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LEARNER GUIDE

67465 National Certificate: Business Administration Services Level 3

Module 7 Numeracy and Research

Unit Standard 13935 Level 3 Credits 6

Plan and conduct basic research in an office environment

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PERSONAL INFORMATION

NAME	
CONTACT ADDRESS	
Code	
Telephone (H)	
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EMPLOYER	
EMPLOYER CONTACT ADDRESS	
Code	
Supervisor Name	
Supervisor Contact Address	
Code	
Telephone (H)	
Telephone (W)	
Cellular	

INTRODUCTION

Welcome to the learning programme

Follow along in the guide as the training practitioner takes you through the material. Make notes and sketches that will help you to understand and remember what you have learnt. Take notes and share information with your colleagues. Important and relevant information and skills are transferred by sharing!

This learning programme is divided into sections. Each section is preceded by a description of the required outcomes and assessment criteria as contained in the unit standards specified by the South African Qualifications Authority. These descriptions will define what you have to know and be able to do in order to be awarded the credits attached to this learning programme. These credits are regarded as building blocks towards achieving a National Qualification upon successful assessment and can never be taken away from you!

Programme methodology

The programme methodology includes facilitator presentations, readings, individual activities, group discussions and skill application exercises.

Know what you want to get out of the programme from the beginning and start applying your new skills immediately. Participate as much as possible so that the learning will be interactive and stimulating.

The following principles were applied in designing the course:

- ✓ Because the course is designed to maximise interactive learning, you are encouraged and required to participate fully during the group exercises
- ✓ As a learner you will be presented with numerous problems and will be required to fully apply your mind to finding solutions to problems before being presented with the course presenter's solutions to the problems
- ✓ Through participation and interaction the learners can learn as much from each other as they do from the course presenter
- ✓ Although learners attending the course may have varied degrees of experience in the subject matter, the course is designed to ensure that all delegates complete the course with the same level of understanding
- ✓ Because reflection forms an important component of adult learning, some learning resources will be followed by a self-assessment which is designed so that the learner will reflect on the material just completed.

This approach to course construction will ensure that learners first apply their minds to finding solutions to problems before the answers are provided, which will then maximise the learning process which is further strengthened by reflecting on the material covered by means of the self-assessments.

Different role players in delivery process

- ✓ Learner
- ✓ Facilitator
- ✓ Assessor
- ✓ Moderator

What Learning Material you should have

This learning material has also been designed to provide the learner with a comprehensive reference guide.

It is important that you take responsibility for your own learning process; this includes taking care of your learner material. You should at all times have the following material with you:

Learner Guide 	***This learner guide is your valuable possession:*** This is your textbook and reference material, which provides you with all the information you will require to meet the exit level outcomes. During contact sessions, your facilitator will use this guide and will facilitate the learning process. During contact sessions a variety of activities will assist you to gain knowledge and skills. Follow along in the guide as the training practitioner takes you through the material. Make notes and sketches that will help you to understand and

	remember what you have learnt. Take and share information with your colleagues. Important and relevant information and skills are transferred by sharing! This learning programme is divided into sections. Each section is preceded by a description of the required outcomes and assessment criteria as contained in the unit standards specified by the South African Qualifications Authority. These descriptions will define what you have to know and be able to do in order to be awarded the credits attached to this learning programme. These credits are regarded as building blocks towards achieving a National Qualification upon successful assessment and can never be taken away from you!
Formative Assessment Workbook 	The Formative Assessment Workbook supports the Learner Guide and assists you in applying what you have learnt. The formative assessment workbook contains classroom activities that you have to complete in the classroom, during contact sessions either in groups or individually. You are required to complete all activities in the Formative Assessment Workbook. The facilitator will assist, lead and coach you through the process. These activities ensure that you understand the content of the material and that you get an opportunity to test your understanding.

Different types of activities you can expect

To accommodate your learning preferences, a variety of different types of activities are included in the formative and summative assessments. They will assist you to achieve the outcomes (correct results) and should guide you through the learning process, making learning a positive and pleasant experience.

The table below provides you with more information related to the types of activities.

Types of Activities	***Description***	***Purpose***
Knowledge Activities 	You are required to complete these activities on your own.	These activities normally test your understanding and ability to apply the information.
Skills Application Activities 	You need to complete these activities in the workplace	These activities require you to apply the knowledge and skills gained in the workplace
Natural Occurring Evidence 	You need to collect information and samples of documents from the workplace.	These activities ensure you get the opportunity to learn from experts in the industry. Collecting examples demonstrates how to implement knowledge and skills in a practical way

Learner Administration

Attendance Register

You are required to sign the Attendance Register every day you attend training sessions facilitated by a facilitator.

Programme Evaluation Form

On completion you will be supplied with a "Learning programme Evaluation Form". You are required to evaluate your experience in attending the programme.

Please complete the form at the end of the programme, as this will assist us in improving our service and programme material. Your assistance is highly appreciated.

Assessments

The only way to establish whether a learner is competent and has accomplished the specific outcomes is through the assessment process. Assessment involves collecting and interpreting evidence about the learners' ability to perform a task.

To qualify and receive credits towards your qualification, a registered Assessor will conduct an evaluation and assessment of your portfolio of evidence and competency.

This programme has been aligned to registered unit standards. You will be assessed against the outcomes as stipulated in the unit standard by completing assessments and by compiling a portfolio of evidence that provides proof of your ability to apply the learning to your work situation.

How will Assessments commence?

Formative Assessments

The assessment process is easy to follow. You will be guided by the Facilitator. Your responsibility is to complete all the activities in the Formative Assessment Workbook and submit it to your facilitator.

Summative Assessments

You will be required to complete a series of summative assessments. The Summative Assessment Guide will assist you in identifying the evidence required for final assessment purposes. You will be required to complete these activities on your own time, using real life projects in your workplace or business environment in preparing evidence for your Portfolio of Evidence. Your Facilitator will provide more details in this regard.

To qualify and receive credits towards your qualification, a registered Assessor will conduct an evaluation and assessment of your portfolio of evidence and competency.

Learner Support

The responsibility of learning rests with you, so be proactive and ask questions and seek assistance and help from your facilitator, if required.

Please remember that this Skills Programme is based on outcomes based education principles which implies the following:

- ✓ You are responsible for your own learning – make sure you manage your study, research and workplace time effectively.
- ✓ Learning activities are learner driven – make sure you use the Learner Guide and Formative Assessment Workbook in the manner intended, and are familiar with the workplace requirements.
- ✓ The Facilitator is there to reasonably assist you during contact, practical and workplace time for this programme – make sure that you have his/her contact details.
- ✓ You are responsible for the safekeeping of your completed Formative Assessment Workbook and Workplace Guide
- ✓ If you need assistance please contact your facilitator who will gladly assist you.
- ✓ If you have any special needs please inform the facilitator

UNIT STANDARD 13935

Unit Standard Title

Plan and conduct basic research in an office environment

Unit Standard ID 13935

NQF Level 3

Credits 6

Purpose

This unit standard introduces the knowledge and skills needed to plan and conduct basic research within the learner's own organisation.

The qualifying learner is capable of:

- ✓ Using simple techniques to plan, conduct and evaluate their research
- ✓ To pose and answer questions in their workplace through a structured process
- ✓ Reflecting on and improving the approach they have taken to carrying out their research

Learning assumed to be in place

There is open access to this unit standard. Learners should be competent in communication and mathematical literacy at level 2. They should be familiar with basic questioning techniques and know how to operate the company computer system

Unit standard range

- ✓ Qualitative research methodologies include case studies, interviews, observations, focus groups, and content analysis.
- ✓ Quantitative methodologies may include interviews, structured questionnaires, and historical data collection.
- ✓ Analysis methods may include ranking, response frequencies, trends, and ranges sorted by demographics, type of information, organisational structure or any other logical and useful division.

More complex statistical and research techniques are excluded from this unit standard.

Specific Outcomes and Assessment Criteria

Specific Outcome 1: Plan a simple research project

Assessment Criteria

- ✓ The need for and the purpose of the research is clearly identified and confirmed in writing with the key stakeholders.
- ✓ The scope of the research is delineated after consultation with the key stakeholders
- ✓ A list of at least five qualitative and quantitative research methodologies is compiled, describing the suitability of each for the research topic in question.
- ✓ A particular methodology is selected based on the most appropriate design for the research in question.
- ✓ A research plan, describing the purpose, the question or problem to be solved, the expected outcome, the methodology and any schedules, questionnaires or models that will be used is formulated according to a selected published model.

Specific Outcome 2: Gather and collate data relevant to the research question of problem

Assessment Criteria

- ✓ The data is gathered according to the methodology described in the plan.
- ✓ The data is collated according to the methodology described in the plan.
- ✓ Where it has been necessary to change any part of the plan, reasons for the change are justified in writing.
- ✓ The data recorded in raw format and collated format.

Specific Outcome 3: Analyse the data obtained from the research

Assessment Criteria

- ✓ A list of five data analysis techniques is compiled, describing the suitability of each for the data obtained and the research topic in question.
- ✓ A particular analysis technique is selected based on the most appropriate for the data obtained and the type of research carried out.
- ✓ The data is analysed correctly using the selected analysis technique.
- ✓ Only the relevant findings are selected for presentation in the report.

Specific Outcome 4: Prepare and present a report and recommendations based on the findings of the research

Assessment Criteria

- ✓ The report includes all the elements of the plan, as well as the collated data, the analysis, the findings, a discussion with reference to published works relating to the topic, the recommendations, a conclusion and references.
- ✓ The report contains appropriate diagrams, graphs or charts that serve to illustrate and enhance comprehension of the points being made.
- ✓ The report links researched findings to published data in an integrated manner.
- ✓ The format of the report is based on a company specific template designed for the purpose.

Specific Outcome 5: Evaluate the effectiveness and utility of the research

Assessment Criteria

- ✓ The effectiveness of the selected techniques is discussed with reference to the purpose of the research being carried out.
- ✓ The utility of the research is discussed with reference to the stated purpose and design.

Critical Cross-field Outcomes (CCFO)

- ✓ Learners are able to identify and solve problems in which responses show that responsible decisions using critical and creative thinking have been made in deciding on the appropriate research methodology and analysis techniques.
- ✓ Learners are able to work effectively with others as a member of a team organisation when they collect data.
- ✓ Learners are able to organise themselves and their own activities when they plan and conduct the research.
- ✓ Learners are able to collect, organise and critically evaluate information in collating and analysing the data they have collected in the research.
- ✓ Learners are able to communicate effectively using visual, mathematics and language skills in the modes of oral and/or written presentations when presenting the report to the key stakeholders.
- ✓ The learner is able to use science and technology effectively and critically when formulating the report and creating appropriate graphics and illustrations to support the findings.
- ✓ Learners are able to demonstrate an understanding of the world as a set of related systems by relating research findings to existing published texts.

PLAN A RESEARCH PROJECT

Specific outcome

Plan a simple research project

Assessment criteria

- ✓ The need for and the purpose of the research is clearly identified and confirmed in writing with the key stakeholders.
- ✓ The scope of the research is delineated after consultation with the key stakeholders
- ✓ A list of at least five qualitative and quantitative research methodologies is compiled, describing the suitability of each for the research topic in question.
- ✓ A particular methodology is selected based on the most appropriate design for the research in question.
- ✓ A research plan, describing the purpose, the question or problem to be solved, the expected outcome, the methodology and any schedules, questionnaires or models that will be used is formulated according to a selected published model.

The Role Of Statistics When Processing Data

What is statistics? Most of us seem to have an innate tendency to become startled or frightened when the word 'statistics' is mentioned. This should not be so. We all use statistics in our daily lives. It is a natural part of ourselves that has allowed us to survive from the days of living in the dark caves of our ancestors to exploring our moon, other planets as well as the galaxy.

'But statistics means working with numbers and I am not good with numbers' you may say. It is true that statisticians work with numerical facts that they call data. However, these numerical facts are simply ways of describing, grouping and summarizing information so that it is more easily understood. Keep in mind that all numbers used in this module are fictitious, that is, they are numbers I invented myself. If I use numbers that are really true, I will let you know. So if I say something has risen or fallen by 20%, I made that value up just as an example.

Here are a few examples that you undoubtedly have heard and may have some idea of what they mean. (Remember to ignore the actual numbers!)

- ✓ Think of our sportsmen and sportswomen. We discuss their average runs at the cricket crease, bowling rates and the athlete's best, worst and average times on the track. We know the average number of goals a striker makes in a season. How do we obtain this information? Why do we say one player is better than another? Can we compare a gymnast with a cyclist?
- ✓ We hear the weather forecaster say that there is a 20% probability of rain today. Perhaps based on this information we decide not to take an umbrella with us. If the weather forecaster said that the probability of rain today is 80%, would you leave the umbrella behind?
- ✓ The government announces that the rate of crime is down by 20%, inflation is up by 10%, unemployment is down to 28% and the CPI (Consumer Price Index) has risen 3 percentage points on a year-to-year basis. What does all this mean? How do they get this information? Are these figures accurate?
- ✓ You have heard that smoking is linked to lung cancer and that HIV is linked to AIDS and that the evidence for these statements is 'statistical'. What kind of evidence is 'statistical' evidence?
- ✓ A medical researcher claims that taking a certain tonic reduces the risk of heart attack. How can an experiment be designed to prove or disprove this statement? What is risk?
- ✓ You use statistics when you cross the street or drive a vehicle. When crossing the street you look both ways, see vehicles approaching, estimate their speeds, estimate your chance of making it across the street without being run over then you move or stay. If you move you have already decided how fast you will move based on the information you have just gathered and analysed. You behave similarly when in a vehicle. Our ancestors behaved similarly when looking for food.
- ✓ If you are a hunter or a sport-shooting enthusiast, you know how to aim and shoot your firearm. You also know that you rarely, if ever, hit the target in exactly the same place with every shot you take. Why is there a slight variation where the bullet hits the target? Why are the bullet holes on my target scattered, or spread, more than on another shooters target?

