

Teacher's Guide

COMPUTER
APPLICATIONS
TECHNOLOGY

12



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA



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As an organisation rooted in technology, we believe in providing a new bold digital world to the communities we operate in. This unique digital book provides the fundamental knowledge necessary for a sound grounding from which to make practical use of the complete and indispensable application-oriented information regarding Computer Applications Technology (CAT) and Information Technology (IT). It is a foundational reference for today's secondary school learners and teachers alike - as well as for the next generation of CAT and IT students.

Computer Applications Technology Teacher's Guide Grade 12
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Contents - Theory

Term 1		Term 3		
Chapter 1	Concepts of computing _____	1	Chapter 10 Types of networks: PAN/HAN _____	67
Term 2		Chapter 11 The internet and world wide web _____	72	
Chapter 2	Using a computer _____	15	Chapter 12 Internet communication _____	79
Chapter 3	File management _____	23	Chapter 13 Social implications: Email and internet _	90
Chapter 4	File and print management _____	30	Term 4	
Chapter 5	Hardware _____	37	Chapter 14 Information management _____	95
Chapter 6	Extended hardware concepts _____	46		
Chapter 7	Computer software _____	52		
Chapter 8	Extended software concepts _____	58		
Chapter 9	Introduction to networks and networking concepts _____	62		

Contents - Practical

Term 1

Chapter 1 Advanced techniques in word processing _____ 106

Chapter 4 Advanced functions in spreadsheets__ 125

Term 2

Chapter 2 Mail merge _____ 111

Chapter 5 Text functions _____ 129

Chapter 8 Reinforce concepts and skills_____ 144

Term 3

Chapter 3 Applying word processing skills _____ 121

Chapter 6 Advanced function combinations _____ 134

Chapter 7 Reports and queries in databases_____ 140

Chapter 8 Reinforce concepts and skills_____ 144

Chapter 9 Tables in HTML _____ 149

Chapter 10 Apply good website design_____ 155



INTRODUCTION TO CAT

Welcome to the *CAT Grade 12 Teacher's Guide*. This book was developed to guide teachers and provide suggested answers that can be used when assessing learners throughout the year.

The *CAT Grade 12 Theory Book* and the *CAT Grade 12 Practical Book* provide learners with interesting, stimulating and challenging learning activities that have been carefully designed and developed so that there is a clear progression of knowledge and skills throughout the FET Phase. These books will make Computer Applications Technology an interesting, exciting and meaningful subject that learners will enjoy.

The *CAT Grade 12 Teacher's Guide* has been designed so that teachers are able to observe and assess their learners' progress and take any corrective measures when necessary. This book is aligned to the CAPS curriculum.

On pages viii – xi you will find the Annual Teaching Plan, which outlines the units, activities and timeframe allocated for each chapter.

HOW THE TEACHER'S GUIDE IS STRUCTURED

Each **Theory** chapter is indicated by this colour:

TERM 1

BASIC CONCEPTS OF COMPUTING

CHAPTER 1

CHAPTER OVERVIEW

Unit 1.1	General model of a computer
Unit 1.2	Hardware and software
Unit 1.3	Types of computers
Unit 1.4	Advantages and disadvantages of using computers
Unit 1.5	Data and information management

The following learning outcomes are covered by this chapter:

- define Information and Communication Technologies (ICTs) and Information Technology
- provide an overview of a general model of a computer

Each **Practical** chapter is indicated by this colour:

TERM 1

ALGORITHMS

CHAPTER 1

CHAPTER OVERVIEW

Unit 1.1	Basics of algorithms
Unit 1.2	Algorithm quality
Unit 1.3	Creating algorithms
Unit 1.4	Flowcharts

The following learning outcomes are covered by this chapter:

- explain what an algorithm is
- give examples of algorithms in everyday life
- produce an algorithm to solve a problem
- test algorithms to determine the quality and accuracy
- compare algorithms considering, for example, order and precision
- use tools, such as a basic flowchart to represent an algorithm

For each chapter we have indicated what resources you will need and the teaching time allocated for the content in the CAPS curriculum.

Each unit then has suggested answers for the activities in the Theory and Practical Books.

