. You agree to pay it off as follows: over 3 years at compound interest of 12%. What would your monthly instalment be? (Use the compound interest year-on-year table to assist your calculations.)

2. Stanley needs to borrow R55 000 from the bank to buy his first car. His interest rate is 15% compound interest per year. Stanley needs to decide what the best loan option would be. Use the compound interest year-on-year table to assist your calculations for 2.1. in order to help Stanley make a good choice between the following three options.
 - 2.1. Work out the monthly instalment as well as the total loan amount for the following three options:
 - Option 1: Over a 3 year period (36 months)
 - Option 2: Over a 2 year period (24 months)
 - Option 3: Over a 1 year period (12 months)
 - 2.2. Using the data from the calculations in Options 1, 2 and 3 above, plot the following data on a graph: the relation between number of years of a loan period and the total loan amount. (Hint: horizontal-axis = Number of years to repay loan; Vertical -axis = Total loan amount. Remember to add a title to your graph.)
 - 2.3. Looking at the data on your graph, which option would you advise Stanley to take and why?

3. Match the forms of credit to what they are used for

Credit	What it is used for
Home Loan	Goods and products such as furniture can be purchased through a longer term lease or hire agreement (hire purchase), insurance products added until it is paid off.
Vehicle financing	Mostly clothes and linen—lay-by 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 in full.
Instalment Sales Agreement	Buying a car, bike or motorboat
Clothing accounts	Large purchases such as furniture, televisions, music centres, etc—with or without deposit
Lay-by	House, flat, townhouse, etc. You must usually pay a deposit
Hire purchase	Clothes, cosmetics, etc—no deposit

Unit Title:

What do banks do?

UNIT CONTEXT: Investments

CAPS Link: Topics, Sections and Contexts

Basic Skills Topics with relevant Sections:

- Interpreting and communicating answers and calculations
- Numbers and calculations with numbers

Application Topics with relevant Sections:

- Finance:
 - Financial documents (Banking documents e.g. bank statements)
 - Banking, Loans and Investments (banking)
 - Investigates types of bank accounts
 - Interpreting banking documents and understanding banking terminology
 - Exchange rates:
 - Work with exchange rates presented in foreign exchange tables for different currencies

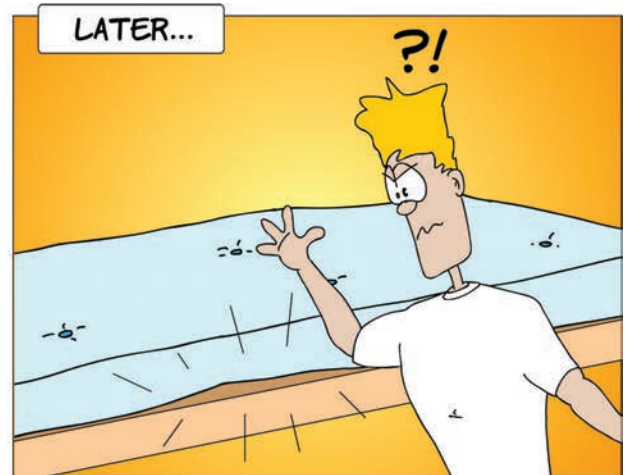
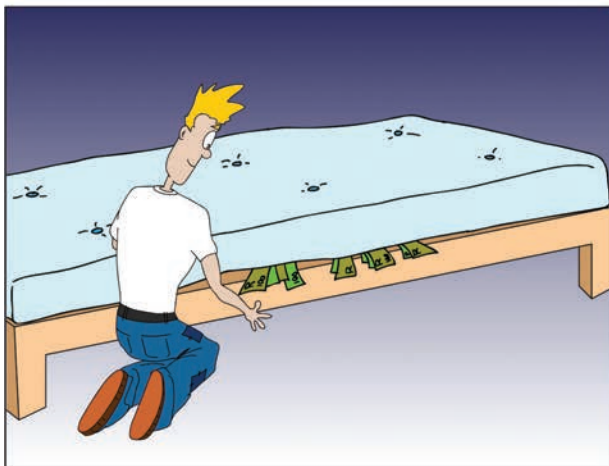
Contexts:

- Understanding the various services offered by banks
- Read and interpret information on bank statements

In this unit...

In this Unit the focus is on how to use the money you make to the best advantage by not spending it all, but by making plans and provision for the future. Learners must understand that saving and investment is not like a 'chore', but rather a fun project that will enable them to realise their dreams. At the end of this Unit learners will be able to:

- discuss items on a bank statement;
- explain how the Reserve Bank influences commercial banks' interest rates;
- explain the difference between repo rate, prime rate and lending rate (for information only—not for exams);
- calculate interest rates based on repo and prime rates; and
- discuss different savings and investment options.



Sequence of activities

- Ask a few learners to share their financial dreams, however 'far-fetched' it may seem now (anything is possible and that any financial goal can be achieved, provided that you have a financial plan in place (Unit 1 and 3), budget properly (Units 2 and 4) watch your debt (Unit 5), and making sure your risks are covered (Unit 8)). The last piece of the puzzle is using the money you make wisely to ensure that you have a more financially secure future.
- The money you earn is the start of your financial security. It is how you use it that will make you more financially independent! A person's wealth is not measured in the amount of money he/she saves, but in how much the money grows—that is, how much interest the savings earned him or her.
- IT'S ALL ABOUT THE CHOICES YOU MAKE. Earning compound interest is one of the main keys to wealth!

1. What do banks do? How do they make money?

- Revise the information learnt in Grade 11. Explain that banks use clients' money to lend out to other clients. The interest they receive on loans is used to (a) cover the bank's costs and (b) pay interest to clients who invest with them.
- Banking Services and Fees: Talk about additional services that banks offer (ATMs, debit and credit cards, cell phone banking, electronic and internet banking). Ask learners who make use of these and to share their experiences.
- Bank fees are charged on a number of bank products and services, such as card activation, issuing cheques, cashing cheques, lost card replacement, balance fees, transaction fees, administrative costs and enquiry fees.
- **Activity:** Look at the following bank statement:

RED BANK			
	Cheque Account Statement J Nokwe July 2014		
	Debit	Credit	Balance
Opening Balance 30 June			+R13 890,00
Cheque Deposit		4 568,00	+R18 458,00
Cheque fee cheque no. 566	- 2,20		+R18 455,80
ATM withdrawal Benoni West	- 700,00		+R17 755,80
ATM fee	- 1,40		+R17 754,40
Internet transfer to account 865 40093	- 480,00		+R17 274,40
Purchase Supershop Menlyn Debit card	- 850,00		+R16 424,40
Debit card fee	- 2,00		+R16 422,40
Internet banking fee	- 5,60		+R16 416,80
Head office admin fee July	- 6,50		+R16 410,30
Closing balance 31 July			+R16 410,30

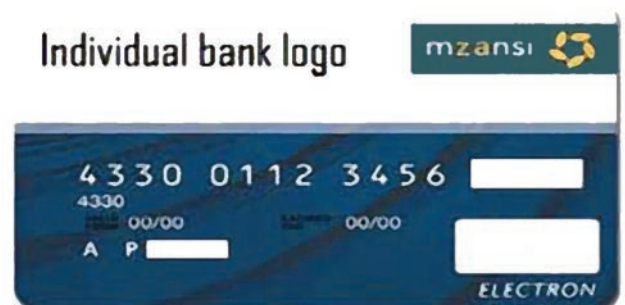
To do: Calculate the total bank costs for July 2014?
(Answer: R17,70)

• **Debit Card & Credit Card**

A debit card can be used to pay for purchases made. You can only buy for the amount that is in your account. When you use a credit card, it is a debt—that is, you buy for more than what is in your account.

2. The role of the Reserve Bank

- The Reserve Bank is the 'central bank' in South Africa. They issue bank notes and determine policies with regard to the availability of money (this is called monetary policy).



Sequence of activities

- Repo rate: From time to time, the Reserve Bank determines what is called the 'repo rate'. This is the interest rate at which the Reserve Bank lends money to the commercial banks. The repo rate is the 'price' that the commercial banks pay to the Reserve Bank for borrowing its money.
- Prime rate: The prime rate is the interest rate at which banks lend this money that they borrowed from the Reserve Bank, out to the public. To make money, the commercial banks add a percent or so on to the repo rate. For instance: Blue Bank borrows money from the Reserve Bank at the repo rate of 10%. They add 2% on to that and lend out money to clients at the Blue Bank prime rate, that is, 12%.
- Blue Bank can lend money to clients at interest charged at the prime rate, or they may charge interest below or above the prime rate. The rate at which they lend money to consumers is based on the consumer's spending behaviour and credit history.
- From time to time the Reserve Bank changes its repo rate. You may have seen headlines in newspapers such as: "SA's repo rate has been cut by 50 basis points". What are basis points?
- Base Points: A percentage point comprises 100 basis points.

Example: So, 50 basis points = half a percentage point.

- ◆ A move from 10,5% to 15,5% is 500 basis points, or five percentage points.
- ◆ If the prime overdraft lending rate declines by 50 basis points to 15%, it means the rate went down by 0,5 percentage points.
- In Summary:
 - ◆ Reserve Bank to Commercial banks = Repo rate.
 - ◆ Commercial banks to Consumers = Lending rate (Prime Rate/adjusted according to the consumer's spending behaviour or credit history).

Note: When the Repo Rate of the Reserve Bank is changed (either increased or decreased), Commercial Banks adjust their Prime Lending Rate which in turn affects your monthly credit instalments, unless your loan has been signed at a fixed interest rate.

Note: Repo rate and prime rate are not examinable sections; the information is for understanding purposes only.

3. Savings products

- Savings products specifically for young people.
- All commercial banks have products specifically designed for the youth market. Most of these products:
 - ◆ have ATM debit cards that you can use to draw cash or pay for purchases;
 - ◆ offer compound interest rates on credit balances (savings);
 - ◆ charge low or no service fees (remind learners that some banks charge more if the client uses another bank's ATM);
 - ◆ do not need a minimum opening account balance (there may be as little as R10 in the account); and
 - ◆ offer various competitions and promotions especially for their young clients.

4. Access accounts

- The Access Account has been designed to meet the savings and transactional needs of entry level banking clients, especially the people who have never had a bank account previously.
- Revise Access Accounts from Grade 11. Ask how many learners have opened these accounts since then. Now talk specifically about how Mzansi accounts can help learners realise their financial goals.
- The Access Account is available from most commercial banks for anyone over 16 who has never had a bank account before. All you need to open an account is a green South African ID book and a minimum deposit as specified by the bank you choose.
- Access Accounts offer benefits such as, you:
 - ◆ get a debit card;
 - ◆ pay for items at shops where you see the logo displayed;
 - ◆ can withdraw or deposit cash at any ATM nationwide;
 - ◆ get one free cash deposit every month;
 - ◆ only pay higher transaction fees if you make more than 5 deposits and 5 withdrawals each month;
 - ◆ do not pay monthly administration fees;
 - ◆ are allowed Debit and Stop Orders; and
 - ◆ are not required to keep a minimum balance (ask at individual banks).

Sequence of activities

5. Retirement planning

- Even though retirement seems far in the future, the sooner you start saving for it, the less of a burden it becomes. If you start saving at the age of 35, it will cost you more than four times as much to get the same pension as if you had started aged 25. For example: a 35-year-old couple who will have to put away R462 a month in order to reach the same pension value of a 25-year-old couple who save R100 a month.

Example: How much interest will you have earned by age 60 if:

- ◆ you invest a bulk amount of R20 000 at the age of 40 at a compound interest rate of 4%? (Answer: R23 822,46)
 - ◆ you invest a bulk amount of R20 000 at the age of 20 at a compound interest rate of 4%? (Answer: R76 020,41)
- If the investment is calculated with compound interest, the value will grow even faster.

6. Informal savings—Stokvels

- Ask learners about their experience of stokvels.
- Traditionally, stokvels refer to any of the informal co-operative savings schemes and is characterised by a group of people who meet regularly to put a fixed amount in a group account. Members then take turns to draw the savings.
- Copy this information box on the board or read it to the learners:

**What are stokvels?**

Stokvels are community savings clubs that create savings for members because of the increased buying and bargaining power.