At this point you may have a few questions that you would like answered. What exactly do these figures mean? How did they (sport announcer, weather forecaster, government, researcher) obtain this information? How accurate is the information? What does it all mean?

Humans have survived for many thousands of years simply because they have the innate ability to take in information, organize and analyse it and then draw conclusions based on their analysis.

This is all that statistics is about: obtain information, organize and analyse the information and then draw conclusions from this information. The goal, however, of statistics is to provide insight by using numbers. In fact, the information usually contains some uncertainty but statistical thinking can deal with it.

Every discipline has developed its own language or terminology over time. Statistics is no different and many words and terms are used with specific meanings attached to them. Some of the same terms are also used daily by non-statisticians but in a loose, semi-defined manner. Statisticians use words to express specific ideas. For instance, statisticians use the word 'data' where 'information' has been used in this introduction. The word 'data' is almost always used in the plural for statistical work and this module uses 'data' as a result.

Methods Of Doing Research

Research is defined as all activities that provide information to guide business, societal and life decisions. Research is an information gathering activity that is intended to guide strategic or operational business, societal and life decisions about target groups, competitive strategies, etc.

Why would you want to do research?

Issues/questions commonly addressed by research in a business environment.

4 C's analysis:

- ✓ Customers (Customer analysis)
- ✓ Competitors (Competitive analysis)

- ✓ Company (Operational analysis)
- ✓ Climate (Environmental analysis)

Customer analysis

The following questions are common in customer analysis:

- ✓ How big is the existing market?
- ✓ How big is the potential market?
- ✓ How fast is the market growing?
- ✓ What are the buyer's background characteristics?
- ✓ How and why do buyers use the product?
- ✓ How and where is the product bought?
- ✓ How brand loyal are buyers?
- ✓ What market segments exists, and how large are the various segments?

Competitive analysis

In addition to analysing customers, market research may be used to describe your organisation's competitive position in the market. Relevant questions may include:

- ✓ What market share do you and various competitors hold?
- ✓ What future sales do you forecast?
- ✓ What are the awareness levels?
- ✓ How do buyers perceive the different brands?
- ✓ What are the repurchase rates for the various brands?
- ✓ How satisfied are the customers with the various brands?
- ✓ What are your competitors' resources and strategies?

Operational analysis

Questions that arise under the heading of operational analysis include:

- ✓ How effective is your distribution?
- ✓ How effective is your advertising?
- ✓ How effective are your sales promotions?
- ✓ How effective are your sales people?
- ✓ How effective are your pricing strategies?
- ✓ How might consumers respond to product changes?
- ✓ How might buyers respond to a new product?

The value of research

Research derives its value from helping managers to make better decisions. It does not change the outcomes of those decisions: it simply helps managers know which course of action is best. Therefore, the value of research in any given situation depends on the importance of the decision at issue, the level of uncertainty about the proper course of action and the ability of the research to reduce that uncertainty.

Where would we get the information required for research?

Sales and expense records

Sales and expense records take two forms. The first is the traditional accounting compilations used to prepare income statements for an organisations operating units. The second is sales and expense information organized by customer groups and not by operating units. The uses of traditional sales and expense data for operating units include:

- ✓ Sales data for a product or business unit can be analysed to measure seasonal fluctuations and make short term sales forecasts
- ✓ Sales for a product can be correlated with prices to estimate to estimate the price elasticity of demand.

- ✓ It can also be correlated with advertising expenditure to estimate the advertising response function
- ✓ Sales can be compared before, during and after a promotion to measure the effects of promotion.

Sales and expense data based on customers rather than operating units are less traditional but lie at the heart of database business, societal and life, which involves using purchase records and background data on individual customers to tailor what is offered to them or to develop target profiles for potential new customers. Example of using internal information in this way include:

- ✓ The profitability of an individual customer or a group of customers can be calculated to determine whether price concessions or business, societal and life expenditures are justified.
- ✓ Heavy purchasers can be compared with light purchasers to develop a profile of key target customers
- ✓ A customer purchase records can be analysed to estimate that customers buying cycle, so that purchase reminders can be sent when a customer is due for a purchase. This also enables companies to send promotional incentives to these customers.

The problem with using the sales and expense recorder is the difference between what has happened and what is yet to come. They provide information on what happed in the past, but future conditions may be different. The past is not always the best prediction for the future.

Sales peoples reports

Four types of reports can be useful:

- ✓ Request and information reports show customer reports that cannot be fulfilled and customer complaints. Documenting these, helps the company recognize problems and opportunities.
- ✓ Lost sales reports provide information on lost sales opportunities. This can alert management to trends and patterns
- ✓ Call reports show the date and time and dates of sales call, the company and person visited, the issues discussed, and the outcome of the visit.
- ✓ Activity reports summarise a sales person's activities over some time period, how many calls were made, to whom and on what dates. The biggest limitation on using sales peoples reports is the workload they put on the sales for a. On the other hand imposing sales reports on sales people can cause resentment.

Street news

Street news about customers and competitors activities is another source of internal information. It should be made a regular part of a company's business, societal and life information system. This can be stabled by:

- ✓ Considering the types of information required
- ✓ Communicating these guidelines to people in the organization and establishing a reporting system.
- ✓ Regularly analysing and reporting this information

Surveys and interviews

This is the gathering of self-report data by means of structured interviews. The identifying characteristic of surveys is the use of a standardized questionnaire, which gives them advantages and disadvantages over structured interviews. The advantages of surveys are:

- ✓ The use of structured questionnaires facilitates easy data analysis in that all respondents are asked the same question in the same order.
- ✓ It allows the researcher to control the interview without being present
- ✓ It allows structured questionnaires, survey interviews to be done by telephone or through mail, which means they can be cheaper than interviews which require personal interaction.
- ✓ The use of telephone or mail and the lower costs per interview makes it possible to conduct a large number of interviews with a broader cross-section of the market.

The disadvantages of surveys are:

- ✓ Structured interviews reduce flexibility
- ✓ Deep feeling and hidden ones cannot be probed very well
- ✓ Question are limited to those that provide short answers.

In conclusion, surveys are good for measuring facts but less so for in-depth studies or profiles of individual respondents.

Personal surveys, telephone surveys, and mail surveys

- ✓ Personal surveys offer maximum questionnaire flexibility.

- ✓ Personal surveys are used where telephone surveys are not appropriate.
- ✓ Intercept surveys, usually conducted in shopping malls, allow objects to be shown to respondents at a lower cost than in personal interviews.
- ✓ Sample quality is low.
- ✓ Save time with short questionnaire
- ✓ Telephone surveys offers a good sample quality
- ✓ The cost of telephone surveys is low.
- ✓ Mail surveys offer the advantage of lower costs
- ✓ Low response rate with mail surveys

Focus Groups And Depth Interviews

Depth interviews rely on self-reports to obtain information. However, they are less structured than surveys. They can be conducted with either individuals or groups. In research, group interviews called "focus groups" are far much more common than individual depth interviews. Their major advantage is that they can gather complex information that doesn't come across very well in a survey.

The disadvantages are that each interview is costly and it is difficult to obtain participation for such long interviews. This further leads to small sample sizes and limited population coverage. They are best suited to concept testing, motivational research and interviewing corporate buyers whose company's may spend large sums of money on a particular service or product.

Strengths And Weaknesses Of Focus Groups

- ✓ Offers more depth and spontaneity than surveys.
- ✓ No broad population coverage
- ✓ High cost
- ✓ Gathers less information

Strengths And Weaknesses Of Individual Depth Interviews

- ✓ Offers more depth and spontaneity than surveys.
- ✓ No broad population coverage
- ✓ High cost
- ✓ Offers flexibility
- ✓ Do not allow gains from group interaction

How Is A Focus Group Organised And Conducted?

- ✓ Focus groups can be held in a variety of locations
- ✓ Participants may be recruited through random telephone calls or mall intercepts
- ✓ They are paid
- ✓ The size is 6 – 10 participants
- ✓ The moderator leads the discussion and draws out opinions

How Is Depth Interview Organised And Conducted?

- ✓ In depth interviews are done with consumers
- ✓ People from the target population are recruited by telephone to come to the site.
- ✓ They receive a monetary incentive to participate.
- ✓ The interviewer starts with simple questions to break the ice.
- ✓ The interviewer the introduces the topic and lets the consumer talk.
- ✓ Time 30 – 90 minutes

Observation

Data obtain through observation is called observational data. It involves observing people, objects, or events. Observations can be executed by human observers or mechanical devices e.g.

- ✓ manufacturers invite children to play in a room containing various toys and observers record which toys are used.
- ✓ Service shoppers visit stores or restaurants and record information about the service they receive

Information can also be gathered by way of self-reporting methods. One advantage of observation is that it does not suffer from respondents forgetting what happened or distorting their answers to make a good impression.

Two terms relevant to distortion is obstructive versus unobstructive and reactive versus unreactive measurement.

Obstructive means that the object being measured is aware of the measurement; reactive means that the objective reacts in changing in some way. The major problem with observation in regard to self-report measures is its limited applicability.

Test Groups

Here, new or revamped products are introduced into selected groups so that their actual market performance can be tested. Its weakness is that it is expensive and the researcher does not have full control over the test market place and competitors may disturb the market to spoil the results. Thirdly, because only a few groups are used, choosing a non representative market can result in a misleading test. Also it is inappropriate for a product that will have a large start up cost before any can be produced. Alternatives are virtual groups.

Case studies

A specific set of circumstances or a group (the 'case') is analysed according to a specific goal of study. Generally, case studies are used to characterise a trend or development.

They provide a systematic way of looking at events, collecting data, analyzing information, and reporting the results. As a result the researcher may gain a sharpened understanding of why the instance happened as it did, and what might become important to look at more extensively in future research.

An incident is studied to determine what caused the incident; what effects the incident had and what can be done to rectify the situation

If you use case studies as a method of research, you will have to make sure that the case studies are relevant to the topic you are researching.

Content analysis

The contents of books and mass media are analysed to study how people communicate and the messages people talk or write about. In other words, you study the printed media, web sites, even paintings for the content you need for your research.

The core questions of content analysis are: "Who says what, to whom, why, to what extent and with what effect?" It has also been used by futurists to identify trends. In political analysis, for example, you could study political scandals, the impact of public opinion polls, sudden events in external politics, inflation etc.

The uses of content analysis can be broken down into three basic categories:

- ✓ you make inferences about the antecedents (coming before in time or order) of a communication
- ✓ you describe and make inferences about characteristics of a communication
- ✓ you make inferences about the effects of a communication

The following table shows fifteen uses of content analysis in terms of their general purpose, element of the communication paradigm to which they apply, and the general question they are intended to answer.

Uses of Content Analysis by Purpose, Communication Element, and Question

Purpose	Element	Question	Use
Make inferences about the antecedents of communications	Source	Who?	Answer questions of disputed authorship
	Encoding process	Why?	Secure political & military intelligence Analyze traits of individuals Infer cultural aspects & change Provide legal & evaluative evidence
Describe & make inferences about the characteristics of communications	Channel	How?	Analyse techniques of persuasion Analyse style

	Message	What?	Describe trends in communication content Relate known characteristics of sources to messages they produce Compare communication content to standards
	Recipient	To whom?	Relate known characteristics of audiences to messages produced for them Describe patterns of communication
Make inferences about the consequences of communications	Decoding process	With what effect?	Measure readability Analyse the flow of information Assess responses to communications

According to Dr. Klaus Krippendorff (1980 and 2004), six questions must be addressed in every content analysis:

1. Which data are analysed?
2. How are they defined?
3. What is the population from which they are drawn?
4. What is the context relative to which the data are analysed?
5. What are the boundaries of the analysis?
6. What is the target of the inferences?

According to Zipf's law, the assumption is that words and phrases mentioned most often are those reflecting important concerns in every communication. Therefore, quantitative content analysis starts with word frequencies, space measurements (column centimetres/inches in the case of newspapers), time counts (for radio and television time) and keyword frequencies

Historical method

This involves a continuous and systematic search for the information and knowledge about past events related to the life of a person, a group, society, or the world. The **historical method** comprises the techniques and guidelines by which historians use primary sources and other evidence to research and then to write history.

The following summarises the history guidelines commonly used by historians in their work, under the headings of external criticism, internal criticism, and synthesis.

Garraghan divides criticism into six inquiries (*A Guide to Historical Method*, 168):

1. *When* was the source, written or unwritten, produced (date)?
2. *Where* was it produced (localization)?
3. *By whom* was it produced (authorship)?
4. *From what pre-existing material* was it produced (analysis)?
5. *In what original form* was it produced (integrity)?
6. *What is the evidential value* of its contents (credibility)?

The first four are known as higher criticism; the fifth, lower criticism; and, together, external criticism. The sixth and final inquiry about a source is called internal criticism.

Once individual pieces of information have been assessed in context, hypotheses can be formed and established by historical reasoning - synthesis

McCullagh gives this example (Justifying Historical Descriptions, 47):

1. In thousands of cases, the letters V.S.L.M. appearing at the end of a Latin inscription on a tombstone stand for Votum Solvit Libens Merito.
2. From all appearances the letters V.S.L.M. are on this tombstone at the end of a Latin inscription.
3. Therefore these letters on this tombstone stand for Votum Solvit Libens Merito.

Qualitative And Quantitative Research

Qualitative research

Qualitative research methodologies are used when you want to be sure of quality information

Qualitative research methodologies include: case studies, interviews, observations, focus groups, and content analysis.

Quantitative research

Quantitative research methodologies are used when you want a lot of information to choose from and the quality of the information is less important.

Quantitative research methodologies include: interviews, structured questionnaires, and historical data collection.