GRADE: 10	DATE:	TEACHING TIME: 4 hours
Resources	Each learner should have access to: <ul style="list-style-type: none"> IT 10 Practical Book IT 10 Theory Book QR Code Reader Computer with Delphi IDE loaded onto it 	
Vocabulary	Learners will need to understand the following terms for this chapter: <ul style="list-style-type: none"> input device – any hardware or peripheral device that allows you to enter data into computer or interact with a computer storage device – a hardware device that is used for storing data random-access memory (RAM) – a hardware device on a computer motherboard, that allows information to be stored and retrieved on a computer processing device – a hardware device that processes a set of instructions, and the results of those instructions output device – a device that allows the computer to present information in a form understandable to a user communication device – is a device that allows a computer to send or receive a signal over a wire or wireless network RSI (Repetitive Strain Injury) – a condition that often results from overuse, of the hand, wrist, or the bone ergonomics – the study of how people interact with their environment. The goal is to create an environment that is safe, comfortable, and efficient for the people using it. 	
UNIT 1.1 Basics of algorithms		
<p>Have a class discussion on the list of instructions that the learners would give for each task. Explain that each task is made up of 'algorithms' or a set of instructions e.g. to call a friend:</p> <ul style="list-style-type: none"> pick-up the phone type in the phone number or locate the phone number on the contact list tap on the call button wait for your friend to answer reply <p>It is important that learners understand computer programs are simply lists of instructions (algorithms). If an algorithm is not correct, it will cause an error in the program you are writing.</p>		
<p>Example 1.1</p> <p>Learners discuss the algorithm to make a cup of hot chocolate and what to do if it is not exactly to their taste. Learners think and talk to their friend about how their algorithm for making hot chocolate (or coffee or tea) would be different to the one in the example.</p>		
<p>Activity 1.1 Memorandum</p> <p>1.1.1 Learners follow the algorithm.</p> <p>1.1.2 Learners compare their picture with their partner and discuss:</p> <ul style="list-style-type: none"> Are your pictures different? Yes Can you explain why? Learners interpreted the drawings differently What was difficult about following the instructions? The instructions were not specific enough What was missing from the instructions? The instructions missed details such as the direction for each line, or its angle to the previous line, its length and so on 		

ANNUAL TEACHING PLAN - OVERVIEW OF TERMS (THEORY)

LAYOUT	DESCRIPTION	HOURS	TERM
Topic 1	Systems technologies		
Chapter 1	General concepts	2 hours	1
Chapter 2	Hardware	6 hours	1
Chapter 3	Software and social implications	4 hours	1
Chapter 7	System software and computer management	4 hours	3
Topic 2	Network technologies		
Chapter 4	Networks	4 hours	2
Chapter 5	Social implications of networks	2 hours	2
Topic 3	Information management		
Chapter 6	Information management: PAT	4 + 2 + 8 hours	1, 2, 3
Topic 4	Internet technologies		
Chapter 8	Internet communication	4 hours	3
Chapter 9	Social implications of e-communications	2 hours	3

ANNUAL TEACHING PLAN - OVERVIEW OF TERMS (PRACTICAL)

LAYOUT	DESCRIPTION	HOURS	TERM
Topic 5	Solution development		
Module 1	Word processing		
Chapter 1	Advanced techniques	6 hours	1
Chapter 2	Mail merge	4 hours	2
Chapter 3	Applying word processing skills	2 hours	3
Module 2	Spreadsheets		
Chapter 4	Advanced functions	8 hours	1
Chapter 5	Text functions in Excel	6 hours	2
Chapter 6	Advanced function combinations and graphs in Excel	4 hours	3
Module 3	Data bases		
Chapter 7	Reports	10 hours	1
Chapter 8	Design a database	2 hours	2
Chapter 9	Create a database	2 hours	3
Module 4	HTML		
Chapter 10	HTML tables	6 hours	2
Chapter 11	Good website design	2 hours	3