Most stokvels work as rotating savings clubs. Members contribute a specified monthly sum to the club, with each of them getting to keep all the contributions when their turn in the rotation arrives. Some stokvels operate as funeral clubs and only pay out a specified amount, on the death of a registered beneficiary. This is a good tool for saving and provides an exciting social environment as well.

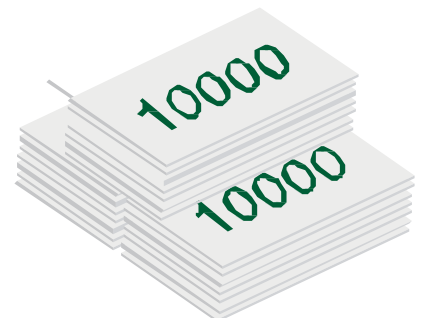
There are at least 800 000 active stokvels in South Africa with a total membership of approximately 10 million people. Although stokvels started off as a very informal concept, it is increasingly regulated.

Government has realized that it has to support and encourage informal community-based savings. Consequently institutions have been introduced to give guidance to stokvels, such as National Stokvels Association of South Africa (NASASA) and the Stokvel Company.

Some banks also offer accounts specifically for stokvels.

• **LAST BUT NOT LEAST: SOME USEFUL SAVINGS TIPS:**

- ◆ Take care of your small coins and watch them grow! Those little 5, 10, 20 and 50's can quickly add up if saved.
- ◆ Save at least 10% of your total income. It does not matter how you earn your income, whether it is being a waiter, teacher or economist. All of us have the same opportunity. Learn to live from the 90% that is left after saving.



Sequence of activities

7. Exchange rates

- Ask learners about their understanding of exchange rates and if they have had any experience with using money when travelling to other countries. The different monetary units are called currency. You need to pay for goods and services using the local currency—e.g. in London (United Kingdom UK) you would use the British Pound—symbol = £; in Dubai you would use the United Arab Emirates Dirham (AED); in Australia the currency is the Australian Dollar (the symbol used is a \$ sign, often preceded by an 'A' or an 'AU' = AU\$).
- The value of the currencies differ—the difference between the value of one currency compared to another is called the 'exchange rate'.

'Exchange rate' = the value of one currency compared to another i.e. the amount in one currency that you would need to buy a unit of another currency. For instance, if you need R15,00 to buy one British Pound (£), we say that the exchange rate is 15 to 1 (15:1). This exchange rate changes continually.

Ask learners how exchange rates can impact on businesses. (E.g. if you import products from other countries to sell here in South Africa).

Activity: Work through some examples with learners:

Examples:

- ◆ If R1,00 = 5 ¥ (Yen is the Japanese currency), what is R4,00 in Yen? (Answer: 20 ¥)
- ◆ If \$1,00 = R10,00, what is \$5,00 = in Rands? (Answer: R50)
- ◆ If the price of a shirt in the USA = \$6. How much would you pay using the South African Rand? (Answer: R60,00)

Example:

Lindi imports pans for her cooking school, from America. The price of a pan is \$80.

- ◆ If the exchange rate is \$1 = R9,80, what would one pan cost in Rands? (Answer: R784,00 (80 x 9,80))
- ◆ If the rate changes to \$1 = R11,00, how much would one pan cost in Rands? (Answer: R880,00)

The price of the pans will also influence the price that Lindi charges for her cooking lessons and for the baked products that she sells. (She needs to recover the cost of the stove from the income she earns from her cooking lessons and from selling baked goods and still make a profit. She will probably increase the prices of her products and lessons.) So if the price of the pans increases by 10% every month because of the exchange rate, she will probably have to increase her prices by 10% as well.

Examples:

Exchange rates: R1 = \$11,50/R1 = £14,30

Rand	Dollar (\$)	Pound (£)
R 50,00	\$ 575,00	£ 715,00
R 7,20	\$ 82,80	£ 102,96
R233,00	\$2 679,50	£3 331,90
R 8,50	\$ 97,75	£ 121,55
R 2,00	\$ 23,00	£ 28,60



DEFINITION: We can define the exchange rate as the value of one country's currency compared to another country's currency.

Use this Rand/Dollar/Pound exchange rate table to practice exchange rate conversions. Have the learners do a number of conversions between different currencies. Find out the current exchange rates by listening to the radio around news time, following the exchange rate insert on television just after the news or finding the exchange rates in the daily newspaper. Emphasise how the exchange rate will influence business budgets.

Suggestions for daily assessment

Mathematical Content	Activity/exercise	Type of evaluation/assessment
<ul style="list-style-type: none"> • Calculate interest rates • Calculate Return on Investment (ROI) and Rate of Return (ROR) 	Class discussions; Case study; calculating compound interest, Worksheet 4	Participation in class discussion; marking of written work

Learner Worksheet

- List 2 advantages and 2 disadvantages of using a stokvel as a savings plan.
- Read the following case study.

Asanda Malema plans to open a shop that will sell women's clothing which she will import from China. She will call the shop 'Asanda Fashions'. The average price of a blouse is 20 Chinese Yuan (we write this as CNY 20) and CNY 15 for a skirt. She converts the price to Rand (this is called the cost price—the price that the product COSTS the retailer to buy) and adds 40% on to each price, this is called the mark-up). She then sells the blouses and skirts at these higher prices (the retail price) to South African consumers. The exchange rate is: CNY 1,00 = R1,40 • R1,00 = CNY 0,71

- 2.1 What does Asanda pay for a blouse and a skirt in Rand?
- 2.2 If she adds 40% to each of these prices in Rand, what is her selling price for a blouse?
Now calculate the selling price for a skirt?
- 2.3 List at least 8 items that Asanda must include in her business budget.
- 2.4 She needs to rent a shop. There are 3 options she could choose from:
 - * Option 1: 40m² at R88,00/m²
 - * Option 2: 60m² at R75,00/m²
 - * Option 3: 55m² at R70,00/m²

- 2.4.1 Calculate her rent for each of these options. Which do you think is the best option and why?
- 2.4.2 What other factors should she take into account when choosing the shop?

- Complete the following table by converting the units: (refer to page 27 to guide you)

3.1	200m ft
3.2	R40,42	\$ (\$1,00 = R11,00)
3.3	100°C °F
3.4	40kg lbs
3.5	£30,80	R (£1,00 = R16,40)



- Phillip runs a CD shop in Johannesburg. He imports CDs from across the world and sells them in South Africa.
 - In the last 3 weeks Phillip imported the following quantity of CDs from London; the exchange rate changed each week:
 - Week 1: 56 units (Pound to Rand exchange rate 1:16,40)
 - Week 2: 23 units (Pound to Rand exchange rate 1:14,80)
 - Week 3: 21 units (Pound to Rand exchange rate 1:15,70).
 Calculate the total price in £ and in R for each weeks' imports as well as the total for the 3 weeks.
 - Phillip imports 77 units from the UK @ £1,00 per unit; 23 units from the USA @ \$1,00 per unit and 55 units from Australia @ AUD 1.00 per unit. Exchange rates at time of import (use the appropriate exchange rate): • R1,00 = £0,06; • R1,00 = \$0,11; • R1,00 = AUD 0,15. Calculate:
 - The total price Phillip pays to the UK supplier in £ and calculate the amount in Rand value.
 - The total price Phillip pays to the US supplier in \$ and calculate the amount in Rand value.
 - The total price Phillip pays to the Australian supplier in AUD and calculate the amount in Rand value.

Unit Title:

**Consumer rights and responsibilities
– Understanding Taxation**UNIT CONTEXT: *My rights and my duties***CAPS Link: Topics, Sections and Contexts****Basic Skills Topics with relevant Sections:**

- Interpreting and communicating answers and calculations
- Numbers and calculations with numbers
- Patterns, relationships and representations
- Making sense of graphs that tell a story
- Patterns and relationships
- Representations of relationships in tables, equations and graphs

Application Topics with relevant Sections:

- Finance: Taxation (Income Tax)
 - Working with the following documents:
 - Payslips; tables containing income tax brackets and income tax formulae; tax deduction tables issued by SARS to employers; IRP5 forms; personal income tax forms to be completed by employees; net pay and tax rebates.
 - Develop an understanding of tax terminology.
 - In order to:
 - Determine an individual's taxable income, personal income tax and net pay.
 - Analyse, interpret and understand completed tax return forms issued by SARS as well as IRP5 forms supplied by the employer.
 - Investigate the effect of an increase in salary on the amount of income tax payable.
- Working with Value Added Tax (VAT)
- Data Handling:
 - Read and select data from representations (that is tables or graphs) containing data in order to answer questions relating to the data
 - Identify and describe trends/patterns in data represented

Contexts:

- Consumer rights and responsibilities within the South African context. Interpreting information regarding consumer information using graphs and tables using one relationship in a table and on a set of axes.
- Calculating personal income tax using the Tax Guide issued by SARS which indicates tax brackets and tax rebates.

In this unit...

In this Unit the focus shifts to the general rights and responsibilities that all consumers have. Learners will discuss ethical issues and paying taxes, they also do simple tax calculations, including VAT. Understanding tax and how it works and issues of ethical consumerism will be considered and learners will be encouraged to reflect on their own conduct and responsibility as consumers. By the end of this Unit learners will be able to:

- explain how to exercise their rights as a consumer;
- explain tax and how this funds government work;
- calculate income tax payable according to SARS Tax Guide using tax brackets and rebate guides;
- calculate VAT amounts payable on articles;
- calculate output VAT in a business setup;
- interpret government spending of income tax using data reflected in a bar graph and a pie chart.



Sequence of activities

1. Consumer Rights and Responsibilities

- Revise Grade 10 & 11, Consumer Rights and Responsibilities. Ask learners about what they think are consumers' main rights and responsibilities. (E.g. Rights: fair value, low prices, honest advertising. Responsibilities: don't buy stolen or pirated goods, etc.)
- Copy and/or read the following information to learners:

Consumer rights

The South African Department of Trade and Industry (DTI) have identified eight basic rights of consumers. These rights are linked to our Constitution and Bill of Rights:

- ◆ The right to basic needs, such as food, water, clothing and shelter.
- ◆ The right to safety. This is the right to be protected against products or services that are dangerous.
- ◆ The right to be informed. This is the right to be given the correct information about a product or service.
- ◆ The right to choose. Consumers must have the right to choose between different products and must not be forced to buy only one product. If there is only one type of a certain product on the market, then the product must be of a good quality and be sold at a reasonable price.
- ◆ The right to be heard. This means that the consumer must be allowed to complain if he or she is not satisfied and take part in setting rules and regulations that affect consumers.
- ◆ The right to redress—This right means that consumers have a right to receive their money back if a product or service was unacceptable or when the information they received was false.
- ◆ The right to consumer education. This means you become an informed consumer.
- ◆ The right to a healthy environment. This means that products and services must not place consumers in danger. For example, factories may not give off poisonous gasses in the air while they produce cars or other products.

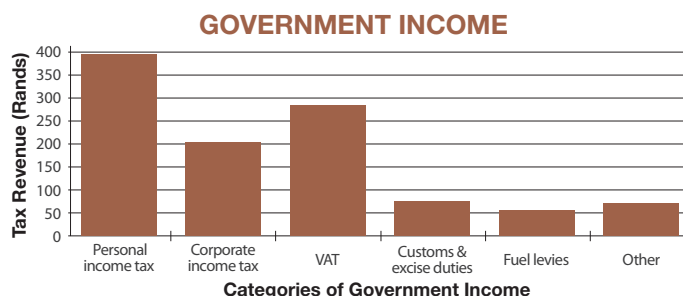
There are many consumer protection bodies like the Consumer Courts; the SABS; the National Consumer Forum; Micro Finance Regulatory Council and the Consumer Protection Bill that was made law in 2008.

- **Activity:** Learners bring examples of a variety of advertising brochures, pamphlets, newspaper and magazine pages, etc. to class. In small groups or pairs, learners identify advertisements which are providing false information; misleading consumers; hiding certain facts by using fine print, etc. Learners then take turns to present their findings to the class. Lead a discussion on how these issues could be reported to the relevant consumer watchdog bodies.