Plan A Simple Research Project

The following steps are important when you plan a research project:

- ✓ Identify the need and purpose of the research
- ✓ Confirm the need and purpose with stakeholders in writing
- ✓ Describe the scope of the research after the consultation
- ✓ Select your research methodologies
- ✓ Develop a research plan

Stakeholders include anybody and everybody with a stake in the research – management, clients, sponsors, etc. - anybody who wants the information and is going to use it for a purpose.

The scope of the research is where you state the specific details of what you will be researching, what will be included in the research and what will be excluded from the research.

Your research plan must include descriptions of:

- ✓ purpose,
- ✓ the question or problem to be solved,
- ✓ the expected outcome,
- ✓ the methodology
- ✓ any schedules, questionnaires or models that will be used

Exercise 1 SO1 AC 1-5 group activity

GATHER AND COLLATE DATA

Specific outcome

Gather and collate data relevant to the research question of problem

Assessment criteria

- ✓ The data is gathered according to the methodology described in the plan.
- ✓ The data is collated according to the methodology described in the plan.
- ✓ Where it has been necessary to change any part of the plan, reasons for the change are justified in writing.
- ✓ The data recorded in raw format and collated format.

Categorising And Using Information

When collecting information, we have the opportunity to make deductions and weighed assumptions on target groups.

Demographically

Demographic definitions include:

- ✓ Sex
- ✓ Age
- ✓ social class - A B C D
- ✓ region
- ✓ e.g. Mothers with babies under 2 years of age, BCD, throughout South Africa

- ✓ All pool owners in Mpumalanga
- ✓ Farmers in the Free State, and so on

Sociologically

e.g. 'Under-privileged young marrieds' or 'Upwardly mobile young executives'

Psychologically

e.g. Shy people who find it hard to make social contact

Product-Wise

e.g. All those who have not yet tried the product Heavy users of...

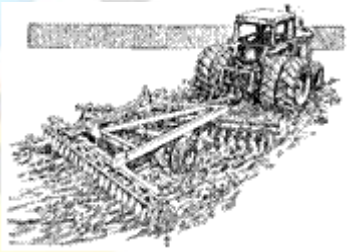
Sometimes the target market can be simply all housewives or all current consumers.

Psychographically

This is a combination of sociological and psychological and attempts to draw a 'Profile' of certain broad psychological/socio logical types.

Example Of Research Outcome

SA's 10 living standards measure. Sunday Times, May 15 2005

LSM 1: RURAL DWELLERS	
✓ Average income R879 a month (mostly social grants) ✓ Traditional huts ✓ Very high unemployment – 83% ✓ High illiteracy – one in five has no formal schooling ✓ No tap water ✓ No fridge, no insurance ✓ Biggest representation in Kwa-Zulu Natal and Eastern Cape	
LSM 2: FARM WORKER LEVEL	
✓ 91% live in rural areas – one third in traditional huts – with some in formal settlements ✓ Average income R1 068 a month. ✓ Most employed are farm workers and labourers ✓ One third have access to running water – mostly outside ✓ First level have TV's, at 30%; and cell phones, at 13%	
LSM 3: MATCHBOX HOUSE/INFORMAL SETTLER LEVEL	
✓ Over a third live in urban areas ✓ Mostly "matchbox housing" and informal settlements ✓ Average income R1 048 a month ✓ Almost half own a TV set and a fridge	
LSM 4: THE URBAN POOR	
✓ High number of backyard and poor township dwellers. ✓ Average income R1 774 a month ✓ Highest number live in Gauteng ✓ Three-quarters own a TV set ✓ Low interest in pets	

LSM 5: "SOMETHING TO LOSE"-	
✓ First level to have significant levels of insurance ✓ Average income R2 427 a month. ✓ Almost two-thirds employed. ✓ Almost 90% have a TV set; a VCR and/or a fridge, and entertainment centre. ✓ Microwaves appear, and almost half have at least a kitchen sink ✓ Rates of clothing purchase close to middle-class levels	
LSM 6: FOLKS IN THE FLATS	
✓ Very urban , with the highest level of flat living ✓ Average income around R4000 a month ✓ Virtually everyone has a TV, a fridge, and entertainment centre ✓ Employment includes "professional/technical", but service and clerical/sales is still high ✓ Many have washing machines and freezers ✓ Hiring of DVDs and Videos is common	
LSM 7: TOEHOLD IN THE MIDDLECLASSES	
✓ High number in small houses and cluster homes ✓ Average income R6 455 a month. ✓ Some can afford domestic help ✓ Most have cell phones ✓ Most have ATM cards, few have a credit card ✓ A third own a vehicle	
LSM 8: TOWNHOUSE AND RETIREMENT GENERATION	
✓ Highest level of townhouse dwelling ✓ Older age profile than middle LSMs ✓ Average income R8 471 a month ✓ A quarter own a PC and DVD player ✓ Job types include administrative/managerial	
LSM 9: HOUSEWIVES AND HOLIDAY SPENDERS	
✓ Highest level of "housewives", most have domestic help ✓ Average income R11 560 usually dominated by males ✓ English and Afrikaans dominate as home languages ✓ 100% ownership of "everyday appliances". ✓ Many spend on timeshare holidays and travel.	
LSM 10: SWIMMING POOLS, SELF-EMPLOYMENT AND SUBURBIA: WELCOME TO EASY STREET	
✓ Medical insurance, stock exchange investment and home loans peak. ✓ Most have DSTV; and pay for private security services. ✓ Swimming-pool ownership almost 300% over LSM9, and almost everyone has a PC ✓ Most are English-speaking	

✓ Average income R18 649 a month ✓ One in five have gym contracts ✓ Only category more likely to eat in restaurants than takeaways. ✓ Many have second homes, recreational vehicles. ✓ Pet heaven – 73% own dogs, 26% keep cats.	

The South African Advertising Research Foundation.

Gather Data

You will gather data according to your research plan. Following is a suggested way of gathering data and collating data. To give an example of gathering data, we will discuss the steps involved in conducting a survey, where you use a questionnaire to gather data.

Designing a survey

The basic process of conducting a survey is as follows:

1. Determine the aim of the survey
2. Define the population
3. Specify the variables to be measured and prepare the questionnaire or other instrument you will use to measure them. If you use a questionnaire, you should test it on a pilot group to be certain it is clear and complete.
4. Set up the sampling frame. For example, if you are interested in new cars and use new car registrations to determine your sampling frame, those who bought more than one new car will appear more than once.
5. Determine the statistical design of the sample. Specify how large the sample will be and how it will be chosen from the sampling frame.
6. Decide how to collect replies: how will you get their replies to your questionnaire: by phone, mail, verbally, etc.?
7. Design your questionnaire: the questions you will ask in order to collect the information
8. Attend to details like training interviewers and arranging the timing of the survey. Remember that surveys usually contain more than one question and each question must be thought through thoroughly. You must also determine how you will code the information and put the information into a computer for summary analysis. If you only have 500 responses and there is only one question on the survey, doing the calculations by hand is pretty easy. However, if you have several thousand questionnaires and each contains 30 questions, you are dealing with a much bigger problem.
9. Run a pilot survey: a test survey to check the process, the questions, the aim and the information
10. Carry out the main survey: the actual research
11. Analyse the data: now you will analyse the data in order to find out what it tells you.

There are three general forms of surveys: questionnaires, interviews and network analysis. This manual introduces questionnaires and only briefly describes interviews and network analysis. In addition to surveying with questionnaires and interviews researchers may make direct observations.

Determine Your Research Aims

Start your survey by setting sown the aims for the survey. Why are you doing research and what do you want to achieve? What do you want to know? If we use Markinor as an example, they want to determine before the election who is going to win in which area, and how the other political parties will do during the elections.

In the workplace it can be that you want to find out:

- ✓ How many passengers you transport per route
- ✓ Why customers use your organisation rather than one of the opponents
- ✓ How much fuel your bus uses
- ✓ How many man hours are lost every year during the winter due to illness of staff members
- ✓ How you can improve your customer service
- ✓ What other services customers require from your organisation

Doing a survey does not have to be difficult and complicated or expensive. There is a story about a construction company that was trying to find a competitive edge. The management decided to do market research and so it asked customers about the worst habits of the competitors. Of course, the customers talked about the bad habits of constructions companies:

- ✓ Being impolite

- ✓ Don't care about the dirt that workers bring into the home
- ✓ Staff and equipment that looked shoddy

So, what did this construction company do to be better than their competitors? They

- ✓ Bought new equipment and kept it in good condition
- ✓ Trained their workers to be polite
- ✓ Dressed the workers well in order to project a good image

Did the company benefit from the market research and the changes that were brought in as a result of the market research? Yes. In less than two years the company increased its yearly sales FIVE TIMES!

Identify the population

Sampling

Sampling is a basic concept used in statistics and is used to try to estimate what the parameters of a population are. For example, I may want to estimate how tall South African men are on the average. Perhaps, I measure a few hundred men and calculate their average. The men chosen for measurement are the sample. The parameter I am looking for is the average height of South African men.

One sip of milk is sufficient to let you know that the milk is sour. This is what sampling is all about. In order gain information about the whole you only need to examine a part. Likewise, sipping a glass of water tells me nothing about the milk.

Here are a few definitions that statisticians use when dealing with samples:

- ✓ A 'population' is the entire group of objects about which information is wanted.
- ✓ A 'unit' is any individual member of the population.
- ✓ A 'sample' is a part or subset of the population used to gain information about the whole.
- ✓ A 'sampling frame' is the list or units from which the sample is chosen.
- ✓ A 'variable' is a characteristic of a unit that is to be measured for those units in the sample.

The distinction between population and sample is extremely important to statistics. First, we look at a population then some examples to make the distinction clear.

A population is defined in terms of our desire for information about that population. For example, if I want information about all high school students in South Africa, then the population is all high school students in South Africa. Even if I can only choose one high school and its students, the population remains all high school students in South Africa.

It is extremely important to define clearly the population of interest.

If you want to determine how many South Africans are in favour of gun control laws, you must define the population precisely. Are all South African residents included, or only citizens? What is the minimum age you require? Are individuals imprisoned for violent crimes allowed to be included, or just those with minor offences, or none at all?

The following examples are presented to give an understanding of population, sample and variables. Data (numbers) used in most examples are completely fictitious as you have been warned.

Example 1

Public opinion polls are designed to determine public opinion on any number of issues. The specific variables measured are responses to questions about public issues. Although these types of polls are very noticeable just before an election, they are held on a regular basis throughout the year. These polls may want to know who you would vote for, how you feel on gun control, are you for the death penalty to name a few.

- ✓ Population: all South African residents, 18 years of age an over.
- ✓ Sample: about 1000 persons interviewed monthly, possibly weekly.
- ✓ Variables: gender, racial group, age, residential area, income category and the answers to the specific question or questions ('If you voted today, which political party would you vote for?').

Note that often the interviewer knows some of the information a priori (beforehand) and need not ask the question. For example, it may be obvious that you live in an apartment in an urban environment when the interviewer knocks on your door. You will see how some of this information may be known prior to the interview when sampling techniques are discussed.

Example 2

Market research is designed to discover your preference and usage of various products or services. Undoubtedly you have heard radio or TV announcers state that their station is listened to or watched by 80% of South African while their competitors only make up the remainder.

- ✓ Population: all South Africans who have either a radio or a TV.
- ✓ Sample: about 1500 residents of South Africa
- ✓ Variables: gender, racial group, age, residential area, income category and the answers to the specific question or questions.

Example 3

The national census attempts to collect basic detailed information from each household in the country.

- ✓ Population: all South African households
- ✓ Sample: the entire population, as far as possible.
- ✓ Variables: the number of occupants, age, race, gender, family relationships, access to electricity, water and telephone services.

Example 4

Acceptance sampling is the selection and careful inspection of a sample drawn from a large lot of a product. The result of the sample indicates where the entire lot should be accepted or rejected. The methods used in this sampling technique are often described in detail in a written contract between the supplier and the purchaser.

- ✓ Population: the entire lot shipped by the supplier and received by the purchaser.
- ✓ Sample: a portion of the lot that the purchaser chooses to sample.
- ✓ Variables: dimensions, weight, quantity defective (light bulbs that do not work).

Example 5

Accounting data is usually sampled rather than inspected in its entirety. To go though each invoice, sales receipt, spares in stock, and so forth, is extremely time consuming and usually very costly. Accountants, therefore, sample each item, pull the records for each item as required and check these.

- ✓ Population: all accounting transactions for a specific company.
- ✓ Sample: about 8% of the accounting transactions and perhaps 5% of the stock.
- ✓ Variables: recorded transactions and actual transactions.

When Markinor does a survey before an election, they do not ask every person in the country for their views or opinions, they choose a number of people from the various population groups. The number of people they choose is called a ***sample***: a sub-set of the population, while the ***population*** is the members of the group you are interested in.

When you choose the sample for a countrywide survey, you have to make sure that your sample represents the entire population. Usually the ***sample*** will then be chosen from a list that contains all the members of the population, such a list is called a ***sampling frame***.

This is probably what Markinor does when they do surveys before elections. Luckily, for most of the research we want to do we do not have to go countrywide: we can usually choose from our community or customers or the customers of our competitors.

When we determine the population sample, we usually want to know market segmentation as well. Market segmentation is a breakdown of your sample taking into account the following factors:

- ✓ Geographic factors: where do they live? If our business is in Gauteng, getting information from people in Cape Town will not help us at all
- ✓ Age: which age group should we target?
- ✓ Income bracket: what should their earning be?
- ✓ Gender: male or female or both?
- ✓ Community and cultural beliefs: how will this influence our survey?

If you need more information about population groups and samples, you can contact the government statistical services and the Department of Trade and Industry will be able to give you information regarding the population segments according to the above criteria.

In order to find out how big your sample size should be (how many people you should question) you must first determine how many responses (completed questionnaires) you will need for the analysis.