TERM 1

Week	Possible dates	Hours	Topic	Chapters	Informal activities	Date started	Date completed
		2 hours	1. System technologies	1. General concepts	Act 1.1; Act 1.2; Act 1.3; Act 1.4		
		6 hours	1. System technologies	2. Hardware	Act 2.1; Act 2.2; Act 2.3; Act 2.4; Act 2.5; Act 2.6; GA 2.1; GA 2.2; GA 2.3; GA 2.4; GA 2.5; Act 2.7		
		4 hours	1. System technologies	3. Software	Act 3.1; Act 3.2; Act 3.3; GA 3.1; Act 3.4; Act 3.5		
		4 hours	3. Information management: PAT	6. Information management 6.1 Data	Act 6.1		
		6 hours	5. Solution development	1. Advanced techniques	Act 1.1; GA 1.1; GA 1.2; GA 1.3; GA 1.4; Act 1.2; GA 1.5; GA 1.6; GA 1.7; GA 1.8; GA 1.9; GA 1.10; Act 1.3; GA 1.11; GA 1.12; GA 1.13; GA 1.14; GA 1.15; GA 1.16; GA 1.17; GA 1.18; GA 1.19; Act 1.4; GA 1.20; GA 1.21; Act 1.5		
		6 hours	5. Solution development	4. Advanced functions	GA 4.1; GA 4.2; GA 4.3; Act 4.1; GA 4.4; GA 4.5; Act 4.2; GA 4.6; GA 4.7; Act 4.3; GA 4.8; GA 4.9; GA 4.10; GA 4.11; Act 4.4		
		10 hours	5. Solution development	7. Reports	GA 7.1; GA 7.2; GA 7.3; GA 7.4; Act 7.1; GA 7.5; GA 7.6; GA 7.7; GA 7.8; GA 7.9; GA 7.10; Act 7.2; GA 7.11; GA 7.12; GA 7.13; GA 7.14; GA 7.15; GA 7.16; Act 7.3; GA 7.17; GA 7.18; GA 7.19; Act 7.4		

TERM 2

Week	Possible dates	Hours	Topic	Chapters	Informal activities	Date started	Date completed
		4 hours	2.Network technologies	4. Networks	Act 4.1; Act 4.2; Act 4.3		
		2 hours	3.Information management: PAT	5.Social implications of networks	Act 5.1; Act 5.2; Act 5.3		
		2 hours	3.Information management: PAT	6. Information management 6.2Information management (Steps 1 to 4)	CS 6.1; GA 6.1		
		2 hours	5.Solution development	2. Mail merge	GA 2.1; Act 2.1; GA 2.2; Act 2.2; GA 2.3; GA 2.4; GA 2.5; GA 2.6; Act 2.3; GA 2.7; Act 2.4		
		6 hours	5.Solution development	5. Text functions in excel	Act 5.1; GA 5.1; GA 5.2; GA 5.3; Act 5.2; GA 5.4; Act 5.3; GA 5.5; GA 5.6; GA 5.7; Act 5.4; GA 5.8; GA 5.9; Act 5.5		
		2 hours	5.Solution development	8. Design a database	CS 8.1; Act 8.1		
		6 hours	5.Solution development	10. HTML tables	GA 10.1; GA 10.2; GA 10.3; GA 10.4; GA 10.5; GA 10.6; GA 10.7; GA 10.8; Act 10.1; CS 10.1; GA 10.9; Act 10.2		

TERM 3

Week	Possible dates	Hours	Topic	Chapters	Informal activities	Date started	Date completed
		8 hours	3.Information management: PAT	6. Information management 6.2 Information management (Steps 5)	GA 6.2; Act 6.2		
		4 hours	1.System technologies	7.System software and computer management	GA 7.1; GA 7.2; GA 7.3; Act 7.1; Act 7.2; Act 7.3; GA 7.4; GA 7.5; Act 7.4; GA 7.6; Act 7.5; Act 7.6		
		4 hours	4.Internet Technologies	8. Internet communication tools	GA 8.1; GA 8.2; GA 8.3; GA 8.4; Act 8.5; Act 8.1; GA 8.6; GA 8.7; GA 8.8; GA 8.9; GA 8.10; GA 8.11; Act 8.2; GA 8.12; GA 8.13; Act 8.3; Act 8.4		
		2 hours	4.Internet technologies	9.Social implications of e-communications and technology	Act 9.1; Act 9.2		
		2 hours	5.Solution development	3.Applying word processing skills	Act 3.1; GA 3.1; GA 3.2; GA 3.3; GA 3.4; Act 3.2; GA 3.5; GA 3.6; GA 3.7; GA 3.8; GA 3.9; GA 3.10; GA 3.11; Act 3.3		
		4 hours	5.Solution development	6.Advanced function combinations and graphs in Excel	Act 6.1; GA 6.1; Act 6.2; GA 6.2; GA 6.3; GA 6.4; GA 6.5; GA 6.6; Act 6.3; GA 6.7; GA 6.8; Act 6.4; GA 6.9; GA 6.10; GA 6.11; GA 6.12; GA 6.13; Act 6.5; Act 6.6		
		2 hours	5.Solution development	9. Create a database	Act 9.1; CS 9.1; GA 9.1; GA 9.2; GA 9.3; GA 9.4; GA 9.5; Act 9.2		
		2 hours	5.Solution development	11. Good website design	Act 11.1; Act 11.2		

TERM 4

Week	Possible dates	Hours	Topic	Chapters	Informal activities	Date started	Date completed
				Revision			

HOW THE TEACHER'S GUIDE WORKS

We provide the information you may need for each lesson and some general things that may assist you in your day-to-day teaching is given in this Teacher's Guide.