2. Why pay taxes?

- Here are three activities to do with your learners to introduce the content on taxation.
- **Activity A:** Divide the class into smaller groups and have them discuss and answer the following questions and discussion points. Provide correct answers and guidance after the discussions.
 - ◆ What is your attitude towards tax?
 - ◆ What is tax? (Tax is the money you pay over to the government you elected; i.e. the country's 'management body'.)
 - ◆ What is this money used for? (It provides funds for infrastructure and services to the population.)
 - ◆ Why pay tax? (If citizens do not pay tax, there won't be money to provide the infrastructure and services. On the other hand, citizens must hold the government responsible for what tax money is used for.)
- **Activity B:** Divide the class into two debating teams. One group debates that taxes should first be spent on upgrading government buildings because it is the government's money anyway and the employees are entitled to work in modern, high-tech environments. The other group argues that taxes should first be spent on service delivery in the poorer communities such as providing roads, water and electricity supply, houses, etc.
- **Activity C:** Government Income: Draw the following Tax Revenue table on the board (only the table, not the bar graph). The learners could work in pairs. Ask the learners to draw a bar graph to reflect the data in the table. They are then to discuss the importance of Personal Income Tax as a tax revenue (income) for the government and what the effect could be if Income Tax was not paid by individuals.

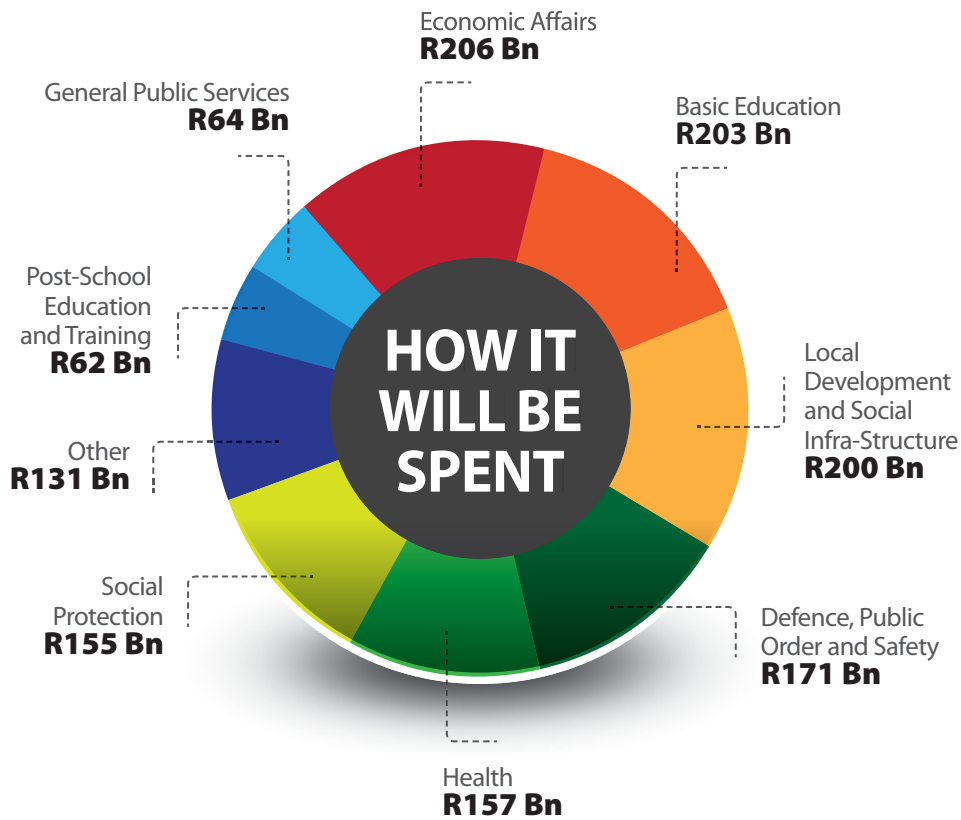
TAX REVENUE	(Rand: Billion)	2015/16	%
PERSONAL INCOME TAX		393.9	36.4
CORPORATE INCOME TAX		202.0	18.7
VAT		283.8	26.2
CUSTOMS AND EXCISE DUTIES		76.1	7.0
FUEL LEVIES		55.7	5.2
OTHER		69.8	6.5
TOTAL		1081.3	100.0



<http://www.treasury.gov.za/documents/national%20budget/2015/guides/2015%20People's%20Guide%20-%20English.pdf>

Sequence of activities

Government Expenditure per Department – 2015



- Looking at the pie chart, learners should analyse the amounts allocated per government department. Hold a class discussion about why they think certain departments are allocated a higher budget. Learners should give their opinion on what they would change about the allocation and why.
- Planning expenditure: learners are to list factors they would need to take into account when planning to spend the 'tax payers' money, for example, are there any current urgent matters requiring attention, etc.? They discuss and decide on the distribution percentages between the given departments and give reasons for the distribution. See table below as an example.

Education	25%
Transport	13%
Safety and security	17%
Health	20%
Sport	8%
Environmental Affairs & Tourism	12%
Arts and Culture	5%

Sequence of activities

3. Types of taxes (relevant to Grade 12 CAPS)

3.1 Value Added Tax (VAT)

- Explain the following content regarding VAT. Do the worked examples with the learners in order for them to gain practical experience in calculating VAT inclusive and VAT exclusive amounts.
- **Value Added Tax (VAT)** is a tax that is levied at 14% on most goods and services, also on the importation of goods and services into South Africa. Some goods are exempt from VAT (they are referred to as 'zero rated').
- **Zero Rated VAT Items**
When you buy groceries that are basic foodstuffs, they are zero-rated in South Africa (that means consumers do not pay VAT on those specific items), see table below.

Brown bread	Mielie Meal	Samp
Mielie rice	Dried mielies	Dried beans
Lentils	Pilchards/sardines in tins	Milk powder
Dairy powder blend	Rice	Vegetables
Fruit	Vegetable oil	Milk
Cultured milk	Brown wheat meal	
Edible legumes and pulses of leguminous plants	Eggs	

- When you pay for goods and services such as some educational services, rail transport, bus services, taxi-fares, rental of your home and life assurance.
- **Calculating VAT on everyday products**
 - ◆ **Example:** Mr Nokwe buys the following products from Crackers Hypermarket: Bananas for R4,60, brown bread for R8,70, chocolate for R5,80, washing powder for R23,90, onions for R3,20, dog food for R38,00 and a magazine for R18,50. TOTAL = R102,70
Q: Which items on the cash register slip are zero rated?
A: Bananas, onions and bread.
Q: Show how the VAT amount of R12,07 was calculated.
A: Total price of remaining products = R86,20 at 14% = R12,07
 - ◆ You should always see the VAT amount reflected separately on a cash register slip.
- **VAT and small businesses:** Lindi's Cookery School is a small business. She expects to sell at least R1,4 million worth of cooking units and ready-made foods to private customers, hotels and restaurants.
- If you expect your business sales to be more than R1 million per year you must register as a VAT vendor at your local SARS office.
- When a business is registered as a VAT vendor, it means two things:
 - ◆ The vendor must collect VAT from customers and pay this VAT to the South African Receiver of Revenue (SARS).
 - ◆ The vendor can claim back VAT that is paid on any products and services for the business.
- **How to claim VAT back (input credits):**
- If you are registered as a VAT vendor and have a VAT number, you can claim back VAT as described when you complete your tax forms for SARS.

CRACKERS HYPERMARKET	
4 February 2016	15:03
Bananas	R4.60
Brown bread	R8.70
Chocolate	R5.80
Washing powder	R23.90
Onions	R3.20
Dog food	R38.00
Magazine	R18.50
TOTAL	R114.77
Includes VAT of	R12.07
Thank you	

This VAT which a registered vendor claims back is called input VAT or an input credit.

You can only claim input credits for the amount of VAT shown on valid VAT invoices that you paid.

Sequence of activities

Work through the following examples with the learners:

- **Example 1:** Lindi is registered as a VAT vendor and she can therefore claim back the R1 680,00 VAT amount she paid.

<hr/> <p>STANLEY'S FURNITURE SOLUTIONS 50 1st Avenue, Cape Town, Tel: 0208 555 555 Company #: 112334 VAT Reg no: 66-777-888</p> <hr/>		
Invoice Number:	ABC001	
Date:	20 January 2016	
To:	Lindi's Cooking School (VAT: 66-717-810)	
Code		
0989	Kitchen Tables	R12 000,00
	Sub Total	R12 000,00
	VAT @ 14%	R 1 680,00
	TOTAL	R13 680,00
<p>Payment terms: Payment within 30 days.</p> <p>Please pay to the account below: STANLEY'S FURNITURE SOLUTIONS Branch code: 2000 Account No: 12345678</p>		

- **Example 2:** Nomsa types letters for other people. She is registered as a VAT vendor. She charges R20 to type one page. She must charge 14% VAT on that fee. 14% of R20 is R2,80. So she charges R20 + R2,80 = R22,80 in total to type one page. She can claim back the VAT she paid on the stationary she bought, e.g. paper, printer ink and envelopes.

So, if she paid R56,00 for printer paper, of which R6,88 is VAT (@ 14%), she can deduct the R6,88 from the total amount of VAT she must pay over to SARS.

- VAT that you pay to your suppliers is called INPUT VAT
- VAT that you charge your clients is called OUTPUT VAT
- OUTPUT VAT - INPUT VAT = VAT PAYABLE to SARS

- **How to calculate what VAT to pay to SARS (your OUTPUT VAT)**

Write the following formula on the board:

- To calculate your **OUTPUT VAT**, (the VAT amount already included in the price), use the following formula:

$$\text{OUTPUT VAT} = (\text{Total Sales Including VAT}) \times (14 \div 114)$$

- **Example:**
$$\text{OUTPUT VAT} = \text{VAT inclusive price of R228 000} \times (14 \div 114) = \text{R28 000 VAT}$$

OR

$$\begin{aligned} \text{OUTPUT VAT} &= \text{VAT inclusive price of R228 000} \div 1,14 = \text{R200 000 (original price excluding VAT)} \\ &\text{(Subtract this answer from the original VAT inclusive price)} \\ &= \text{R228 000} - \text{R200 000} = \text{R28 000 VAT} \end{aligned}$$

- **Activity:** Do calculations of output VAT based on the formula using different sales figures.
- **Example:** In July, Lindi made total sales of R65 000 (for catering as well as cooking lessons).
- She charged her customers VAT at 14% on her services and food products sold.

$$\begin{aligned} \text{Lindi's Output VAT} &= (\text{Total Sales incl. VAT}) \times (14 \div 114) \\ &= 65\ 000 \times (14 \div 114) \\ &= \text{R7 982,46 VAT} \end{aligned}$$

- If her input VAT (the VAT she paid on ingredients and equipment she bought) was R4 765, she must pay R3 217,46 to SARS for the month of July.

- Photocopy **Worksheet 5A** for the learners to complete in pairs or small groups.

Sequence of activities

3.2 Personal Income Tax and Pay Slips

- Discuss the following content regarding Personal Income Tax with your learners. Once they understand the concepts and terminology, they can start familiarising themselves with the Tax Table and Tax Rebates in order to calculate Personal Income Tax for a wide range of scenarios. Feel free to add your own scenarios to the worked examples. Photocopy **Worksheet 5B** for the learners to complete in pairs or small groups.
- The SA Revenue Services (SARS) collects taxes on behalf of the government. Income tax includes all taxes levied on profit received by businesses and income received by individuals.
- PAYE stands for Pay-As-You-Earn. PAYE is the employees' tax that is deducted from the employee's income and paid over to SARS by the employer.
- The amount of tax to be deducted from an employee's income by an employer is calculated using a Tax Table and Tax Rebate figures which are issued by SARS each year in a document called the 'Tax Guide' – also known as the 'SARS pocket Tax Guide'. (See extracts from these documents under point 3.2.1 as well as the Classroom Poster.)
- An employer must issue an employee with a receipt known as an employees' tax certificate (an IRP5) if PAYE has been deducted (see example of an IRP5 under point 3.2.4). This shows the total employment income earned for the year of assessment and the total PAYE deducted and paid to SARS. The employee uses the IRP5 to complete their Income Tax Return Form (ITR12) before submitting the forms to SARS (or this can be done online via e-filing at <http://www.sarsefiling.co.za>).
- Guide the learners to relevant websites that offer tax calculators, e.g. www.taxtim.com/za/calculators/income-tax where an explanation of the calculations are also provided.
- It is perfectly legal to try and pay as little tax as possible, as long as it is within the law. Tax evasion is illegal e.g. not declaring income. Tax avoidance is a legal way to pay less tax e.g. by declaring expenses. Not declaring your income for tax is not only illegal, but you also deprive the rest of the country of their rights to services.