A general rule is to look for about 20-30 responses in each of the major sub-categories for the sample. For example, if a key aspect of your research is to compare male and female then you should look for about 30 females and 30 males in your responses.

Once you know how many responses you want, 60 per the above example, you have to find out how many questionnaires you have to send out. Usually, about 20% of the people will reply to the questionnaire. This means that you then have to send out about 300 questionnaires to get 60 responses (people replying to your questionnaire)

On the other hand, if you are going to interview your customers by telephone or face-to-face, you will need less questionnaires.

Questionnaire Design

Most researchers make the mistake of asking too many questions. Your greatest enemy in survey research may well be poor response rate. Clear and concise questionnaires can help get the best response.

Design of the questionnaire can be split into three elements:

- ✓ Determine the questions to be asked
- ✓ Select they question type for each question type and specify the wording
- ✓ Design the question sequence and overall questionnaire layout

Determine the Questions to be Asked

Obviously, your questions should relate directly to the aim of the survey and to the specific information that you will require.

Decide on Layout and Sequence

- ✓ Do not clutter up the form with unnecessary headings and numbers.
- ✓ Include the contact and return information on the questionnaire, irrespective of whether addressed return envelopes are provided, these can easily become separated.
- ✓ Identify individual questions for reference purposes.
- ✓ Be careful not to overfill the page.
- ✓ Avoid using lots of lines, borders and boxes since these can make the page look too 'dense'.
- ✓ Small fonts may put people off, especially people with bad eyesight.
- ✓ Use a good legible font.
- ✓ Make good use of italics and bold types, think of using italics consistently to give instructions.
- ✓ Consider using bold for the questions themselves or for headings. Symbol fonts may also be useful.
- ✓ Begin with questions that will raise interest.
- ✓ You should try to keep the flow through the questionnaire logical and very simple, i.e. avoid any complex branching.

Question Types

Open-ended Questions: E.g. Do you think football hooliganism is caused by: (tick if appropriate)

Lack of discipline at home	
Players' behaviour on pitch	
Family breakdown	
Youth unemployment	
Poor schooling	
Violence on T.V.	
Other (please specify)	

Single vs. Multiple Response: E.g. What is your most usual means of travelling to college?

Bus	
Car	
Bike	

Rated Response: A popular approach in the social science is to use Likert scales such as the example below.

Please state how often you use the following: (*Please circle the numbers as appropriate)*

	Very often	***Often***	***Occasionally***	***Never***
Newspapers	1	2	3	4
Books	1	2	3	4
Periodicals	1	2	3	4

Wording of Questions

When you compile a questionnaire, think carefully how you phrase the questions that you are going to ask the people out there. You have to phrase the questions in such a manner that the people who complete them must:

- ✓ Be able to understand the question
- ✓ Be able to answer the question
- ✓ Be willing to give you the information you need

You also have to ensure that the questions and the way you ask them cannot be constituted as biased in any way, e.g. biased based on race, gender, age, religion, culture, etc.

Formatting

Most survey forms begin with a brief statement of introduction to announce the survey, request participation, assure confidentiality (if appropriate), and indicate how to return the survey form. A letter of introduction is included with mailed survey forms although sometimes introductory letters are used in other settings as well.

The important part of the survey form usually includes the questions or statements to which respondents must react. In practice, most questionnaires place demographic questions (gender, age, racial group) first but some researchers argue that demographics should be placed last to avoid boring people with dull background questions at the beginning of the survey.

Next, questions that rely on the same sort of response mode (multiple choice, true and false) are grouped together. Each section should be preceded by instructions for completing the items. Some researchers recommend that questions that deal with the same issue should be grouped together. However, this ordering sometimes creates bias in response as people may try to respond in ways that are consistent with early statements on the survey. For example, suppose I ask you to evaluate the quality of teaching in statistics classes and at a later point ask you to state what you believe are the most important needs at your place of work. It is quite likely that you will mention the quality of teaching as being one of the important needs.

Although you can't avoid the effect of question order, you should attempt to estimate what the effect will be. This will allow you to interpret results in a meaningful fashion. If the order of questions seems an especially important issue, you might prepare more than one version of the questionnaire where each contains different ordering of questions.

The correct length for a questionnaire almost always poses a problem for researchers. In general, brief questionnaires are preferred to lengthy ones but sometimes you may have to prepare long questionnaires. For example, if you use standard measures of some personality traits, you may have to include many questions. If you use several items to measure each concept, you will probably end up with a pretty long questionnaire. However, if you use only one item to measure each concept you may find yourself with insufficient information to determine your objective. Even so, you should be careful about using lengthy questionnaires and avoid the temptation to 'throw in' questions that are unrelated to your purpose. If you must use a lengthy questionnaire, it's a good idea to prepare several questionnaire forms that put the scales groups in different orders to control for subject fatigue.

Administering the questionnaire

In questionnaire studies, respondents are given survey instruments along with instructions and left to provide their answers in writing. The respondents are usually left alone to answer the questionnaire so this makes it easy to send through the mail, by fax, email or be answered in classrooms and offices.

In all cases the researcher is limited by the respondent's willingness to participate. People do not participate in survey research just because they are asked. Some people will not participate for any number of reasons and researchers face sampling biases when people choose not to respond.

For mailed questionnaires, one popular guideline is that a response rate of at least 50 per cent is adequate for analysis and reporting; a response rate of at least 60 per cent is good; and, a response rate of 70 per cent is very good.

After collecting the questionnaires, it is typical for the researcher to explain in person or in writing, what the study was about and to offer additional feedback to subjects who wish it. This 'debriefing' is not just a nice-to-have; it is a requirement of all ethical research.

Run A Pilot Survey

Test the questionnaire on a small sample of your subjects first. If this is not possible at least test it on some colleagues or friends. The aim here is to detect any flaws in your questioning and correct these prior to the main survey.

Having done your pilot survey, you can make amendments that will help to maximise your response rate and minimise your error rate on answers.

Carry Out The Main Survey

The purpose of doing a pilot survey is to find out if you have to change anything in the questionnaires or in your population sample or even the aim of your survey.

If you are using fieldworkers, you have to ensure that they are well trained to minimise errors in the collecting of data.

- ✓ Errors when choosing respondents
- ✓ Interviewer dishonesty
- ✓ Misinterpreting or misreporting of information
- ✓ Non responses: where people are not at home or refuse to answer questions

For the process of actually doing the market research, you also have to

- ✓ Set deadlines: start on a specific day and end on a specific day
- ✓ Determine the number of questionnaires you want to complete by that day
- ✓ If you employ field workers, how many questionnaires every day and how many at the end of the period

You have to put an administrative process in place: who is going to collect the completed questionnaires?

You must also have a quality and cost control system in place to prevent dishonesty and prevent fieldworkers from charging too much and wasting too much time. You could, for example, pay per correctly completed questionnaire.

Interviews

Questionnaires are handy but researchers sometimes find interview methods more useful for a couple of reasons. It is easy for many people to ignore a cold questionnaire but it may be difficult for them to ignore a live person who asks questions. Of course, the interviewer may arouse some suspicions but this is part of the job to involve respondents in the task. Interviews are conducted to increase the willingness of the respondent to participate and to obtain information that may be lost with a questionnaire.

The interviewer may record information (such as a respondent's manner and body language) that would be absent with the questionnaire method. Of course, there is some art involved in completing interview studies. So when you read studies that use the interview method, imagine the give and take involved and the pressures the researcher and respondent felt.

- ✓ The interviewer should be warm and professional.
- ✓ Establish rapport to make respondents feel at ease.
- ✓ Professional appearance is important

How Do We Increase Participation Rates In Surveys?

In face to face and telephone interviews, participation rates depend mainly on:

- ✓ The number of call backs used to reach unavailable respondents
- ✓ The experience of the interviewer in gaining co-operation.

In mail surveys, using pre-notification postcards, follow-ups, monetary incentives, self-addressed stamped envelopes, persuasive cover letters, and professional questionnaires can increase response.

Record the data

When doing a survey, the recorded data will be the replies you receive. If you are not doing a survey, you will record the information you need according to the research methodology you selected.

The initial recording of data will be in raw format – as you collect it. Once you have collected your data, you will collate the information.

Organise The Material

Once you have gathered information, the material you have collected has to be organised.

Sorting And Categorizing

Arrange or organise the information with common features or characteristics systematically in groups.

All the information with similar content is grouped together. Your classification will depend on the order in which you are going to write the document: you can sort the information chronologically, using contrast or cause and effect.

You can use cause and effect, and contrast to help you arrange your paragraphs in a logical way.

- ✓ ***Contrast*** is when you contrast one theme, thought, opinion or product with another. Refer back to the introduction of the article about the gorillas: you can contrast the concern of conservationists who were worried about the gorillas, with the views of humanists who were more concerned about the people being killed.
- ✓ ***Cause and effect***: referring back to the same text, you can progress from the causes of the war to the consequences (effect) of the civil war on ordinary people.

If you are writing about something that happens over a period of time, you can arrange your paragraphs chronologically: start with the earliest date and end with the latest date. When writing about droughts in South Africa you can start with the big drought in the 1930s and end with the current drought.

Sifting For Relevance

Once you have classified the information and data, you have to sift through it for relevance. You should keep only the information that is relevant to your topic, everything else can be discarded. In other words, if you are writing about plants that flower in summer, all information about plants that flower in autumn is not relevant, you cannot use it to enhance your writing and you should discard it.

Validity And Reliability

Now you have to check your information for validity and reliability. The obvious way of doing this is to check your facts with more than one source:

- ✓ check more than one manual,
- ✓ talk to more than one person,
- ✓ visit more than one website,

to ensure that your facts are correct.

Preferably, you should use more than one manual, more than one website and the knowledge of more than one expert for each aspect that has to be checked. If most or all you sources state the same basic fact, you can be reasonably sure that the fact is correct.

Recording

Once you have sifted and verified your information, record it in the categories you have selected. This recording is in draft form, usually in the form of rough notes.

Any arguments used in your document must be supported by sound reasons and facts. You have to justify your feeling about the matter with facts in order to persuade the reader to your point of view. Something your neighbour said about the matter is not fact – you have to verify the statement your neighbour made.

Modify your plan

At this stage, you may have to modify your original plan. For example, you may want to use an alternative research methodology. If this is the case, modify your plan after discussion with the stakeholders and confirm the changes in writing.

Exercise 2 SO1 AC1-4 group activity

ANALYSE DATA

Specific outcome

Analyse the data obtained from the research

Assessment criteria

- ✓ A list of five data analysis techniques is compiled, describing the suitability of each for the data obtained and the research topic in question.
- ✓ A particular analysis technique is selected based on the most appropriate for the data obtained and the type of research carried out.
- ✓ The data is analysed correctly using the selected analysis technique.
- ✓ Only the relevant findings are selected for presentation in the report.

Determining Trends Using Statistics

We determine and identify trends in societal issues such as crime and health; relevant characteristics of targets such as age, range, gender, socio-economic , cultural belief and performance; and the attitudes or opinions of people on issues by doing research as indicated and then by interpreting this information statistically.

We look at common grounds and averages to determine these trends.

Mean, median, and mode

Mean, median, and mode are three kinds of "averages". There are many "averages" in statistics, but these are, I think, the three most common, and are certainly the three you are most likely to encounter in your pre-statistics courses, if the topic comes up at all.

- ✓ The "mean" is the "average" you're used to, where you add up all the numbers and then divide by the number of numbers.
- ✓ The "median" is the "middle" value in the list of numbers. To find the median, your numbers have to be listed in numerical order, so you may have to rewrite your list first.
- ✓ The "mode" is the value that occurs most often. If no number is repeated, then there is no mode for the list.

Exercise: individual activity trends

Follow the steps as detailed

Find the mean, median, and mode for the following list of values: 13, 18, 13, 14, 13, 16, 14, 21, 13

The ***mean*** is the usual average, so:

(13 + 18 + 13 + 14 + 13 + 16 + 14 + 21 + 13) ÷ 9 = 15

Note that the mean isn't a value from the original list. This is a common result. You should not assume that your mean will be one of your original numbers.

The ***median*** is the middle value, so I'll have to rewrite the list in order:

13, 13, 13, 13, 14, 14, 16, 18, 21

There are nine numbers in the list, so the middle one will be the (9 + 1) ÷ 2 = 10 ÷ 2 = 5th number:

13, 13, 13, 13, 14, 14, 16, 18, 21

So the median is 14.

The ***mode*** is the number that is repeated more often than any other, so 13 is the mode.

mean: 15

median: 14

mode: 13

Find the mean, median, and mode for the following list of values: 1, 2, 4, 7

The mean is the usual average: (1 + 2 + 4 + 7) ÷ 4 = 14 ÷ 4 = 3.5

The median is the middle number. In this example, the numbers are already listed in numerical order, so I don't have to rewrite the list. But there is no "middle" number, because there are an even number of numbers. In this case, the median is the mean (the usual average) of the middle two values: (2 + 4) ÷ 2 = 6 ÷ 2 = 3

The mode is the number that is repeated most often, but all the numbers appear only once. Then there is no mode.

mean: 3.5

median: 3

mode: none

The list values were whole numbers, but the mean was a decimal value. Getting a decimal value for the mean (or for the median, if you have an even number of data points) is perfectly okay; don't round your answers to try to match the format of the other numbers.

Find the mean, median, and mode for the following list of values: 8, 9, 10, 10, 10, 11, 11, 11, 12, 13

The mean is the usual average: (8 + 9 + 10 + 10 + 10 + 11 + 11 + 11 + 12 + 13) ÷ 10 = 105 ÷ 10 = 10.5

The median is the middle value. In a list of ten values, that will be the (10 + 1) ÷ 2 = 5.5th value; that is, I'll need to average the fifth and sixth numbers to find the median: (10 + 11) ÷ 2 = 21 ÷ 2 = 10.5

The mode is the number repeated most often. This list has two values that are repeated three times.