We will start by:

- Explaining how the practical and theory textbooks work.
- Providing various best practices as per DBE booklets.
- Providing general tips, links and ideas that you can use.

After the general section, each module will focus on the following if available:

- Tips and ideas on presenting the specific information.
- Links to additional information.
- Links to websites for additional activities.
- Memorandum for the activities.

HOW THE TEXTBOOK WORKS

There are two textbooks for each grade, a theoretical textbook and a practical textbook, of which both are available in printed format and electronic format. The information in these textbooks are combined in learner-friendly topics, that are divided into chapters and units as per school term.

Teaching elements used in these textbooks are:

- Additional information – Information that the teacher can use to explain certain concepts to the learners that are not covered in the books.
- Box – information that does not flow directly from the text, but forms part of the overall concept.
- Case studies – this can be used in class to support the information covered in the unit. The questions should be discussed with the learners in class or can be given as an informal activity.
- Glossary – a summary of all keywords given at the end of each module.
- Guided activities – the guided activities are step-by step procedures on various computing tasks and should be done together with the learners. It is strongly recommended that each learner does the activities on his/her own computers.
- Learning outcomes – a description of what is covered in the chapter as relevant to CAPS.
- Practical activities – provide opportunities to the learners to apply their skills.
- QR codes – provide the learners with links to optional videos or additional reading materials. Learners must have a QR reader on their smartphones to read these codes.
- Revision activities – a self-assessment activity covering the most important information and skills focussed on in the chapter.
- Something to know – boxes in the margin of the book containing information not covered in the main text, but important for the learners to know.
- Theoretical activities – provide learners the opportunity to recap, review and reinforce what they have learned. These activities are mainly theoretical activities but may include group or pair projects as well as research activities.

BEST PRACTICES – LESSONS FOR THE CLASSROOM

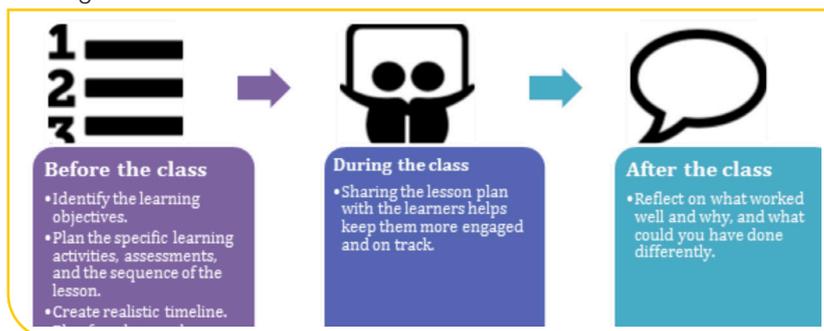
The following information was obtained from a study that was done for the DBE on *Successful teaching and learning in information technology – Best practices in the classroom*.

PLANNING

Although the curriculum or CAPS tells you WHAT you will be teaching, and in which SEQUENCE you should teach it, it does not explain HOW you should teach it or which TEACHING STRATEGIES you should apply. That is where proper and detailed planning of each lesson comes in, breaking up the instruction into small enough chunks of information so that the learners can link it to existing knowledge and synthesise the new knowledge into their understanding.

Planning addresses and integrates the following three key components:

- Learning objectives.
- Learning activities.
- Informal assessment to check for learner understanding.



When doing your planning, it is important that you look at the bigger picture.

The following provides guidelines for effective planning:

- Start with the end in mind – What does the learner need to know and be able to do? Learning goals and objectives.
- Identify curriculum resources – (e.g. textbook) Does the textbook provide everything needed to achieve the learning goals or does one have to develop/find additional content or activities? What other resources will be needed, e.g. previous exam papers?
- Identify declarative knowledge – Think about the concepts and ideas learners will need to know. What are developmentally appropriate given the learners’ background knowledge and prior learning?
- Identify procedural knowledge – Skills, strategies and processes. Procedural knowledge incorporates the use of declarative knowledge.
- Create, find and select learning activities and assignments – activities are the instructional strategies that allow teachers and learners to interact with content, skills and materials. The goal of classroom activities is to help learners to interact with new knowledge and skills, deepening their understanding and raising skill levels related to the learning goal(s). Activities often require teacher coaching or guidance. When planning classroom activities, start by selecting the instructional strategies that allow learners to process critical information or vocabulary associated with the learning goals first, i.e. which subject terminology or concepts will be introduced, and when?