The SARS Tax information reflected in this section is in accordance with the SARS Pocket Tax Guide 2015/2016

**Summary of the steps followed to determine the amount of income tax payable:
(NB: these steps must be read in conjunction with the SARS Tax Guide)**

Steps	Actions	Explanation
1.	Calculate Gross Income:	This is the total amount of all income received by an individual before deductions.
2.	Subtract exempt (non-taxable) income:	SARS excludes certain income from being taxed and it is therefore excluded from the gross income. For example: A certain % of pension fund contributions and retirement annuities.
3.	Subtract tax deductions:	Certain tax deductions are allowed by SARS, for example: medical and disability expenses (excluding medical scheme contributions), donations made (under certain conditions) as well as subsistence and travel allowances (under certain circumstances).
You now have your Taxable Income amount		
4.	Use the Age Tax Threshold table to see if tax is payable according to age and income (see table under 3.2.1):	There are certain thresholds (limits) stated by SARS per age category. If you earn above the threshold for your age category, then tax becomes payable (you then need to calculate how much tax is payable according to the tax tables). If you earn below the threshold then you do not need to pay tax.
5.	Use Tax Table's sliding scale and do the calculation (see table under 3.2.1):	Take the taxable income amount and select the correct sliding scale rate on the Tax Table as provided by SARS each year. Do the calculation using your Taxable Income amount.
6.	Deduct Rebate amounts:	There are certain rebate amounts which can now be deducted from the payable tax as calculated in Step 5 above. There are Primary, Secondary and Tertiary rebates; these are linked to ages. (see Rebate under point 3.2.1).
7.	Deduct Medical Credits:	This is a deduction of R270 for the main medical scheme member as well as the 1st dependant; also deduct R181 for each additional dependant.

Sequence of activities

DID YOU KNOW?

Taxation Terminology

All learners need to become familiar with the terminology used within the CAPS's topic of Finances – Taxation. The following terminology should be explained to the learners using real-life examples and scenarios to illustrate the meaning of each taxation term/concept.

- **Gross Income:** Total income earned.
- **Net Income:** The amount an employee 'takes home' after all payslip deductions have been made.
- **Exempt or Non-taxable income:**
 - ◆ Interest from a South African source earned by any natural person under 65 years of age, up to R23 800 per annum, and persons 65 and older, up to R34 500 per annum, is exempt from taxation.
 - ◆ If a person earns less than the prescribed tax thresholds, according to their age, then no tax is payable by that person.
- **Salary / Pay slip deductions:** For example UIF, PAYE, Medical Scheme contribution, Teacher Union Fees, Funeral Policy, etc.
- **Monthly Remuneration for employees' tax purposes:** Remuneration is any amount of income which is paid/payable to any person whether in cash or otherwise (e.g. fringe benefit) and whether or not for services rendered. Remuneration will include: salary, fee, bonus, wage, gratuity, pension, leave encashment, emolument, voluntary award, commission, annuity, stipend, overtime, superannuation allowance, retirement allowance, lump sum benefit payment, director's remuneration, etc. (www.sars.gov.za/FAQs/Pages/61.aspx)
- **Employee's Tax (Pay-As-You-Earn: PAYE):** Employees' Tax refers to the tax required to be deducted by an employer from an employee's remuneration paid or payable. The process of deducting or withholding tax from remuneration as it is earned by an employee is commonly referred to as PAYE. (www.sars.gov.za/TaxTypes/PAYE/Pages/default.aspx)
- **Tax deductions:** Certain deductions are allowed by SARS, for example: pension fund contributions (see explanation below), medical and disability expenses (not medical scheme contributions), donations made under certain circumstances as well as subsistence and travel allowances (under certain circumstances). (Tax Pocket Guide 2015/2016: www.treasury.gov.za/documents/national%20budget/2015/sars/Budget%20PocketGuide%202015-16.pdf)
- **Pension Tax Deduction:** The greater of 7,5% of remuneration from retirement funding employment, or R1 750. For more details consult the SARS Tax Guide for 2015/16.
- **Allowances:**
 - ◆ **Subsistence allowance** – is any allowance paid by the employer to the employee to cover accommodation, meals or incidentals costs where the employee is, by reason of the duties of his or her office or employment, obliged to spend at least one night away from his or her usual place of residence in South Africa.
 - ◆ **Travel allowance** – is any allowance paid or advance granted by the employer to the employee for the use of his or her private motor vehicle for the employer's business purposes. Allowance to a holder of a public office – is any allowance granted to the holder of a public officer to cover expenditure incurred by him or her in connection with such office. (www.sars.gov.za/TaxTypes/PAYE/Pages/PAYE-Allowances.aspx)
- **Medical Scheme Fees Tax Credit:** A tax rebate referred to as a medical scheme fees tax credit of R270 for the individual who paid the contributions and the first dependant on the medical scheme and R181 for each additional dependant.
- **Medical Disability Tax deductions:** In addition to the Medical Scheme Fees Tax Credit, a medical credit is allowed under certain circumstances for medical disability expenses (this detailed information will not be required at Grade 12 level). For more details consult the SARS Tax Guide for 2015/16.
- **Rebates and Tax Credits:** For example Medical Scheme Fees Tax Credit; Primary, Secondary and Tertiary Rebates.
- **Income Protection Policies:** These policies are no longer considered a tax deduction from 1 March 2015.
- **Unemployment Insurance Fund (UIF):** This contribution is made up of 2% of the employee's remuneration. The employer pays 1% and the employee pays 1% to a maximum of the contribution threshold. For 2014/15 the maximum payslip deduction for the employee's contribution was R148,72 and for 2015/16 it was R10,00 (a temporary one-year relief measure by SARS was applicable). UIF is not a tax deduction.

Please note that this information is extracted from the SARS website: www.sars.gov.za. SARS has very detailed and often lengthy explanations for some of these terms as this information is used by Bookkeepers, Accountants, Auditors and Tax Consultants within their spheres of work. The detailed and in-depth level of some concepts would not be relevant for use within the Grade 12 Mathematical Literacy curriculum. As Mathematical Literacy educators, it becomes necessary to find the level at which the SARS information meets the requirements of the Grade 12 curriculum. It is however necessary for the Mathematical Literacy teacher to be familiar with these concepts in order to provide the learners with the understanding behind the terminology. Learners would be expected to use taxation guidelines to understand salary slips, make relevant calculations such as determining PAYE contributions (personal income tax), net pay/income, gross income, total payslip deductions, etc. (see CAPS document from page 48-50 Topic: Finance – Financial documents and also refer to pages 58 & 59 Topic: Finance – Taxation: UIF, VAT and income tax).

Sequence of activities

3.2.1 Tax Tables, Rebates and Thresholds – as stated in the SARS Tax Guide for 2015/2016

Tax Thresholds

Age	Tax Threshold (above this amount, income tax becomes payable)
Below age 65	R73 650
Age 65 to below 75	R114 800
Age 75 and over	R128 500

Tax Threshold is the amount above which you need to pay tax. If you earn below this then you do not need to pay tax.

Taxable Income = Gross Income – exempt income and certain allowed tax deductions

SARS Tax Rates Table

Taxable Income (R)	Rate of Tax (R)
0 – 181 900	18% of taxable income
181 901 – 284 100	32 742 + 26% of taxable income above 181 900
284 101 – 393 200	59 314 + 31% of taxable income above 284 100
393 201 – 550 100	93 135 + 36% of taxable income above 393 200
550 101 – 701 300	149 619 + 39% of taxable income above 550 100
701 301 and above	208 587 + 41% of taxable income above 701 300

Rate of Tax = the amount of tax owed BUT remember to also deduct any allowed rebates and credits from the two tables below.

Tax Rebates

Rebates

Primary: (everyone receives this rebate)	R13 257
Secondary – Persons 65 and older (in addition to primary rebate)	R7 407
Tertiary – Persons 75 and older (in addition to primary and secondary rebates)	R2 466

Rebate: is an amount deducted from the amount calculated in the Tax Table. Everyone receives the Primary rebate; there is an additional Secondary and Tertiary rebate taking age into account.

Monthly contributions to Medical Schemes are not tax deductions but there is a Medical Scheme Fees Tax Credit which may be deducted from tax payable.

Medical Scheme Fees Tax Credit

Medical Scheme Fees Tax Credit	R270 for the main member as well as R270 for the 1st dependant
	R181 for each additional dependant

Sequence of activities

3.2.2 Payslips:

- Explain to the learners that now that they understand all the tax components, it is time to put it into context of a pay slip to see how all the above mentioned income taxes, UIF, etc. look on a pay slip.
- **Reading a payslip**
- Photocopy the following payslip or write it on the board and mention what the various items are and discuss the following with your learners. In this example:
 - ◆ The employee is Mrs Ruth Nkosi, and she is a Floor Manager in the Milling Department. She started working there on 01/05/2006. She is 35 years old and pays for medical aid to cover herself, her husband and two children. This pay slip shows the payments and deductions for the month of September 2015 (i.e. from 1 September to 30 September 2015). Mrs Nkosi earns a basic salary of R15 900,00 per month. She is also paid a housing allowance of R550,00 and overtime monies of R800,00 for this month.
 - ◆ The employer deducts: tax (which is paid over to SARS), medical aid premiums (which is paid over to the medical aid fund), pension (which is paid over to the pension fund) and an unemployment contribution (which is paid over to the UIF). All this information is used to calculate the total payslip deductions for Mrs Nkosi.
 - ◆ Explain to the learners how to calculate Mrs Nkosi's net pay. (Net pay is gross earnings less all payslip deductions). The gross pay of R17 250,00 for the month less the deductions of R4 380,17 leaves a net pay of R12 869,83.
 - ◆ Discuss how salaries are normally paid out to employees. Ask the learners to find information on the payslip that indicates how Mrs Nkosi receives her salary.

Flour Box Bakery (Pty) Ltd		PAY SLIP	
Employee name:	Ruth Nkosi	Tax Number:	0428/246/13/6
Employee Code:	06/112	Date Engaged:	01/05/2006
Job Title:	Floor Manager	Bank Account:	Red Bank 0987 6545 332
Department:	Milling	Payment Date:	25/09/2015
Period:	01/09/2015 – 30/09/2015		
Earnings		Deductions	
Basic Salary	R 15 900,00	Pay-As-You-Earn (PAYE)	R 1 077,67
Overtime	R 800,00	Pension Fund Contribution	R 1 192,50
Housing Allowance	R 550,00	Medical Scheme	R 2 100,00
		Unemployment Insurance Fund (UIF)	R 10,00
		Total Deductions:	R 4 380,17
Gross Monthly Salary:	R17 250,00	Net Monthly Pay:	R12 869,83

Calculating Taxable Income & PAYE for Mrs Nkosi (worked example)

Taxable income = Annual gross salary – Pension Fund tax deduction (the greater of 7.5% of remuneration or R1 750)
 = 12 months x (R 17 250,00 – R1 293,75)
 = 12 x R15 956,25
 = **R191 475,00 annual taxable income for Mrs Nkosi**

PAYE = look up tax bracket in the SARS Tax Table (see point 3.2.1 above); take age and income bracket into account for Mrs Nkosi, then deduct primary rebate because she is under 65 years old, then subtract medical tax credit for member, 1st dependant and for 2 additional dependants

$$\begin{aligned}
 &= R32\,742 + [26\% \times (R191\,475 - R181\,900)] - [R13\,257 + (R270 \times 2 \times 12) + (R181 \times 2 \times 12)] \\
 &= R32\,742 + R2\,489,50 - R24\,081 \\
 &= \mathbf{R11\,150,50 \text{ annual PAYE. Divide by 12 months to calculate monthly PAYE deduction on the payslip}} \\
 &= \mathbf{R929,21}
 \end{aligned}$$

Sequence of activities

3.2.3 Worked Examples

- Now that the learners have all the content in order to calculate taxable income, the tax amount payable and Net Pay, do the following examples with them:
- **Tax rates: (Photocopy or write up the tax rates table in point 3.2.1, on the board or use the classroom poster provided.)**
- **Worked Examples:** It is easy to calculate how much tax one should pay using these tables:
 - ♦ **Q1:** Fasika is 24 years old and earns a taxable income of R110 000 per year. How much tax will she pay?
Answer: 0 – 181 900: 18% of each R1
 = 19 800 tax rate – R13 257 rebate = R6 543 tax payable for the tax year
 - ♦ **Q2:** Mike is 68 years old and earns R72 000 per year.
Answer: Tax threshold Age 65 to 75 years = R114 800: no tax payable
 - ♦ **Q3:** What if Mike in Q2 earns an annual income of R393 300? He has no medical aid or dependants. Calculate his annual tax payable.
Answer: = R93 135 + [36% x (R393 300 – R393 200)] – (R13 257 + R7407)
 = R93 135 + R36 – R20 664
 = R72 507 tax payable for the tax year
 - ♦ **Q4:** Jeremiah is 35 years old and earns R285 000 and has one daughter registered as a dependant on his medical aid. Calculate his annual tax payable.
Answer: = R59 314 + [31% x (R285 000 – R284 100)] – [R13 257 + (R270 x 2 x 12 months)]
 = R59 314 + R279 – R19 737
 = R39 856 tax payable for the tax year
 - ♦ **Q5:** Buyisiwe is 55 years old and earns R674 000 per year; she has a husband and 3 children on her medical aid. Calculate her annual tax payable.
Answer: = R149 619 + [39% x (R674 000 – R550 100)] – [R13 257 + (270 x 2 x 12 months) + (R181 x 3 x 12 months)]
 = R149 619 + R48 321 – R26 253
 = R171 687 tax payable for the tax year.