About the only hard part of finding the mean, median, and mode is keeping straight which "average" is which. Just remember the following:

mean: regular meaning

median: middle

mode: most often

Range

The range before is the difference between the largest and smallest values in the data set.

The range is one measure of the spread of a set of data. If the range is very large we may expect the values in the data set to be spread widely.

Exercise: range group activity

Complete the following table:

Use the names of learners in your class and the number of children they have.

Names of Learners in your class	Number of Children					
	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

We would like to indicate how many learners (number of cases) fall within the class intervals.

The class intervals range from 0 – 1children, 2 – 3 children etc.

Class Interval	Tally (number of learners)	Number of children
0 - 1		
2 - 3		
4 - 5		
6 and more		
TOTAL:		

What is the range of the data set?

Distributions

The aim of statistics is to provide insight by means of numbers. In order to achieve this we must collect numbers that are valid in the sense of being both correct and relevant to the issue at hand

Data are presented in tables and graphs. This section covers some simple ways to represent data in graphs and to begin seeing how these numbers are distributed. The 'distribution' of a variable simply describes the values the variable takes on and how often each value occurs.

We want to use our knowledge of statistics to communicate facts and to support decisions. Data, like words, need to be organized in order to tell us anything useful. Tables of data are usually very large and I believe the best place for them is in a computer storage device or in an archive somewhere. I may need to get at these data for some or other reason but I don't want their volume to confuse me. I like simple things that I can understand.

Displaying data

I am going to start of with a table of data, taken from the 2001 census and published by Stats SA.

Language	Male	Female	Total
Afrikaans	2,900,214	3,083,212	5,983,426
English	1,772,483	1,900,720	3,673,203
IsiNdebele	342,366	369,455	711,821
IsiXhosa	3,726,376	4,180,777	7,907,153
IsiZulu	5,045,450	5,631,855	10,677,305
Sepedi	1,987,170	2,221,810	4,208,980
Sesotho	1,704,071	1,851,115	3,555,186
Setswana	1,774,785	1,902,231	3,677,016
SiSwati	571,429	623,002	1,194,431
Tshivenda	482,134	539,623	1,021,757
Xitsonga	1,001,446	990,761	1,992,207
Other	126,117	91,175	217,292
Total	**21,434,041**	**23,385,736**	**44,819,777**

FIRST HOME LANGUAGE BY GENDER: SOUTH AFRICA, 2001

This table lists the languages along with the number of people, grouped by gender, who use this language as their home language. Look at the table. It contains a few very important details.

Firstly, a table is made up of rows and columns. The rows extend horizontally across the page and the columns extend vertically down the page. Secondly, the table has a caption that describes the contents of the table. In this case the caption is below the table while in other cases the caption may be above the table. This table has a total column as its last row that may or may not appear in other tables. Thirdly, each column is labelled (Language, Male, Female and Total) so that you know what is in each column of data.

A table is pretty simple. It lists data in rows and columns and you can find the information you are looking for by going to either the row or columns of interest and looking either across or down. The intersection of the row and column (where they cross) is the data you require. In this example, if I want to find out how many people reported that they speak a home language that is not one of the official nine languages, I would look in the row called 'Other' and read the number to its right in the 'Total' column: 217,292.

Frequency tables

One of the first things to do when organizing a set of data is usually to count how often each value occurs. Stats SA kindly did this for us and presented the data in the form of a table

Because rates or proportions are often more useful than totals, we calculate these and display them per the table on the next page.

The technique used to create a table of proportions or ratios is simple but can become a little tedious without a calculator or a computer program to do it for you. If you are doing this by hand, that is, actually dividing the numbers, you will probably make a few mistakes. So check your work again.

	Male	Female	Total
Afrikaans	0.14	0.13	0.13
English	0.08	0.08	0.08
IsiNdebele	0.02	0.02	0.02
IsiXhosa	0.17	0.18	0.18
IsiZulu	0.24	0.24	0.24
Sepedi	0.09	0.10	0.09
Sesotho	0.08	0.08	0.08
Setswana	0.08	0.08	0.08
SiSwati	0.03	0.03	0.03
Tshivenda	0.02	0.02	0.02
Xitsonga	0.05	0.04	0.04
Other	0.01	0.00	0.00
Total	1.00	1.00	1.00

The basic idea of creating a proportion of a ratio is to divide the individual value by the total value. In the case of our example, the totals are already given, so you probably won't have to calculate them again. Or should you? Ensuring your data is correct is called 'internal consistency'.

Exercise: individual activity interpret frequency tables

Do the calculations that follow

I'll show you the calculations for the first three languages for 'Male', 'Female' and 'Total' in order to show you how easy it is to do.

Male:

$$\frac{2,900,214}{21,434,041} = 0.1353 \approx 0.14 \text{ or } 14\% \text{ for Afrikaans, male}$$

$$\frac{1,772,483}{21,434,041} = 0.0827 \approx 0.08 \text{ or } 8\% \text{ for English, male}$$

$$\frac{342,366}{21,434,041} = 0.0160 \approx 0.02 \text{ or } 2\% \text{ for IsiNdebele, male}$$

Female:

$$\frac{3,083,212}{23,385,736} = 0.1318 \approx 0.13 \text{ or } 13\% \text{ Afrikaans, female}$$

$$\frac{1,900,720}{3,385,736} = 0.0813 \approx 0.08 \text{ or } 8\% \text{ English, female}$$

$$\frac{369,455}{23,385,736} = 0.0158 \approx 0.02 \text{ or } 2\% \text{ IsiNdebele, female}$$

Total:

$$\frac{5,983,426}{44,819,777} = 0.1335 \approx 0.13 \text{ or } 13\% \text{ for Afrikaans, total}$$

$$\frac{3,673,203}{44,819,777} = 0.0820 \approx 0.08 \text{ or } 8\% \text{ for English, total}$$

$$\frac{711,821}{44,819,777} = 0.0159 \approx 0.02 \text{ or } 2\% \text{ for IsiNdebele, total}$$

If you check the results shown in the table from Stats SA, by summing each column you will find that the sums are 1.01, 1.00 and 0.99 for the 'Male', 'Female' and 'Total' columns. What happened? The arithmetic is correct but when I rounded the fractions to two decimal places, a little precision was lost. These errors are called 'round-off errors' or 'rounding errors' and they will be with us any time we round numbers. You'll get used to it!

- ✓ The 'frequency' of any value of a variable is the number of times that value occurs in the data. A frequency is a count.
- ✓ The 'relative frequency' of any value is the proportion or fraction or per cent of all observations that have that value.

In the example above, the total number of South Africans who use Afrikaans as a first language is 5,983,426. This is a frequency because it's a count of something: first language Afrikaans speakers.

The relative frequency is usually expressed in decimal form and in this case is 0.13. However, we could just as well express this value as a percentage (13%). Remember that 1% is $\frac{1}{100}$ or 0.01. A number in decimal form can be changed to a percentage by moving the decimal point two places to the right. (This is the same as multiplying the decimal form by 100 and putting a per cent sign, %, behind the result. 'Per cent' means 'by 100' or 'per 100',)

Frequencies and relative frequencies are a very common way of summarizing data when a nominal scale is used (gender, responses on questionnaires, eye colour).

In fact, it is such a handy way of summarizing facts that it is often used with an interval/ratio scale. In this case, we artificially group items and then count how many items fall into each group.

In this example, again taken from the census figures of Stats SA, we are looking at the age of a person. Age is measured on an interval/ratio and is a continuous value.

The table on the next page shows the actual values of the age of all South Africans grouped into five years age groups. The table also displays the percentage of each age group. Note that the column totals do not sum to 100%. I only used three decimal figures to calculate the results in order to demonstrate the potential problems with round-off errors.

Age	**Male**	**%**	**Female**	**%**	**Total**	%
0-4	2,223,731	10.3%	2,226,085	9.5%	4,449,816	9.9%
5-9	2,425,804	11.3%	2,427,751	10.3%	4,853,555	10.8%
10-14	2,518,956	11.7%	2,542,961	10.8%	5,061,917	11.2%
15-19	2,453,079	11.4%	2,528,642	10.8%	4,981,721	11.1%
20-24	2,099,293	9.7%	2,195,230	9.3%	4,294,523	9.5%
25-29	1,899,124	8.8%	2,035,814	8.7%	3,934,938	8.7%
30-34	1,594,488	7.4%	1,746,412	7.4%	3,340,900	7.4%
35-39	1,441,507	6.7%	1,630,264	6.9%	3,071,771	6.8%
40-44	1,233,632	5.7%	1,385,832	5.9%	2,619,464	5.8%
45-49	967,604	4.5%	1,119,776	4.7%	2,087,380	4.6%
50-54	769,499	3.5%	868,521	3.7%	1,638,020	3.6%
55-59	552,323	2.5%	652,943	2.7%	1,205,266	2.6%
60-64	444,510	2.0%	620,784	2.6%	1,065,294	2.3%
65-69	304,763	1.4%	483,164	2.0%	787,927	1.7%
70-74	232,547	1.0%	398,922	1.7%	631,469	1.4%
75-79	136,436	0.6%	231,101	0.9%	367,537	0.8%
80-84	90,835	0.4%	180,111	0.7%	270,946	0.6%

85+	45,907	0.2%	111,425	0.4%	157,332	0.3%
Total	21,434,038	99.1%	23,385,738	99.0%	44,819,777	99.1%

AGE DISTRIBUTION AND RATIO IN FIVE-YEAR INTERVALS BY GENDER: SOUTH AFRICA 2001

Graphing data

The purpose of a graph is to provide a visual summary of data. Graphs are the most effective way to communicate data and a good graph shows facts that would be very difficult or impossible to see from a table.

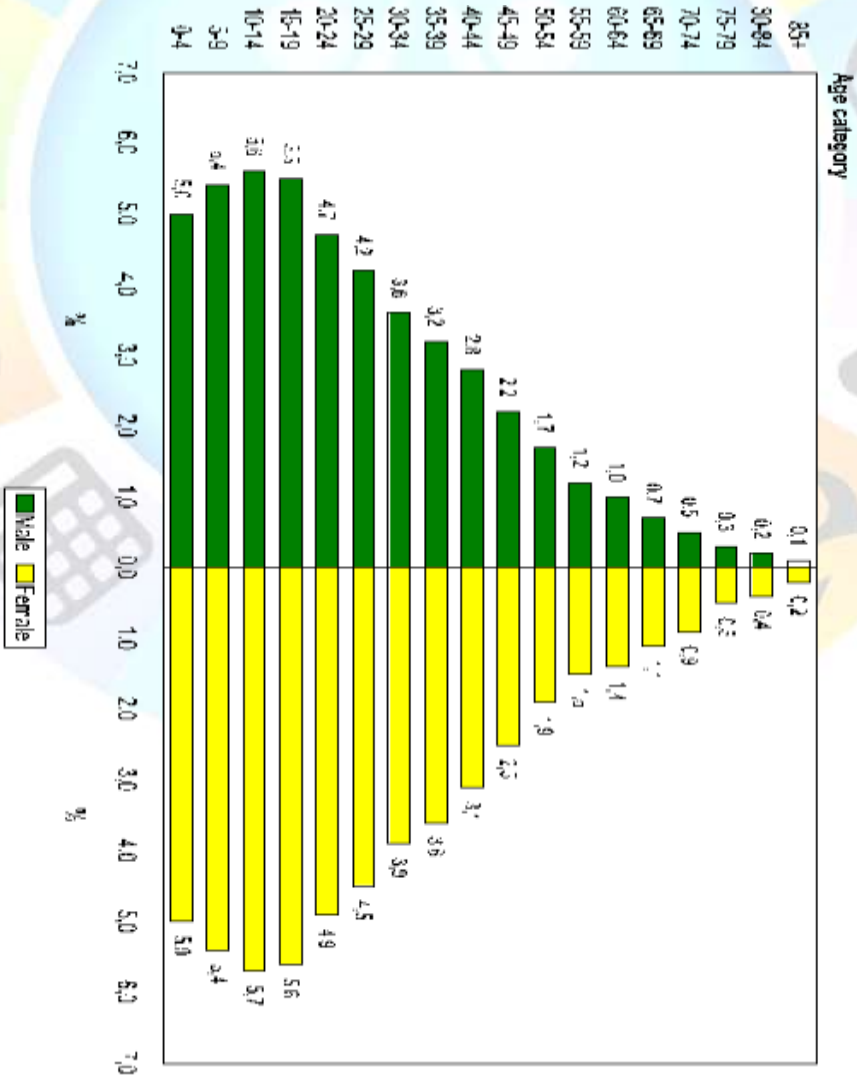
The visual impact of a graph is much stronger than looking at rows and rows of data in a table. I can't get excited over a table of numbers but a good graph can tell me plenty. There is one problem with a graph and you must be aware of it. Graphs are so easy to use and so powerful that some people look at them and forget to think. A graph might look pretty, but it is very easy to deceive the person looking at it. But I'll show you what to do to create a good graph and at the same time, show you what to look for when someone is trying to 'sell' you bad data.

Graphs, like tables, should be clearly labelled to show the variables that are being presented and the units being used. There are three things to remember when putting data in a graph:

- ✓ Make your data stand out
- ✓ Avoid clutter on the graph
- ✓ Use visual perception to get the facts to others.

An excellent example of a graph is shown in one the next page. This graph is the one Stats SA distributed with the age information in the previous example.

The impact of this graph along with its clarity of presentation is striking. This type of graph is called a pyramid or butterfly graph because of its shape and it belongs in the category of bar charts.



AGE DISTRIBUTION OF MALES AND FEMALES IN THE TOTAL POPULATION, CENSUS 2001

The vertical axis displays the age categories and the horizontal axis displays the percentage of each age group according to male and female. The data for the male groups is in green and is shown on the left while that for the female groups is shown on the right. This type of graph allows you to compare two groups of items at the same time.