3.2.4 IRP5 and ITR12

- Make copies of the IRP5 and ITR12 or show these examples to the learners (they do not need to know how to complete the forms but should just become familiar with the purpose of these documents). Explain that the IRP5 is issued to an employee by the employer. The individual then uses the IRP5's information to fill in an ITR12 which is sent in to SARS for assessment.

Example of an IRP5 which is issued to the employee by the employer

Sequence of activities

Examples of some items on the ITR12 which is completed by an individual and submitted to SARS

ITR12 FORM

The ITR12 form is completed by an individual and submitted to SARS once a year. This form can be submitted to SARS on line through e-filing or manually by posting the form or handing it in at the local SARS office.

This ITR12 form provides SARS with your personal details (name, address, etc.) as well as your earnings, deductions, tax paid as well as your banking details (in case they need to pay money out to you, i.e. refund).

3.2.5 Learner Worksheet

- Learners complete Worksheets 5A and 5B in pairs or small groups.

Suggestions for daily assessment

Mathematical Content	Activity/exercise	Type of evaluation/assessment
<ul style="list-style-type: none"> Percentages Calculations 	Class discussions and debates; conducting tax calculations; utilising tax tables as issued by SARS; Worksheet 5A and 5B	Participation in debates and group or pair activities; marking of written work; marking of Worksheets 5A and 5B; self-assessment
<ul style="list-style-type: none"> After completing Worksheets 5A and 5B, you could write the following self-assessment checklist on the board. Learners can use the checklist to assess their own knowledge. Learners who experienced difficulties should revise the Grade 11 work: Self-assessment <ul style="list-style-type: none"> ✓ I can explain how I can exercise my rights as a consumer (yes/not yet) ✓ I can calculate income tax payable based on different incomes and age (yes/not yet) ✓ I can calculate VAT amounts payable on products (yes/not yet) ✓ I can calculate output VAT in a business setup (yes/not yet) ✓ I can interpret government spending by analysing data on a bar graph or pie chart (yes/not yet) ✓ I can make buying decisions taking into account social and environmental issues (yes/not yet) 		

Learner Worksheet

1. At the local supermarket, Peter buys a basket of goods (all prices are exclusive of VAT):
Apples – R 6,80; bread – R7,20; biscuits – R13,60; cold drink – R14,90; fruit juice – R7,80; milk – R9,40; cat food – R17,40; vegetable oil – R8,80
 - 1.1 Identify the items on which VAT is payable and those which are zero-rated.
 - 1.2 Calculate the amount of VAT that Peter must pay.
 - 1.3 What is the total cost of the basket?

2. Stanley received the following invoice from Big Ben Tools and Equipment for purchases made:

<hr/> BIG BEN TOOLS AND EQUIPMENT 25 Rabelle Road, Cape Town, Tel: 082 389892 0 Company #:82553 VAT Reg no: 685 - 21 <hr/>		
Invoice Number:	AYR 08978	
Date:	2 April 2015	
To:	Stanley's Furniture Solutions (VAT: 66-777-888)	
Code		
876	Benches	R36 000,00
	Drill	R 800,00
	TOTAL (incl. VAT)	R41 952,00
Payment terms: Payment within 30 days.		
Please pay to the account below:		
BIG BEN TOOLS AND EQUIPMENT Branch code: 8762- 887		
Account No: 9825242		

- 2.1 Stanley, who is VAT registered, used the tools and equipment to make tables. How much of the total amount can Stanley claim back for VAT? (Please show all calculations)
- 2.2 After two days the drill broke and Stanley took it back to the shop and he was refunded (given back) his R800. Rework the invoice above without the drill. Show VAT amount as well as Total including VAT.
- 2.3 What does VAT stand for? To whom does the registered VAT Vendor pay the VAT money?

Learner Worksheet

1. Instructions:

In small groups of 3, work together to calculate the following employee's **gross income, taxable income, PAYE** and **net pay**.

2. Background information:

You are the HR Officer at a juice company called Juicy Joy. The employee is Mrs Elizabeth Mokoto, and she is a Juice Quality Controller in the company. She started working here on 01/04/2014. She is 42 years old and pays for medical aid to cover herself, her husband and one child. This pay slip shows the earnings and deductions for the month of February 2016. She is also paid overtime when she stays late to help clean up after functions (R550,00 for this month).

Juicy Joy – Salary Advice			
Employee name:	Elizabeth Mokoto	Tax Number:	0112/333/21/9
Employee Code:	11JJ/959	Date Engaged:	01/04/2014
Job Title:	Quality Controller	Bank Account:	Sharp Bank 4456 9908 222
Department:	QA	Payment Date:	28/02/2016
Period:	01/02/2016 – 28/02/2016		
Earnings		Deductions	
Basic Salary	R 25 000,00	Pay-As-You-Earn (PAYE)	R (B)
Overtime	R 550,00	Pension Fund Contribution	R 2 700,00
		Medical Scheme	R 3 500,00
		Unemployment Insurance Fund (UIF)	R 10,00
		Total Deductions:	R (C)
Gross Monthly Salary:	R (A)	Net Monthly Pay:	R (D)

- 1.1 Calculate Mrs Mokoto's Gross Monthly Salary (**see A** on the Pay Slip).
- 1.2 Calculate her annual taxable income. (Remember: Taxable Income = Gross Income – Pension Fund tax deduction (greater of 7.5% of monthly remuneration or R1 750) and other allowed tax deductions).
- 1.3 Using the annual taxable income amount, calculate the PAYE amount (**see B** on the Pay Slip) that must be stated on her annual taxable as a PAYE deduction (Use the SARS tax tables on the Tax poster. Hint: PAYE = tax table amount – primary rebate (if under 65 years) – medical tax credits).
- 1.4 Calculate the total of all deductions on the pay slip. (**see C**).
- 1.5 What is Mrs Mokoto's net pay (take home pay) for February 2016 (**see D**)?
- 1.6 What do the letters UIF stand for? What are the benefits of paying UIF?
- 1.7 What percentage is paid to SARS by the employer and the employee each month? Why is Mrs Mokoto only paying R10,00?

Unit Title:

Risk, insurance and probability

UNIT CONTEXT: Probability

CAPS Link: Topics, Sections and Contexts

Basic Skills Topics with relevant Sections:

- Interpreting and communicating answers and calculations
- Numbers and calculations with numbers

Application Topics with relevant Sections:

- Finance
 - Taxation: Work with UIF in the context of payslips
- Maps, plans and other representations of the world
 - Scale work with different types of scales (bar scale)
 - Plans: use floor and elevation plans (front, back and side) showing side view perspective
 - Plans: understand the symbols and notations used on plans
 - Models: Make and use 3-dimensional model and /or 2-dimensional scale cut out of buildings
- Probability
 - Expressions of probability
 - Prediction
 - Representations for determining possible outcomes

Contexts:

- Risk scenarios within short- and long-term insurance
- Probability scenarios involving games using coins and dice
- Plans in context of a complex house, i.e. security features to decrease your risk profile for insurance purposes

In this unit...

In this Unit the focus is on understanding and using insurance as a way to manage risk. The learners will recap the different types of insurance, but will now focus more on how to apply this knowledge in their future business plans. At the end of this Unit learners will be able to:

- discuss risk and probability;
- list different types of insurance;
- explain why insurance is necessary;
- list risk factors that affect insurance premiums;
- calculate and understand probability;
- explain UIF periods and payments; and
- design security features for a new home and build a 3-dimensional scale model.



Sequence of activities

1. What is insurance?

- Ask learners to name what types of items/life events can be insured. List them on the board. Now place these into categories: long-term and short-term insurance. Revise the distinction made between these two types of insurance in Grade 11.
 - ◆ Long-term insurance covers the major events in life, such as death, retirement and disability.
 - ◆ Short-term insurance insures your goods and possessions (eg. your household goods, cars) against events that may happen, such as fire, theft or damage.
- There are two Acts which regulate the insurance business, namely the Long Term Insurance Act, 1998 (Act No. 52 of 1998) and the Short-term Insurance Act (No. 53 of 1998).

2. Types of insurance

- Discuss the insurance categories below and who makes use of these.

	Insurance	Probable users
Short-term insurance	Motor Insurance	Owners of vehicles—for theft, fire, and damage they cause to another car or person (third party).
	Household contents	Anyone who has any items inside their home that they wish to insure against loss and damage.
	Houseowners Insurance	Home owners—your house itself, its fixtures and fittings.
Long-term insurance	Funeral Insurance	Anyone wishing to cover funeral and related costs.
	Life Insurance	This policy can pay a sum after your death. The sooner you take this policy, the lower the cost.
	Retirement annuity	By investing a small sum monthly, yearly or a lump sum, this policy pays out at retirement age. It is tax deductible.

- **Activity:** In preparation for this Unit, collect brochures and advertisements for a wide variety of insurance companies/packages. Ask the learners to bring these from home as well. In groups, learners are to research one type of insurance company per group. Some South African insurance companies include: Auto & General; Budget; Dial Direct; 1st for Women; OUTsurance; SANTAM; Mutual and Federal; Zurich. Find as many as possible.

In their groups, learners analyse the information about the insurance offered in the advertisements and answer the following questions:

- ◆ What type of insurance is this company offering?
- ◆ Who would use this type of insurance?
- ◆ When would you put in a claim against this insurance?
- ◆ Who do you think would be a high risk client for this type of insurance? (Hint: A Formula One motor racer is a high risk client for Life or Disability insurance.)
- ◆ Is it easy to understand the information in the advertisement brochure or would you need to speak to one of their consultants?
- ◆ Would you take out this type of insurance when you earn a salary one day?

3. Business insurance

- Business insurance is not too different from household insurance but there are special types of insurance packages available from insurance companies and business owners will need to know about these when they start their own businesses. It would be wise to contact an insurance company and discuss your unique type of business with them in order to make sure you have the correct type and relevant amount of insurance cover (assets, loss of income, partnership, insurance, etc).
- **Activity:** In groups of 5–6, learners select a small business (any small business—one that already exists or one you would like to start one day) and complete the following steps:
 - ◆ What is the name and main function of the business you selected?
 - ◆ Draw up a table with three columns. In the left-hand column write up a list of the assets (furniture, equipment, stock, vehicles, etc). In the middle-column write the quantity of each (eg. 6 x laptop computers or 1 x tool set) that you would need to insure.
 - ◆ Estimate the rand value of these assets and write this in the right-hand column. Remind the learners that they must estimate the amount that it will cost to replace the items should they get stolen/damaged. ALSO: the value must be adjusted by the inflation percentage each year to ensure that your insurance is adequate to cover unforeseen events. Add up the left-hand column to calculate the total value of the assets.
 - ◆ Write down the types of insurance you think your company would need (Hint: insurance for assets including motor vehicle; professional liability insurance; unemployment insurance for employees, loss of income.)