I'm giving a bit of interpretation of this graph so that you can get the feel of looking at a picture and still see data. The very top of the graph shows that there are very few of us in the 85+ year group. This makes sense because as the population ages its population declines. In other words, the further the green or yellow lines are from the centre the more people there are in that age group. Conversely, the closer the green or yellow lines are to the centre the fewer people there are in that age group.

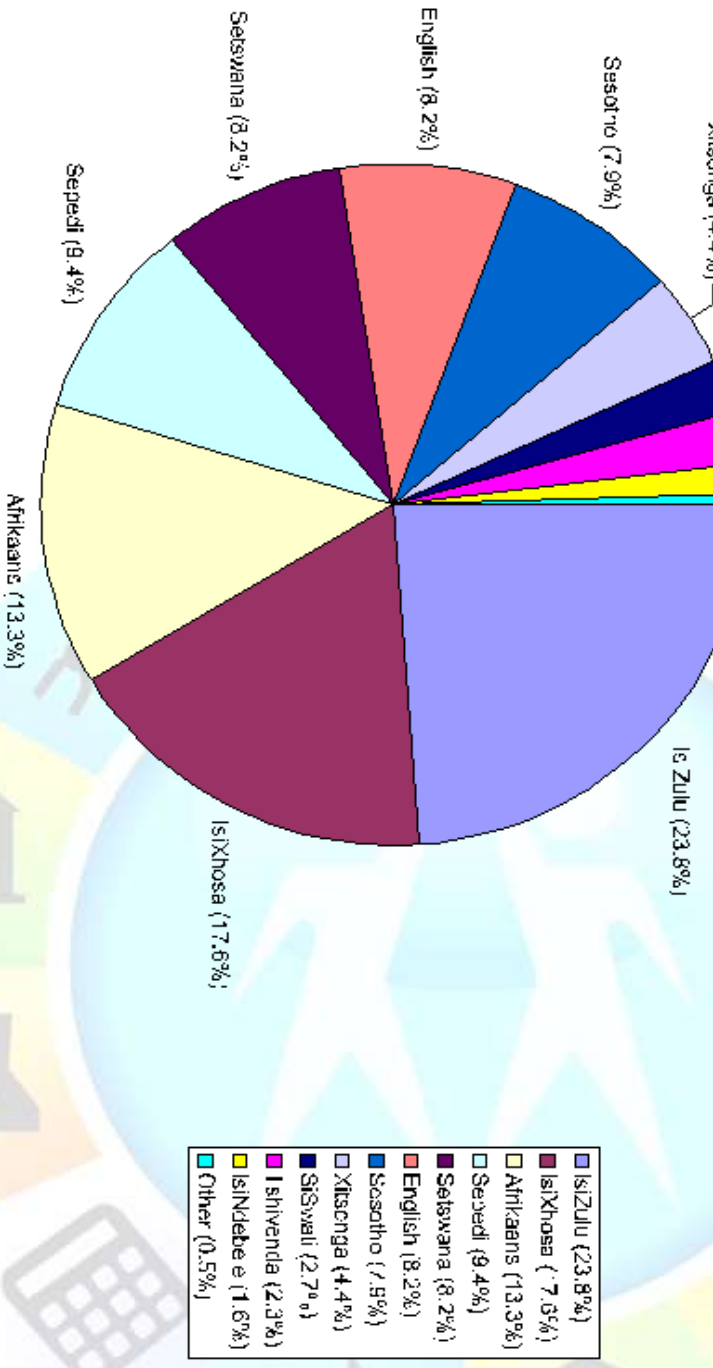
In addition, the female population slightly outnumbers the male population in every category with the exception of the bottom two where they are approximately equal. This makes sense from two viewpoints. Firstly, the female population is slightly greater than the male population (52% to 48%, respectively). Secondly, females tend to live about five years longer than males. This may also be seen in the top end of the graph (above the 35-39 year group) where the male to female ration starts declining. At the 70-74 year groups and up the number of females is approximately double the number of males.

Pie charts

The pie chart shows how a whole is divided into parts. The home language distribution is shown on the next page.

The pie chart is a good option to choose when you want to show the relationships that parts have to the total. In this example, all the home languages are compared. They have been ordered from largest (IsiZulu) to the smallest (Other) and are displayed in this manner in the pie chart. The legend on the right as well as the labels and colouring of each section of the pie make the pie chart easy to understand.

Pie charts show us the parts that make up the whole but humans don't see angles as clearly as we see length. For this reason, the pie chart is not a good choice to compare sizes of various parts with the whole. In addition, the divisions used in the example of the pie chart are causing the graph to become a bit crowded. If I tried to do a pie chart of the age groups, it would probably look pretty messy! If not messy, it certainly would look crowded. I also think the 85+year group would be hard to see. There are alternatives to the pie chart!

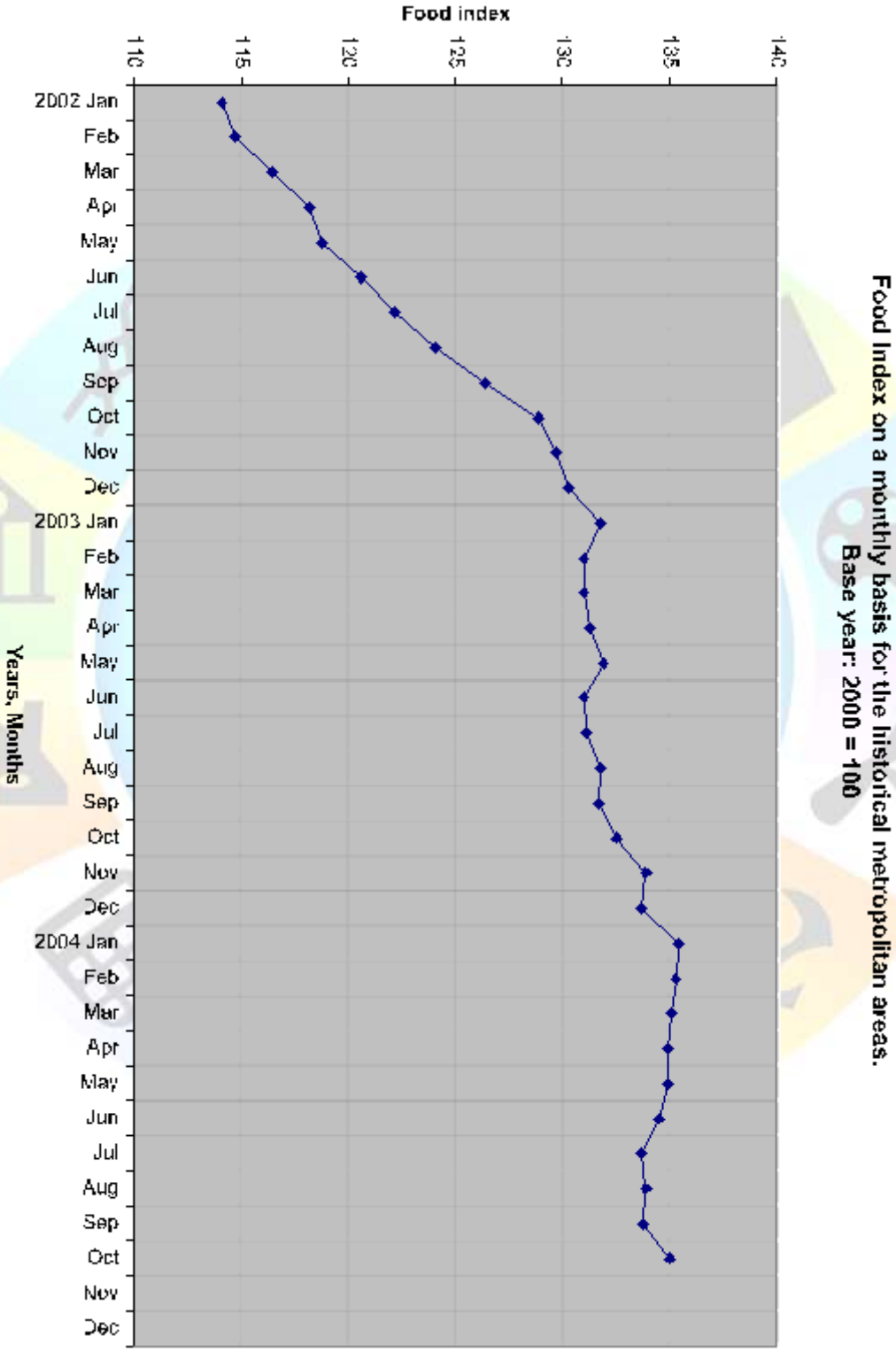


PIE CHART OF HOME LANGUAGES, CENSUS 2001

Line graphs

Line graphs show the behaviour of a variable over time. Time is placed on the horizontal axis and the variable being plotted is shown on the vertical axis.

A good example of a time based, line graph is the food index from Stats SA.

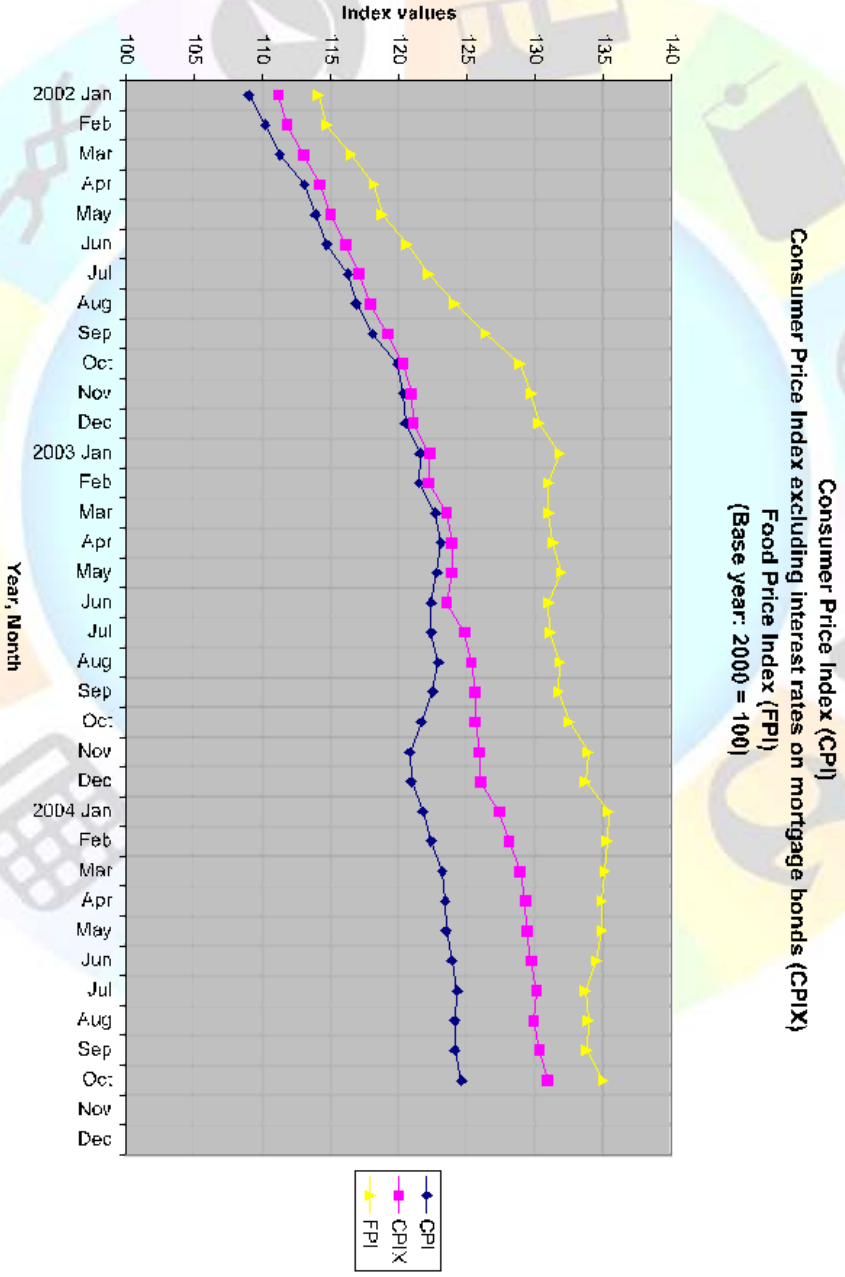


The graph makes it clear that the food index rose sharply between January 2002 and January 2003 after which its rise slowed somewhat.

As you can see in the graph, time (years and months) is displayed on the horizontal axis and the index value is displayed on the vertical axis. All time periods are of a fixed length and the length is the same for each month. I am pointing this out because I have seen graphs that try to distort facts by altering the graph in some respects.