Sequence of activities

- ◆ What risk factors does your company have? List them. (Hint: the location—situated in an area which is known for a high rate of break-ins; type of business—eg. building company has a higher risk of personal injuries to employees.)
- ◆ How do you think these risk factors would affect your insurance premiums (payments)?
- ◆ What actions could your company take, if any, to reduce your risk factors?

4. Unemployment Insurance Fund (UIF) for employees

- Explain what the UIF is. Talk about the Unemployment Insurance Fund as a specific type of Insurance. The UIF was instituted in terms of the Unemployment Insurance Act of 2001.
- To whom does the Unemployment Insurance Act apply? All employers and workers, BUT not to:
 - ◆ workers working less than 24 hours a month for an employer;
 - ◆ learners;
 - ◆ public servants;
 - ◆ foreigners working on contract;
 - ◆ workers who only earn commission; and
 - ◆ women on maternity leave who are receiving a salary from their employer.
- It is important to know that domestic and farm workers and their employers ARE included under the Act. How do you calculate the UIF contributions?
 - ◆ Employers MUST register workers with the fund and deduct the contribution from the workers' salaries.
 - ◆ How much should be deducted? The contribution that employers must deduct from a worker's pay is 1% of the worker's total earnings.
 - ◆ How much from the employer? In addition to the 1% deducted from the worker, the employer also contributes 1% for every worker that they employ. The UIF monthly contribution by the employee may not be more than R148,72.
 - ◆ The total contribution paid to the UIF is therefore 2% of a worker's total pay.
- **Activity:** In pairs, learners calculate the UIF contribution in the following scenario: A worker earns R1 000 per month. How much must be paid to UIF in total? How much of this is deducted from the worker's salary? How much of this is paid by the employer? (Answer: The employer must deduct 1% of R1 000 = R10. In addition, the employer must pay 1% of R1 000 = R10 for that worker. The total of R20 must therefore be paid over to the UIF.)

When do you claim from the UIF?

- ◆ If you lose your job and you have contributed to the UIF while you were employed.
- ◆ You can only claim if you were dismissed, retrenched or your contract has expired. You cannot claim if you resigned from your job.

How much can I claim?

- ◆ The highest amount that can be paid is 58% of what you earned per day.
- ◆ If you have been contributing to the Fund for four years or more, you can claim for up to 238 days.
- ◆ If you have been contributing for a shorter period, then you can claim 1 day for every 6 days that you worked while you were contributing to the Fund.
- ◆ If you take maternity leave, you can only claim up to 172 days.
- ◆ You can only accumulate a maximum of 436 days worth of pay. So for instance if you've worked for four years consistently, you'll get UIF for eight months. That's the maximum length of time for which you can be paid out.

5. Excess payments

- An excess is the uninsured amount that you as the policyholder have to pay towards the cost of a claim. What this means is that if for example your excess is R2 000 and your claim is R10 000, then the insurer will deduct R2 000 from your claim and pay out the remaining R8 000 of the claim.
- **Activity:** Write the following table up on the chalkboard. Discuss the following premiums and percentages of excess with the learners. Learners work in pairs to calculate the excess amounts required below—

Claim Intervals numbered	Claim intervals	Type A (high premiums – average R800/month)	Type B (medium premiums – average R600/month)	Type C (low premiums – average R400/month)
0	0 – R4 000	R500	R800	R1 000
1	R4 001 – R5 000	5%	10%	15%
2	R5 001 – R15 000	7%	12%	20%
3	R15 001 – R30 000	8%	15%	22%
4	R30 001 – R50 000	10%	18%	25%
5	R50 001 – R100 000	12%	20%	28%
6	R100 001 – R150 000	15%	22%	30%

Sequence of activities

Be Sure Insurance company's core business is to insure business owners for their business furniture and equipment. The insurance packages require policy holders to pay an excess amount (percentage of the claim) on all claims, depending on the amount of the claim and the type of policy.

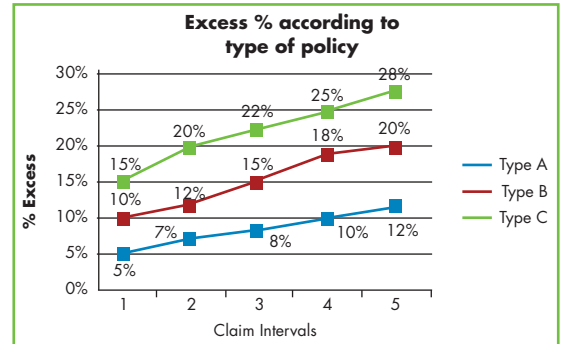
In the line graph alongside, we see the difference in excess amounts for the first 5 percentages, for the 3 different types of policies.

How much will the excess payment be in the following cases?

- John takes out a Type C policy; claims for R13 500
- Maggie takes out a Type A policy; claims for R144 000
- Philip takes out a Type B policy; claims for R66 000
- Lindi takes out a Type C policy, claims for R 700
- Sarah takes out a Type C policy; claims for R14 675

(Answers: (a) 20% of R13 500 = R2 700; (b) 15% of R144 000 = R21 600; (c) 20% of R66 000 = R13 200; (d) Flat fee of R1 000

– clearly it will not be worth it for Lindi to claim from the insurance; she should rather cover her R700 herself; (e) 20% of R14 675 = R2 935)



- You can choose the type of policy you want to take out, depending on how much excess you are prepared to pay. If you are willing to pay high premiums, you will pay lower excess, and if you would rather pay low premiums, you will have to pay a higher excess if you claim.

6. Risk factors, probability and insurance premiums

- Discuss how risk factors affect the insurance premiums. Ask the learners to answer this question: Who do you think is a higher risk client and would possibly pay a higher life insurance premium and why? A 35 year old bookkeeper who exercises regularly and is a non-smoker; or a 35 year old motor-car racer who smokes 30 cigarettes a day and does no physical exercise?

Possible Risk Factors

Activity: Divide the class into groups of 4–6. The group is to make a list of possible risk factors and discuss how they think it is relevant to insurance.

Possible answers:

- Ill health issues—eg. smoking, lack of exercise, life threatening illnesses
- Dangerous occupations—eg. soldier in the artillery division of the Armed Forces; stuntman for action movies
- Dangerous hobbies or sport—eg. collecting / keeping poisonous snakes and spiders or taking part in extreme motorbike trick competitions

Calculating insurance premiums taking risk factors into account

Activity: In the same groups, learners calculate the insurance premium taking risk factors into account in the following example:

Be Sure Insurance Company offers life insurance policies. The document setting out the insurance premium states the following:

Calculate the following: Jonathan wants to take out insurance. He is a 19 year old student who works as a bungee jumping instructor over weekends. He does not smoke. What will his insurance premium be?

Answer:

- | | |
|---|---------------|
| ◆ Start with the average premium: | R1 000 |
| ◆ Age: 18 – 20; add 12% (12% of R1 000) | R 120 |
| ◆ Bungee jumping (dangerous); – add 8% | R 80 |
| ◆ Non-smoker—no additional fees | |
| ◆ Jonathan's monthly premium will be: | <u>R1 200</u> |

BE SURE INSURERS

Our average premium is R1 000,00 per month for a person between the ages of 30 and 40 years old.

Various factors influence the monthly premiums individuals must pay when they take out insurance:

AGE: The age category of 30 – 40 years old is regarded as the healthiest age and also the age where people live their lives in the most responsible manner. The risk at that age is therefore usually the lowest.

- 18 – 20 years old: Add 12%
- 21 – 25 years old: Add 10%
- 26 – 30 years old: Add 5%
- 31 – 40 years old: Average premium only
- 41 – 50 years old: Add 5%
- 51 – 60 years old: Add 10%
- 61 – 70 years old: Add 20%
- 71 – 80 and older: Add 30%

SMOKER: If the applicant is a smoker, add 10%.

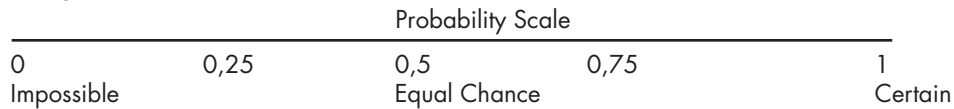
DANGEROUS ACTIVITIES: If the applicant takes part in dangerous sports or pastimes, add 8%.

Sequence of activities

• How are risk factors linked to probability?

Probability is the likelihood of an event happening. This is very relevant to insurance companies because they are taking the risk that such an event could happen. The more probable (likely) that the event will happen; the more of a risk factor it becomes to the insurance company. The insurance companies do extensive research and draw up statistics which they use to determine their risk factors according to probability.

• Using a probability scale



The probability of an event happening is expressed as a number: either a decimal or ordinary fraction or as a ratio. An event that will definitely happen has a probability equal to 1; an event that will never happen has a probability equal to 0. Any other probability that is calculated must lie between these two points.

• **Activity:** Draw the probability scale on the chalkboard and ask the learners to determine the probability of the following events:

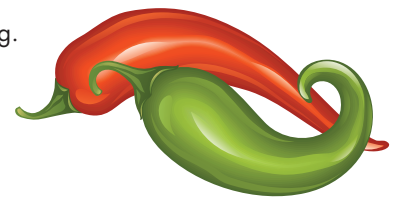
- ◆ The sun setting in the East.
- ◆ A dropped slice of buttered toast landing on the floor with the buttered side down.
- ◆ A tortoise walking the distance of 600km in 4 hours.

• Calculating Probabilities

When we calculate the probability of an event happening we call it the Theoretical Probability. The formula used to calculate probabilities is: $\text{Probability of the Event} = \frac{\text{Number of ways the event can happen}}{\text{Total number of events that can happen}}$

Example: You pick 15 chillies from your vegetable garden, 10 are green and 5 are red. You open the packet that you placed them in and take out one chilli without looking. What is the probability that you have taken a green chilli out of the packet?

Answer: The number of green chillies is 10 and the total number of chillies is 15. The probability of pulling a green chilli from the packet is $10/15 = 0,7$ probability of the event. See where this would be plotted on the Probability Scale above.



- Learners complete **Worksheet 6** in groups of 5–6 learners.

7. Increasing security features to your home to decrease your risk factors for short term insurance

- Security features: Ask: What do you think is meant by security features? Name them. List these items on the board and discuss each one. Mention what type of security it offers and why you say so. (e.g. burglar bars; security doors on all external doors (doors which lead out of the house); alarm systems; light beams in the garden; electric fencing on the perimeter of the property).
- Learners write a list of the security features on a sheet of paper, and working in pairs, list approximately 2 advantages and 2 disadvantages of each feature.
- **Example:** A metal security gate at the front door entrance.
 - ◆ An **advantage** is that breaking into the house is made quite difficult and will stall (delay) the thieves for quite some time.
 - ◆ A **disadvantage**: if a fire should break out at night in the house while everyone is home, the family could be trapped inside and fire fighters will not be able to enter the home easily to rescue the family.
- **Why increase your security features?**

The more secure your home or vehicle is the less likely they would be damaged or stolen. This reduces the risk of you claiming on your insurance policy. Insurance companies encourage you to reduce your risk profile by 'offering' better premiums for better security; this is because the chance (probability) of your house or car being damaged or stolen has been reduced.

8. Exploring security features through house plans and scaled models

- Bring old house or office plans along to school (ask learners as well); these are often available from the municipality offices where people submit their plans for approval.
- Explain that a scale is a measurement that represents a larger area in the real world, for example: the **number scale** 1:500 means that every 1m on a map = 500m in the real world. The same for bar scales:



Sequence of activities

8.1. Exploring scales: set up 2 work stations in the classroom: At station 1, the learners measure a large object in class, e.g. the board/door. They then use a scale of 1:20 to draw a scaled diagram of that object. At station 2, they explore maps to determine the distance from point A to point B using the scale found on the map (pre-mark points 'A' and 'B' on the map). They then determine the cost of travelling from point 'A' to point 'B' if they were to use a metered taxi at a rate of R2,50 per km.

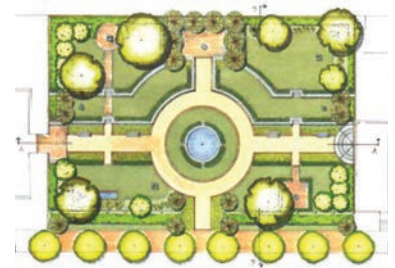
8.2. Exploring floor, elevation and design plans:



Floor plan



Elevation plan



Design plan (garden)

Recap the Grade 11 work on different types of plans. Which plans would be used for which purposes? What details would need to be on plans and why? (So builders can build accurately, etc.). Draw various plan symbols on the board and discuss their meaning (refer to the Grade 11 book, Unit 8).

8.3. Exploring models:

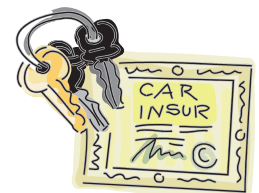
After a plan is drawn of a house or a garden, etc. a scaled model can be constructed using the scale on the plan (e.g. a bar scale). The model could either be a 2-dimensional scale cut-out/pictures to show certain features, or a 3-dimensional scale model of a building.

8.4. Design, draw and make a model showing increased security features on a house:

In groups of 3, learners work together to complete **Learner Worksheet 7**.

9. Ethical aspects of insurance (false claims)

- Ask learners if they have heard of anyone 'loading claims' when claiming from insurance, or simply submitting a false claim. Some people regard it as a minor crime (such as when thieves break into your car and steal only the radio) and as an opportunity to 'load' their claim and claim for items not stolen or damaged (e.g. designer sunglasses, leather jackets that were not in the car). This is fraud, and is a criminal offence. The fact is that everyone pays eventually for this type of fraud, because premiums are increased. An important example is that of the Road Accident Fund—the more false claims submitted the more taxpayers have to pay to cover the costs of payouts.
- **Activity:** Hold a class debate. Divide the class into two groups. One group is to argue that it is acceptable to make false claims with insurance companies because you have paid your money every month, so it is your own money anyway. The second group is to argue that it is a criminal offence to make false claims as this pushes up the insurance premiums for everyone, even those who are not abusing their insurance to benefit themselves!



Suggestions for daily assessment

Mathematical content	Activity/exercise	Type of evaluation/assessment
<ul style="list-style-type: none"> • Excess payment percentages • Insurance premium percentages: high risk factors • Graphs • Probability calculations • Scales, plans and models 	Class discussions; class debate; Calculating excess payments; calculating and investigating probability; Worksheet 6 and 7	Participation in class discussion and debate marking of written work; self-assessment

Learner Worksheet

1. What types of insurance will you need when: (Give a brief reason for each insurance type listed.)
 - 1.1 You start your own business?
 - 1.2 You work for someone else?
 - 1.3 You are a student?
2. Are the following UIF statements True/False? Write down the rule which applies to each statement.
 - 2.1 Tiny, who works for the Department of Labour qualifies for 4 months UIF payments. TRUE/FALSE
 - 2.2 Mike worked for Sharp Designs Ltd for 9 years and earned R6 000,00 per month. He resigned from his job so that he could study further. He will receive 58% of his salary for 4 months from the UIF to support him while he studies. TRUE/FALSE
 - 2.3 Sipho, who works on the farm, does not have to pay UIF because he receives his weekly wages in cash. TRUE/FALSE
 - 2.4 Maggie, who works as a general assistant at a furniture store must have 1% of her salary deducted for her part of the UIF contribution each month. TRUE/FALSE
3. Use the insurance table on page 51 to calculate the following excess amounts for insurance claims:

Claim	Type of Policy	Excess amount
a) R54 990	C	
b) R150 000	B	
c) R300	A	

4. Investigate probability using dice

Number of throws	After 30 throws	Actual/Observed probability	Theoretical probability
1			
2			
3			
4			
5			
6			

- 4.1 Calculate the actual probability (i.e. observed probability) of the following event happening. In your group, each member takes turns to throw the die. On a separate sheet of paper, keep tallies **HHH**. Write down the numbers that are rolled on the die. Roll the die 30 times. Add up the total per die face number and write it in under the correct column in the table. Now use the probability formula on page 53 to calculate the Actual or Observed probability. Eg. If the number 3 came up 7 times out of the 30 throws, then we say $7/30 = 0,23$ probability.
- 4.2 Calculate the theoretical probability of the numbers on a die (6 surfaces), i.e. how likely is a number to come up when you throw the dice once. Use the same formula. Fill in the theoretical probability in the correct column in the table above.
- 4.3. In your group, compare the theoretical probability and the observed probability for each number on the die. What do you notice?

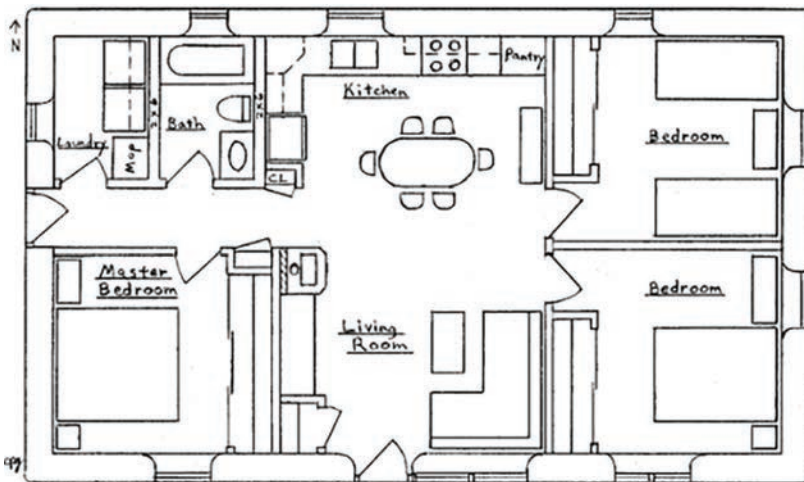


WORK IN GROUPS OF 3 LEARNERS

Exploring security features on a house

Your family has decided to add some extra security features to your house. There have been many break-ins in the area and your insurance company has requested that all the families in the area try to add some security to their homes as this might keep their premiums lower too.

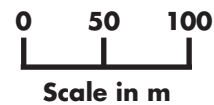
1. Draw a scaled plan of a small three bedroom house, see example below. Redraw this house on a separate sheet of paper and add a bar scale.



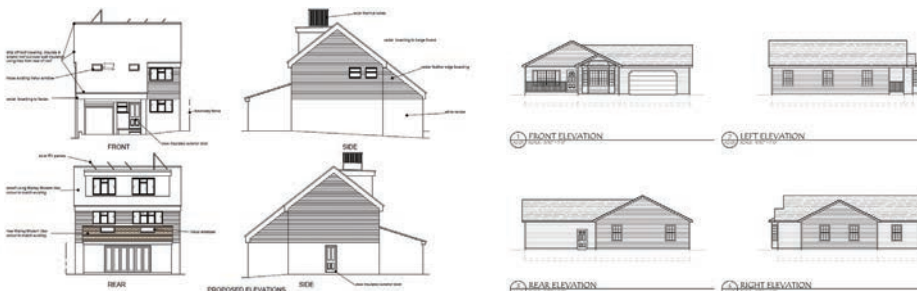
2. How many external doors does this house have?
3. Name three security features you would like to add to this house (one of them must be in the garden) and then draw these features in on the plan:

- 3.1 _____
- 3.2 _____
- 3.3 _____

4. What do you think the scale of this plan is? (Hint: a standard bath length is 1,5m and a standard door width is 1.2m). Draw your bar scale in the block below. For example:



5. Study these elevation plans. Which drawing is 'better' and why?



Plan A

Plan B

6. Draw and cut out a North elevation of the house in question 1, to clearly show the security features from the front of the house and label all security features clearly.

Unit Title:

Grade 12 Study and Exam Tips**CONTEXT: Matric Study and Exam Time**

Go through the following pages with the learners. Preferably make photocopies for each learner or pair. If no photocopying facilities are available, the content could easily be written up on the board and learners do their planning, etc. on separate sheets of paper or in their workbooks.

In this Unit we check:

1. Do you have a study plan?
2. Set up a Study Schedule
3. Stop Stressing!
4. Exam success—Quiz Time

1. Do you have a study plan?

Follow these tips when creating your study plan:

- budget your time realistically;
- break the study time up into smaller sections which makes it easier to hand and keep track of progress;
- divide the course material into small segments and assign them to the study sessions;
- set clear and specific goals for the study sessions;
- make sure that material weighted more heavily in the exam gets enough study time;
- take into account your familiarity with the material and the difficulty level;
- don't make the study sessions too long;
- study sessions should have enough variety of topics and activities so you won't get bored;
- don't cram your work before the exam; and
- don't forget to take regular breaks, it helps clear the head.

**1.1. Draw up your study schedule:**

- What is a study schedule? This is a personal study timetable showing time, for example, over a calendar month. After reading the tips in the box above about planning your studies, see if you can plot your study time; your actual exam dates per subject. Remember most exams in matric have more than one paper.
- Remember to add the following items on your study schedule (timetable): preparations, study, revision, relaxation, enough sleep, eating, family, etc.
- As you progress through the dates on your timetable, cross out or tick off exams or study sessions which you have completed. This helps to show you a visual picture of what still needs to be done also of when and what has already been completed. You could even work out a 'key/symbol system' where you mainly use symbols on the timetable. Keep a list of your timetable 'keys' handy to make sure you don't forget which symbol means what.
- This study timetable must be placed where you see it daily!

Sequence of activities

My Grade 12 Study Timetable

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY

Key:
 E = Exam
 S = Study
 B = Break

S = Sleep
 E = Eat
 V F = Visit friends
 VFam = Visit Family

V F = Visit friends
 VFam = Visit family

Remember: plan 50 minute study blocks; allow 10 minute breaks between study blocks; study every day, even weekends; plan your rest and visiting times as these are very important too!

LEARNERS WORK THROUGH THIS WORKSHEET INDIVIDUALLY

Learner Worksheet

1. Study skills: match the following problems and solutions:

- | | |
|---|--|
| a) I am stressed | 1) Release nervous tension by taking a break, walking, changing you activity |
| b) I don't know when to study | 2) Plan blocks of time to go into the details |
| c) I am not motivated | 3) Plan rewards for yourself like a treat or a chat with a friend |
| d) I need to learn concepts and information | 4) Develop a study plan |

2. Look at this time management matrix: everything you do in life can be classified in one of the four quadrants or squares

	Urgent	Not Urgent
Important	1 • crises • pressing problems • deadline-driven projects	2 • planning and preparation • long-term projects • true recreation/relaxation • relationship-building
Not Important	3 • many interruptions • some phone calls • some email or paper mail • many popular activities	4 • trivial tasks • busy work • some phone calls • junk mail or spam

2a) Where would you place a fire? Quadrant 1,2 ,3 or 4? Why?

2b) Where would you place a question from someone walking past you in the street?

3. Now consider everything you do over the course of a week and classify activities in the matrix below:

	Urgent	Not Urgent
Important	1 • • •	2 • • •
Not Important	3 • • • •	4 • • • •

The following Exam Quiz will assist the learners to memorise a few important points about exam writing skills while having a bit of fun at the same time. Divide the class into 4 groups. Make 4 copies of the following Quiz Cards, cut them out and hand out one set to each group. They are given 10 minutes to study the quiz cards. The cards are then handed in. Now ask random questions regarding the information on the quiz cards, for example: 'What should you take into the exam room with you?' Each correct answer is allocated a point to that particular team. The team with the highest marks wins! Reward them with, e.g. a few extra minutes of break time, etc.

Note: This quiz game helps the learners take the time to internalise these tips.



Quiz Card #1

Arrive early;
have all your stationery
with you & your
ID book!



Quiz Card #2

Make sure you are writing the
correct paper. For example:
Mathematical Literacy and not
Mathematics



Quiz Card #3

Plan your time!
How many marks for
how many minutes...
approximately—just estimate
quickly.



Quiz Card #4

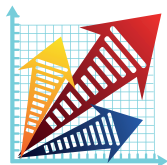
Read instructions on exam
paper—make sure you know
which questions need
to be answered.



Quiz Card #5

Analyse **WHAT** each question is
asking you to:

- Draw...
- Explain...
- Name...
- Discuss...



Quiz Card #6

Do **NOT** leave any blank
just **try** at least!



Quiz Card #7

Write legible (clearly)—an examiner cannot give marks to words that cannot be read.

My Handwriting

Quiz Card #8

Don't panic! Stay calm even if you get confused. Take a few breaths and try the question again.



Quiz Card #9

Check everything when you are done writing the exam:

Numbering...
Answers...
Drawings/Graph...
Calculations, etc...