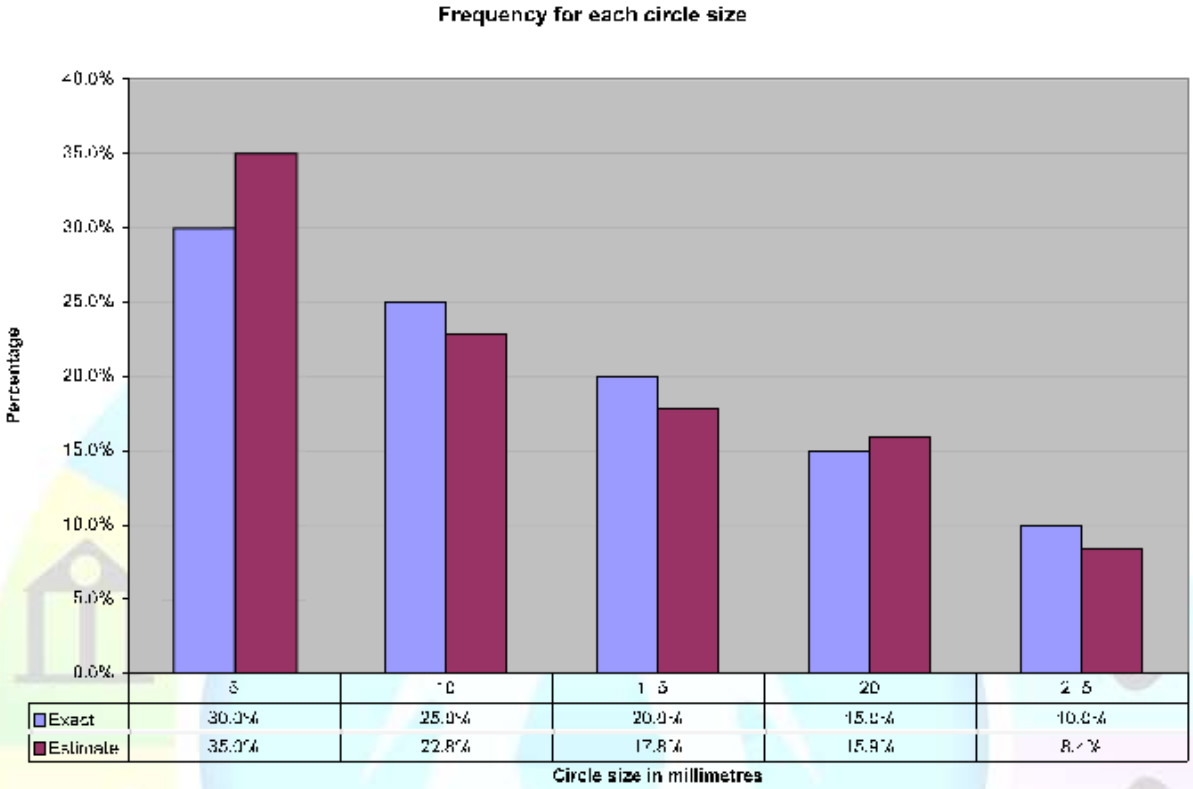
A very handy feature with the line chart is that you may have several graphs on the same chart. This makes them a bit easier to compare. The line chart shows the Consumer Price Index for the historical metropolitan areas (CPI), the Consumer Price Index excluding interest rates on mortgage bonds (CPIX) and the Food Price Index (FPI). The FPI was shown on the last two figures.

In this graph we can see the same as before with the FPI, however, the CPI and CPIX are also shown in comparison. The interpretation of these index figures is not discussed here, however, you can see that more than one graph may be represented and comparisons may be made. The FPI represents the price of food, as you probably have already guessed. In comparison to the CPI and the CPIX note how sharply the FPI rose from about July 2002. If you remember, there was a big outcry concerning the cost of food and, in particular, basic food prices near the end of 2002. This graph shows you that rise.



Bar charts

Bar charts or bar graphs may also compare the values of several variables. In fact, I showed you this previously when I displayed the estimated and theoretical values of the frequency distribution of each circle. Don't return to the previous figure. The graph is shown again in for your convenience.



Note that a separate legend is left out of this graph but a table of values is shown and the legend is included in the table. The exact proportions of the population of circle sizes are show in a bluish colour and the red-like colour shows the values of the estimates. The circle sizes in millimeters, the percentages of both the exact and estimated values and the visual presentation summarize many paragraphs of text and a table of numbers into one picture.

The bars of the chart may be vertical or horizontal. They may touch each other as shown in the figure or they may overlap each other or be separated from each other. But be careful when creating your own bar chart! Each bar must have the same width because our eyes and mind respond to the area of the bars. When the bars have the same width and a height that varies with the variable then the area (height times width) also varies and our eyes and brains receive the correct impression.

Scatterplots

Scatterplots consist of two sets of data that are plotted against each other. For example, you could measure temperature in °C as well as the amount of paraffin used in order to see if there is a relationship between the two. (How much paraffin do I need to keep my chickens warm at night?)

The table on the next page contains such information.

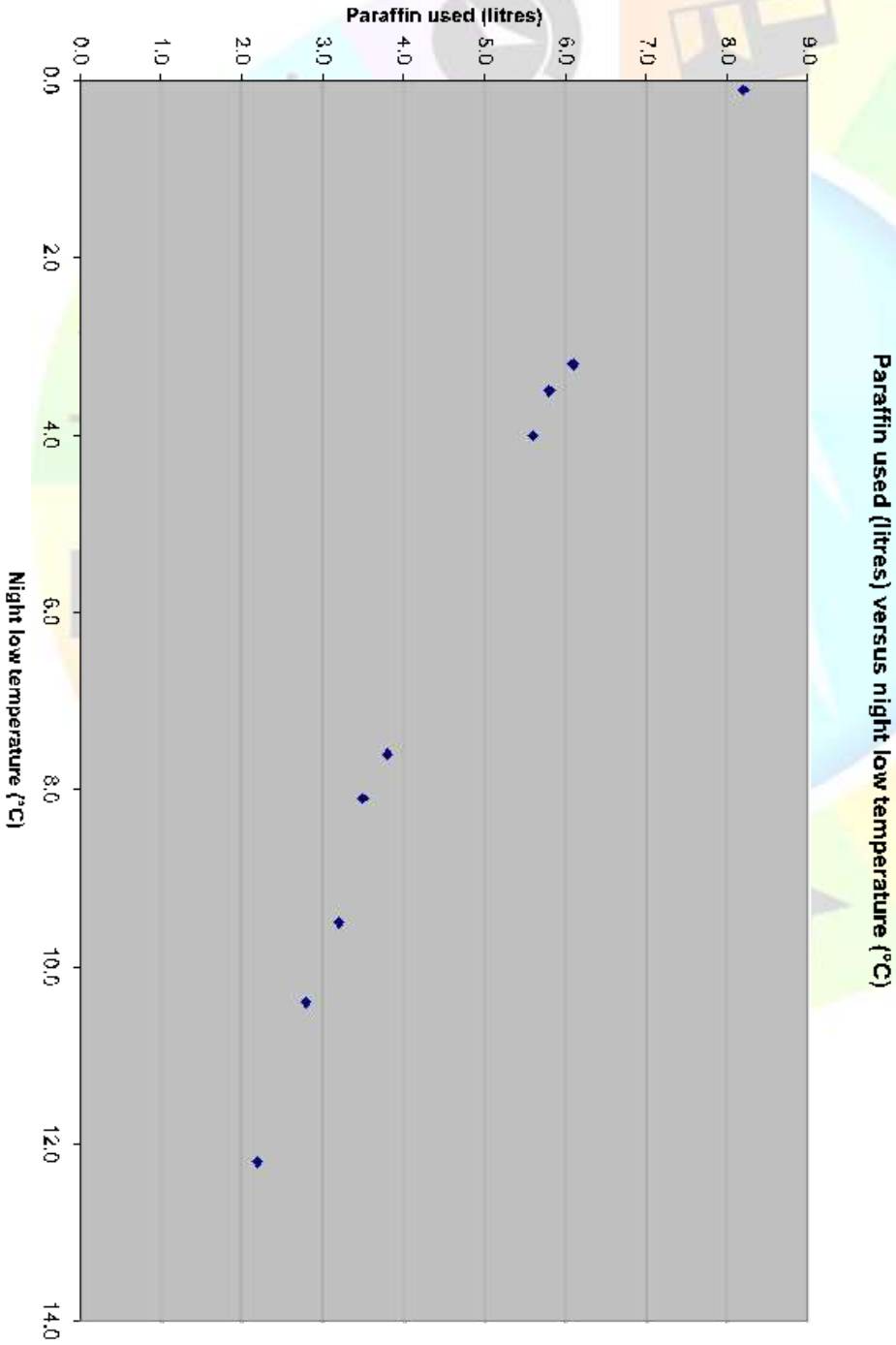
Degrees °C	Paraffin (litres)
8.1	3.5
12.2	2.2
10.4	2.8
7.6	3.8
4.0	5.6
9.5	3.2

3.5	5.8
0.1	8.2
3.2	6.1

The scatter graph shows the data plotted as points.

Putting temperature on the x-axis (horizontal axis) and paraffin on the y-axis (vertical axis) seemed to be logical to me but there is nothing that stops me from plotting the data the other way.

Notice that the higher the temperature the less amount of paraffin is used. This makes sense. In statistics-talk these two variables are negatively correlated. That is, when one value goes up the other value goes down. If both values appear to move in the same direction they would be positively correlated. If the plot does not appear to have a pattern, the two data sets would be uncorrelated.



Other Anaylysis Methods

You can also analyse the data by the following methods:

Ranking

Arrange the data from the most important to the least important or vica versa

Response frequencies

- ✓ How many replies were received
- ✓ The number of replies received per question category
- ✓ The percentage value per category out of the total number of replies received?

The easiest would be to prepare a document that lists all the questions. You then count all the answers and add the totals to the document. Let us suppose you did a survey about computer games:

Do you play computer games?	Yes	1450	No	550

Now you can calculate a percentage of the sample: who plays computer games and therefore might be interested in buying a new game.

- ✓ Total questionnaires received: 2000
- ✓ Total Yes 1450 percentage of sample: 72%
- ✓ Total No 550 percentage of sample 18%

This means that, of the people who took part in the market research, 72% do play computer games.

Exercise: response frequencies group activity

Analyse the responses for the following questions:

Why do you use a taxi to and from work	Cheap	1631
	Fast	1091
	Safe	312
	Convenient	1849

If you sent out 2000 questionnaires, what percentage of the sample use taxis because they are cheap, what percentage use taxis because they are fast, what percentage use taxis because they are safe and what percentage use taxis because they are convenient?

Cheap	
Fast	
Safe	
Convenient	

Which taxi route do you use every day?	Route A	755
	Route B	830
	Route C	415

What percentage uses Route A, Route B and Route C?

Route A	
Route B	

Route C	

You would do this for all the questions.

On the basis of the above information, you can now make a decision as to whether there is actually place in the market for a new taxi service, or whether your improved service will satisfy a need with the customers.

Ranges

Where data is sorted by demographics, type of information, organisational structure or any other sensible category.

For examples of sorting data by ***demographics***, refer to section 2 categorising and using information. For examples of sorting data by ***type of information***, refer to section 2 organise the material.

Sometimes data has to be sorted according to the ***structure of the organisation***. For example, if you have to do research about the number of health and safety incidents in the company, you could sort your information according to the number of incidents per department.

Exercise 3 SO5 AC1-4 group activity

PREPARE AND PRESENT A REPORT

Specific outcome

Prepare and present a report and recommendations based on the findings of the research

Assessment criteria

- ✓ The report includes all the elements of the plan, as well as the collated data, the analysis, the findings, a discussion with reference to published works relating to the topic, the recommendations, a conclusion and references.
- ✓ The report contains appropriate diagrams, graphs or charts that serve to illustrate and enhance comprehension of the points being made.
- ✓ The report links researched findings to published data in an integrated manner.
- ✓ The format of the report is based on a company specific template designed for the purpose.

Writing Reports

In the business world, a report will usually be as a result of something that was investigated or researched, such as the implementing of a new computer system. The custom in the organisation will determine whether the report is written in the formal or informal register.

Reports usually consist of the following: (see hand-out)

- ✓ A cover page
- ✓ A title page
- ✓ Introduction and statement of the aim of the report, also called the terms of reference
- ✓ A brief summary of the main contents
- ✓ A table of contents
- ✓ Procedure followed during the research or investigation
- ✓ Findings and conclusions as a result of the research or investigation
- ✓ Recommendations based on the research or investigation
- ✓ bibliography

The layout of a report

Introductory statement (terms of reference)

State the aim of the report, who requested it and why it was done

Summary of report

Summarise the main contents of the report.

1. Procedure

2. Findings.

3. Recommendations.

Table Of Contents

Introduction

This is your introductory paragraph, where you introduce the report to the reader

Procedure

Here you will state the procedure(s) you followed to gather information. For example, you were requested to source computers for the organisation, so you will state that you contacted the following computer wholesalers:

- ✓ Abc trading
- ✓ Xyz computers
- ✓ Technical computer experts

Findings

Here you will state your findings: how much each quoted for the same kind of PC, what after sales service each company offers, what training they can provide or recommend, etc.

Conclusion

- ✓ This will usually be a summary of your findings:
- ✓ The kind of PC's available
- ✓ The prices
- ✓ The training provided
- ✓ After sales service, etc.

Recommendations

Your recommendations as to the kind of PC's that the organisation should purchase, the prices, that should be paid, the training that should be provided to the staff.

The purpose of a recommendation is to convince the reader to take a decision which the reporter deems the most suitable under the prevailing circumstances.

In almost every report it is necessary for the reporter to make a recommendation, even if it was not requested for by the authority ordering the report to be submitted.

It is useless to submit an unmotivated recommendation. Such a recommendation is meaningless and carries no weight. Should the writer recommend a specific action without indicating why he has considered it as the most suitable solution, he has missed his goal.

Appendices

You will probably attach quotes and profiles of the companies for the reader to view.

Annexures and ***appendixes*** which are attached to reports, must be numbered. Annexures are numbered with capital letters of the alphabet and appendixes with Arabic numerals, i.e. Annexure "A", "B" and Appendix 1 and 2. The difference between an annexure and an appendix is that an annexure is a document without which the report would be incomplete. An appendix is an explanatory document with which the original writing would, in any case, be complete, viz a map of the surroundings.

Bibliography

If you made use of books, magazine articles, etc. in your research, quote you bibliography here.

The contents of a report must be concise and written in the first person.

You have to develop a writing style that is direct and straightforward. Although exceptions may sometimes be necessary, only one subject is to be dealt with in a particular report.

Reports can sometimes be lengthy. In such instances it is necessary to make use of ***headings*** and ***sub-headings***. It is also necessary to give a brief ***summary*** of the contents at the beginning of the report, to clearly outline the nature of the contents to the reader. These particulars should, preferably, be given in the first paragraph.

This learner guide has examples of headings and sub-headings.

The contents of the report must be ***complete, comprehensive and brief***, without discourteousness. High-flowing terms, sarcasm, etc. should be avoided at all times without being excessively humble, servile or insipid.

Write in a concise, simple, direct style and in the first person

When writing a report, ensure that you keep the language you use simple, clear, understandable and to the point.

Also, when writing a report you should do so in the first person. This means you reffer to yourself and what you experienced in the report.

The Finished Product

When preparing the document for a report or project or assignment, think about:

- ✓ The objective you set, or the intended purpose of the report- it must be short, yet clear, precise and it must create an interest.
- ✓ The specific audience and their understanding of the subject as well as the concerns they may have.

Reports, projects and specific assignments and tasks in the workplace play an important role in the smooth flow of information.

- ✓ They provide accurate and unbiased (fair) information about a situation.
- ✓ When dealing with possible courses of action the findings in a report can highlight all the possibilities and consequences you should be aware of.

Keep the "C's" in mind for successful reporting;

Clarity:	the report must be transparent:- clear, and easy to interpret and understand.
Completeness,	it must all the relevant detailed information.
Conciseness,	It must be to the point and contain all the information clearly set out in a few words.
Correctness,	it must be free of errors, the information must be accurate.
Concreteness	It must be specific in its purpose, have a definite purpose.
Courtesy	be polite and respectful and reflect good manners.

Writing the report

The way in which you structure your report depends on the contents of the report and the intended audience. Some organizations have a specific format in which reports must be submitted.

Before you write the report you must

- ✓ First restructure and organize the information you want to use in your report.
- ✓ Develop the key components into meaningful paragraphs that are sequenced in a logical pattern.
- ✓ Organize these paragraphs under the correct headings without losing the pattern making the report easy to read and to interpret.

Features of a formal report

The following features can serve as guidelines when preparing and writing a specific formal report..:

Feature	***Purpose***
Contents list	Gives an outline of the components addressed in the report. Number correctly and make sure the page numbers correspond with the titles. Include a contents list especially if the document is loner than 10 pages.
Executive summary	Every report should have an executive summary that gives a short summary of the contents of the report. At a glance a reader can see what it's all about, and decide whether the report is relevant to them or not. Don't make this summary longer than

Feature	*Purpose*
	an A4 page.
Introduction	Contains the background or history to the report or where it originated from, the scope and purpose, the manner in which it has been conducted and any other explanatory information
Body	This is the main part of the report it gives an account of your findings and the conclusions you have drawn, details of the research are included such as diagrams, graphs, tables, etc.
Conclusions	A separate summary of all the conclusions you have drawn referring to the relevant finding.
Recommendations	This section may not be relevant to all reports however where specific recommendations are made it is easier to highlight them in this section.
Bibliography	Finally the sources you have referred to; the published and unpublished texts you have quoted from and referred to. List alphabetically as follows: BOSMAN, C.H. 1969 Mafikeng Road Cape Town: Human and Rousseau
Appendices	Lengthy detailed information such as; completed questionnaires, detailed data and case studies. Note: Information is placed in this section as verification of the details mentioned in the report.

Make sure that the layout of your document improves the text and the visual aids.

- ✓ Does your document look nice, attractive, neat, and readable?
- ✓ Will it arouse the interest of the reader?
- ✓ Did you make use of headings and subheadings?
- ✓ Did you use numbers or bullets?
- ✓ Are your paragraphs not too long or too short?
- ✓ Do the visual aids enhance the value of your document?

Evaluate the content and information of your document

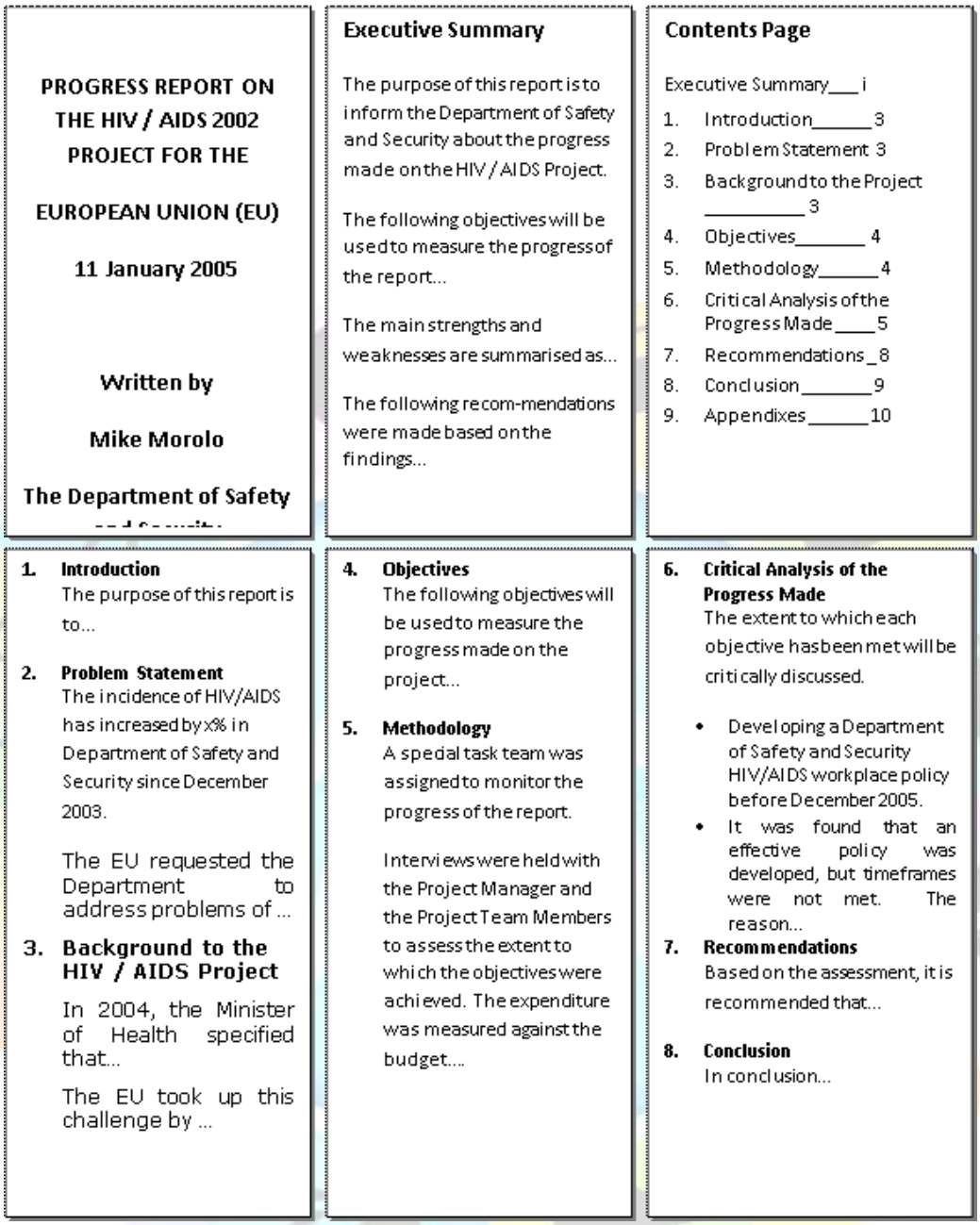
- ✓ Are the facts stated in your document correct?
- ✓ Did you stay with the purpose of the document or did you add unnecessary information that has no bearing on the document?
- ✓ Will the audience understand your writing?
- ✓ Did you choose the correct type of business document for your purpose?

Lastly, proofread your document to make sure there are no errors.

- ✓ Does the report include all the elements of the plan, as well as the collated data, the analysis, the findings, a discussion with reference to published works relating to the topic, the recommendations, a conclusion and references?
- ✓ Does the report contain appropriate diagrams, graphs or charts that serve to illustrate and enhance comprehension of the points being made?
- ✓ Does the report link researched findings to published data in an integrated manner?
- ✓ Is the format of the report based on a company specific template designed for the purpose?

The next page contains an example of the format of a general report

An Example of the Format for a General Report



PROGRESS REPORT ON THE HIV / AIDS 2002 PROJECT FOR THE

EUROPEAN UNION (EU)

11 January 2005

Written by

Mike Morolo

The Department of Safety

Executive Summary

The purpose of this report is to inform the Department of Safety and Security about the progress made on the HIV / AIDS Project.

The following objectives will be used to measure the progress of the report...

The main strengths and weaknesses are summarised as...

The following recom-mendations were made based on the findings...

Contents Page

1. Introduction
The purpose of this report is to...

2. Problem Statement
The incidence of HIV/AIDS has increased by x% in Department of Safety and Security since December 2003.

The EU requested the Department to address problems of ...

3. Background to the HIV / AIDS Project

In 2004, the Minister of Health specified that...

The EU took up this challenge by ...

4. Objectives
The following objectives will be used to measure the progress made on the project...

5. Methodology
A special task team was assigned to monitor the progress of the report.

Interviews were held with the Project Manager and the Project Team Members to assess the extent to which the objectives were achieved. The expenditure was measured against the budget....

6. Critical Analysis of the Progress Made
The extent to which each objective has been met will be critically discussed.

- Developing a Department of Safety and Security HIV/AIDS workplace policy before December 2005.
- It was found that an effective policy was developed, but timeframes were not met. The reason...

7. Recommendations
Based on the assessment, it is recommended that...

8. Conclusion
In conclusion...

Pointers for all report writing

- ✓ Be precise in your purpose or intention
- ✓ Remember to include a Table of Contents
- ✓ In the executive summary prove that your report is worthwhile studying
- ✓ Be accurate, honest and objective.
- ✓ Write as clearly and as correctly as possible.
- ✓ Include relevant details and keep to the point. Include additional information under the appendices.
- ✓ Organise, prioritise and logically sequence events and facts and processes.
- ✓ Take aspects into consideration that can influence the reader
- ✓ Include a section to sign off on the report
- ✓ Your style of writing should be impersonal and formal.

The report can be stored for a number of years and used as a reference therefore it must be readable regardless of the audience, the time and the circumstances

Exercise 4 SO4 AC 1-4 group activity

EVALUATE THE RESEARCH

Specific outcome

Evaluate the effectiveness and utility of the research

Assessment criteria

- ✓ The effectiveness of the selected techniques is discussed with reference to the purpose of the research being carried out.
- ✓ The utility of the research is discussed with reference to the stated purpose and design.

Evaluate Selected Techniques

Evaluation is the systematic determination of merit, worth, and significance of something or someone

We evaluate just about everything in life in order to make decisions for our future actions:

- ✓ The food you bought for lunch – was it worth the money you paid for it, was it tasty, would you buy from that shop again?
- ✓ The clothes you bought – did you pay a good price for the quality you received?
- ✓ The holiday accommodation that you stayed in – did they deliver everything that was promised?
- ✓ The ride in the taxi or bus to come to work: did the driver obey the rules of the road, did you feel safe, etc?

In the business world we also evaluate everything:

- ✓ Does the new supplier deliver on time?
- ✓ Are our customers satisfied?
- ✓ Do the new procedures make it possible for us to work more effectively?
- ✓ Personnel evaluations take place regularly
- ✓ Products and services are tested and evaluated all the time

At the end of the research, you have to evaluate the research techniques you used: did the methods assist you with your research, or would a different method have been more helpful?

Did the techniques you selected help you to stay within the intended purpose of the project?

What would you do differently next time?

Exercise 5 SO5 AC1-2 group activity

FORMATIVE ASSESSMENT WORKBOOK

Exercise 1 SO1 AC 1-5 group activity

Select a topic that relates to the business world you would like to do research on. Topics could include inflation, increasing or decreasing interest rates, the impact the price of oil has on the price of petrol, the impact the price of petrol has on the prices of consumer goods, the effect strikes have on the national economy, etc.

Plan your research project and develop a research plan.

Remember to consult with the stakeholders.

When you select your research methodologies, you have to develop a list of at least five qualitative and quantitative research methodologies. Describe the suitability of each methodology for your research topic

Exercise 2 SO2 AC1 individual activity

List five ways of categorising information

Exercise 2 SO1 AC1-4 group activity

Refer to your research project and do the following:

- ✓ Gather the data according to the research methodology described in the plan.
- ✓ Record the data in raw format. Attach this to the assessment as proof

- ✓ Collate the data according to the methodology of the plan
- ✓ Consider whether you have to change the plan
- ✓ Consult with stakeholders to confirm the plan or changes
- ✓ Confirm the decision in writing

Exercise 3 SO5 AC1-4 group activity

- ✓ Compile a list of 5 data analysis techniques
- ✓ Describe the suitability of each technique for the data you gathered and your research topic
- ✓ Select a particular analysis technique based on the appropriateness for the data that were gathered and your research topic
- ✓ Analyse the data
- ✓ Select the most relevant findings to include in a report
- ✓ Attach written proof of the above to your assessment

Exercise 4 AC 1-4 group activity

Write a report about your research project.

Include all the elements of the plan such as: the collated data, the analysis, the findings, a discussion with reference to published works relating to the topic, the recommendations, a conclusion and references.

Your report must also contain appropriate diagrams, graphs or charts that serve to illustrate and enhance understanding of the points being made.

Make sure that your report links your findings to data that has been published.

Make sure that the format of the report is based on a company specific template designed for the purpose, or the format of your college.

Exercise 5 SO5 AC1-2 group activity

In your groups, discuss the following with your facilitator:

The effectiveness of the techniques you selected for your research project?

How did the techniques help you to stay within the intended purpose of the research project?

What will you do differently next time and how do you think it will help you to stay within the aims and purpose of the research project?

Can you think of a research project that will be ideally suited to the technique you used? Give details of the project as well as your reasons.