Quiz Card #10

Don't leave! Use all the time you have. An extra fact or two might just increase your marks.



Quiz Card #11

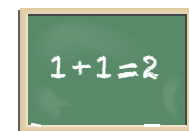
Include the units of measurement in all your answers for Mathematical Literacy—you will lose marks if you don't!

E.g.: **R, g, km, ℓ, °C, m³, %, \$**

Quiz Card #12

Show all calculations! In Mathematical Literacy marks are allocated for calculations.

Show them!



Worksheet 1:

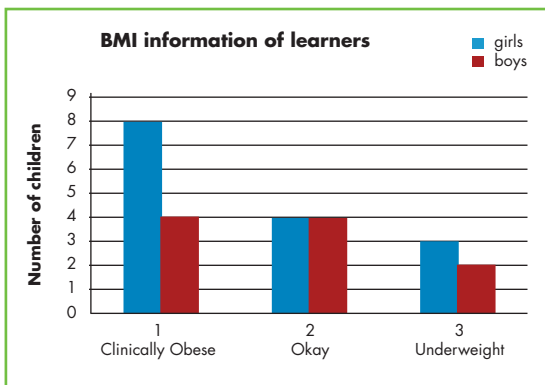
- 1.a. A budget is a summary of expenses and income;
- 1.b. To tackle debts systematically, to control spending, and to build wealth;
- 1.c. Student answer;
- 1.d. Fixed expenses are the same every month (e.g. rent) and variable expenses change over time or from one week/month to the next (e.g. movies and entertainment, petrol and transport costs);
2. Student answer;
3. Student answer

Unit 3: Assignment A:

1. Approximately $16\text{cm} \times 50 = 800\text{km}$
2. $800\text{km} \div 100\text{km} = 8 \times 8\ell = 64\ell \times R11,03 = R705,92$
3. Yes because Springbok to Upington only needs 32ℓ of fuel and you have 55ℓ
4. $800 \div 120 = 6\text{hrs } 40\text{ mins}$
5. Student answer – allocate mark if answer is logical and explained
6. If you travel at 120km/hour then you will drive for 6,7 hours. Therefore $15\text{h}00 - 6\text{hrs } 40\text{mins} = \text{around } 08\text{h}20$.
7. $R705,92 \times 8\% = R56,47$ therefore $R762,39$
8. $6\ell/100\text{km}$ then $48 \ell/800 \text{ km} @ R 11,03/\ell = 48 \times 11.03 = R529,44$. Which is $R176,48$ less
9. $14\text{cm} \times 50 = 700\text{km}$. Time = $700\text{km} \div 1 227\text{km/h} = 57\text{mins}$
10. Student's own question and correct answer.

Unit 3: Assignment B:

- 1.1. $70 \div 1,6^2 = 27,34$ BMI;
- 1.2. Overweight
2. Any answer between 50 – 65kg
3. See graph below



4. The body needs to be at a healthy weight, the other extremes each place different stresses on the body and could cause health problems.
5. Yes, if they are 1.98 or taller.
6. 8 bottles of water.
7. Approximately one step per second $\times 1 200$ seconds = 1 200 steps approximately.
8. Plastic packets filled with sand for arm lifts; a broom stick with a plastic packet hanging off each end filled with sand for use as a bar bell; any other safe ideas.
9. Programme is to include meals, healthy snacks; exercise (both cardio as well as weight training); drinking water.

Worksheet 2:

- 1A = R3 600; B = R3 520; C = R1 282,56;
D = R720.

- 2i Clothing store = B
- 2ii Call Centre Agency = C
- 2iii Fast food take away = A
- 2iv Biltong and nut shop = D
- 3.1 C and D
- 3.2 Dry cleaners, cell phone repair shop, any other relevant student answer
- 3.3 $A = 9 \times 4 = 36\text{m}^2$
- 3.4 It is in the middle of a passage way; very noisy; not much room for computers and telephone systems, etc.

Worksheet 3:

- 1.1 R18 000, Deposit: $10\% \times R18 000 = R1 800$,
Owing: $R16 200 = R21 060$ total loan repayment

1.2.

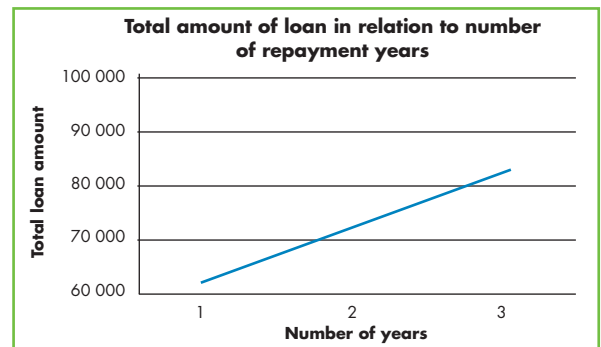
Year	Amount Borrowed	Interest Rate	Interest Value	Total
1	15 000,00	12%	1 800,00	16 800,00
2	16 800,00	12%	2 016,00	18 816,00
3	18 816,00	12%	2 257,92	21 073,92

Monthly instalment: $R21 073,92 \div 36 = R585,39$

2.1

Option 1: 36 months	Total loan repayment: R83 648,13 Monthly repayment: $R83 648,13 \div 36 = R2 323,56$
Option 2: 24 months	Total loan repayment: R72 737,50 Monthly repayment: $R72 737,50 \div 24 = R3 030,73$
Option 3: 12 month	Total loan repayment: R63 250 $\div 12$ months = R5 270,83

2.2



- 2.3 Stanley should choose Option 3 as the total loan amount is the least. He should however consider if he can afford the monthly instalments as they are higher than Option 1 and 2.

Worksheet 4:

1. Any relevant answer from learner.
- 2.1 Blouse = $20 \text{ CNY} \times R1,40 = R28,00$, Skirt = $15 \text{ CNY} \times R1,40 = R21,00$
- 2.2 $R28,00 + 40\% = R28,00 + ((40 \div 100) \times 28) = R28,00 + R11,20 = R39,20$ per blouse, $R21,00 + 40\% = R21,00 + ((40 \div 100) \times 21) = R21,00 + R8,40 = R29,40$ per skirt;
- 2.3 Examples: rent, wages, stationery, marketing, stock, accountant/bookkeepers fees, equipment, any other valid answer from the learner;
- 2.4.1. R3 520,00 for 40m²; R4 500,00 for 60m²; R3 850,00 for 55m².

Depending on her needs;

Option 1 offers the least amount of money to be paid per month; Option 2 offers the largest size shop; Option 3 offers the cheapest amount per m²;

2.4.2 Examples: Location, accessibility, budget available, other similar types of shops close by, any other relevant answer by learner;

3.1 656ft; 3.2 \$3,67; 3.3 212°F; 3.4 88,9lbs; 3.5 R505,12;

4.1 Week 1: £56,00; Week 2: £23,00; Week 3: £21,00, Week 1: R918,40; Week 2: R340,40; Week 3: R329,70;

4.2.1 £77,00 and the Rand value is R1 283,33 (Calculation: 77 units x £1,00 = £77,00. Then £77,00 ÷ 0,06 = R1 283,33);

4.2.2 \$23,00 and the Rand value is R209,09 (Calculation: 23 units x \$1,00 = \$23,00. Then \$23,00 ÷ 0,11 = R209,09);

4.2.3 AUD55,00 and the Rand value is R366,67 (Calculation: 55 units x AUD1,00 = AUD55,00. Then AUD55,00 ÷ 0,15 = AUD366,67);

Worksheet 5A – VAT:

1.1 Zero rated: Apples, bread, milk, vegetable oil. VAT payable Items: biscuits, cold drink, fruit juice, cat food

1.2 Biscuits R13,60 + cold drink R14,90 + fruit juice R7,80 + cat food R17,40 = R53,70 x 0,14 = R7,52 VAT payable

1.3 R53,70 vat items + apples R6,80 + bread R7,20 + milk R9,40 + vegetable oil R8,80 + VAT already calculated R7,52 = R93,42

2.1 Subtotal: R36 000,00 + R800,00 = R36 800,00; VAT @ 14% = R36 800,00 x 0,14 = R5 152,00 VAT Stanley can claim

2.2 Subtotal: R36 000,00 x 0,14 = R5 040,00; Total including VAT: R36 000,00 + R5 040,00 = R41 040,00

2.3 VAT = Value Added Tax; The VAT vendor pays this VAT to SARS.

Worksheet 5B – Income Tax

1.1 Gross Monthly Salary: R 25 000,00 + R550,00 = R25 550,00 gross monthly salary

1.2 Allowed pension fund tax deduction: (The greater of 7.5% of remuneration or R1 750) = 7,5% of R25 550,00 = R1 916,25 allowable pension fund tax deduction;

Calculating Taxable Income: Gross earnings – Allowable tax deductions (as calculated above) = (R25 550,00 – R1 916,25) = R23 633,75 monthly taxable income. Now x12 months = R283 605,00 annual taxable income.

1.3 PAYE: = R32 742,00 + [26% x (R283 605,00 – R181 900,00)] – [R13 257,00 + (R270,00 x 2 x 12 months) + (R181 x 12 months)]

= R32 742 + R26 443,30 – R21 909

= R37 276,30 annual PAYE ÷ 12 months

= R3 106,36 PAYE monthly (see (B) on the payslip)

1.4 Total Deductions: R3 106,36 + R2 700,00 + R3 500,00 + R10,00 = R9 316,36 total deductions (see (C) on the payslip)

1.5 Net Monthly Pay: R25 550,00 – R9 316,36 = R16 233,64 net monthly pay (see (D) on the payslip)

1.6 Unemployment Insurance Fund. Provides protection to workers who become unemployed.

1.7 UIF: 1% of gross salary by employer and 1% by employee. The 1% UIF contribution by employee may not exceed R10,00 for the 2015/2016 tax year. Therefore 1% of Mrs Mokoto's gross salary of R25 550,00 = R255,50 which exceeds the R10,00 maximum UIF deduction limit. UIF deduction is therefore R10,00.

Worksheet 6:

1.1, 1.2 and 1.3 Accept any relevant insurance type if motivated correctly;

2.1 FALSE. Tiny is a government employee and does not qualify for UIF;

2.2 FALSE. Mike does not qualify for UIF payments as he resigned from his job;

2.3 FALSE. All domestic and farm workers must contribute to the UIF;

2.4 TRUE. The employer deducts 1% of the worker's salary; adds another 1% from the employer and pays over a total of 2% UIF contribution to the Unemployment Fund each month per employee;

3. Calculating excess amounts;

Claim	Type of Policy	Excess Amount
a) R54 990	C	R15 397,20
b) R150 000	B	R33 000,00
c) R300	A	R500 (Excess is more than the damages claimed for)

4. Investigating probability;

Number of throws	After 30 throws	Actual/Observed probability	Theoretical probability
1			1/6 = 0,17
2			1/6 = 0,17
3			1/6 = 0,17
4			1/6 = 0,17
5			1/6 = 0,17
6			1/6 = 0,17

4.3 Any relevant answer in relation to the statistics in that group's table. The most likely comments should be that even though all 6 numbers have the same theoretical probability, the actual/observed probability shows that some numbers come up more often than others.

Worksheet 7:

1. Learner redraws the house to his/her scale. 2. Two external doors 3. Learners answers, e.g. metal security gates on the two external doors; burglar bars on the windows; Electrical fencing around the perimeter of the property. 4.

Any appropriate scale of around 1:150 (i.e. 1cm on the plan = approximately 150cm in the real world).

5. Plan A because it has detailed labels on the plan.

6. Learner submits a cut-out of the front elevation of the house

Worksheet 8:

1 a – 1; 1 b – 4; 1 c – 3; 1 d – 2; 2a = Quadrant 1

2b = Quadrant 4; 3. Individual answers based on the 4 quadrants provided.

Grade
12

Managing **my** Finances

A Mathematical Literacy Resource for Teachers

Teach your learners about money and financial management while covering some of the content, skills, knowledge and values for Mathematical Literacy.

All the lessons provided in **Managing my Finances** are linked to the National Curriculum Statement (NCS) – Curriculum and Assessment Policy Statement (CAPS), specifically the Subject: Mathematical Literacy.

The **Managing my Finances** Resource provides you with:

- Subject content
- Suggestions for daily assessment
- Homework and Assessment tasks
- Answers to Worksheet activities