COMPUTATIONAL THINKING

Computational thinking is a problem-solving approach that has particular reference to the practical component of the CAT curriculum. Elements of Computational Thinking which are relevant to CAT are:

ELEMENT	DESCRIPTION	EXAMPLE
Decomposition	Breaking a problem down into smaller, more manageable parts.	Breaking a complex Excel formula down into simpler “building blocks”.
Pattern recognition	Observing patterns and trends.	Using functions and techniques learned in one package, in another package, e.g. the formula to calculate someone’s age is very similar in both Excel and Access.

ASSESSMENTS

Assessment drives instruction and learning by providing relevant information on the learners' progress and performance. Its main purpose is to support and improve further learning by incorporating artefacts, illuminating various processes, checking in at multiple waypoints and placing value on multiple ways of knowing. Assessment should be both informal/daily (assessment for learning) and formal (assessment of learning).

To make sure that tests and examinations are applicable to all learners, you should use Blooms Taxonomy as described below according to the DBE's Computer Applications Technology SBA Exemplar Booklet. Teachers who are successful also analyse mistakes made by the learners in tests and examinations to inform teaching and to follow-up through improvement strategies.

The following three documents should be consulted with regard to assessment in CAT:

1. The CAPS for CAT
2. The Computer Applications Technology SBA Exemplar booklet published by the DBE
3. The Exemplar Book on Effective Questioning: Computer Applications Technology published by Umalusi.

COGNITIVE LEVELS OF LEARNERS (BLOOM'S TAXONOMY)

The cognitive demand of a question refers to the type and level of thinking learners need to successfully engage with and answer a question.

- High cognitive questions are those which demand that the learners manipulate bits of information previously learnt to create and support an answer with logically reasoned evidence. This sort of question is generally interpretive, evaluative, inquiry-based, inferential, synthesis-based and open-ended.
- Lower cognitive questions are more basic. They ask learners to recall material previously presented and learnt. These questions are generally direct, closed, recall-related and that measure knowledge only – factual and process.

Bloom's revised taxonomy illustrates the different cognitive levels.

COGNITIVE LEVEL		COMMENT	CONTEXT
C1	Knowledge Recall of factual/process Knowledge in isolation, i.e. one step/set of steps/instruction/process at a time	Requires recalling or recognising only. Practised or learnt the isolatable bit, e.g. fact/skill/ process/steps before.	Exactly the same context as a textbook example or a classroom-based exercise. Explicitly part of the curriculum.
C2	Understanding Convert from one form of representation to another.	Requires knowledge and understanding of steps/process/ isolatable bits. Translating "words", pictures, symbols, diagrams into e.g. programming code.	Familiar context. Includes interpreting, exemplifying, classifying, summarising, inferring, comparing and explaining.
C3	Application Using known routines/steps/processes to complete a task. All the information required is immediately available to the learner.	Requires knowledge, understanding and use of steps/ routines/processes. Application of appropriate abstraction without having to be prompted...and without having to be shown how to use it in a familiar context.	Familiar context but with new elements /new circumstances. Learners have seen the same or very similar steps working with different data or other circumstances.

COGNITIVE LEVEL		COMMENT	CONTEXT
C4	Analysis Understand how parts relate to a whole (pinpoint the core/main aspects) or interact with each other and use appropriate methods to complete task/solve problem.	Requires reasoning/ investigation/ developing a plan or algorithm; has some complexity. Completing task could have more than one possible approach. Organising component parts to achieve an overall objective.	New context. Unseen, unfamiliar problems or tasks.
C5	Evaluation Judging or deciding according to some set of criteria, generally without real right or wrong answers	Requires weighing possibilities, deciding on most appropriate. Testing to locate errors.	
C6	Create Putting elements together to form a coherent or functional whole or re-organising elements into a new pattern or structure.	Requires familiarisation with the task by exploring different approaches and interpreting and analysing relevant approaches. Generalisation.	Novel situation. The learner has no familiarity with completed functional whole.

In CAT, the above cognitive levels are collapsed providing for lower-order, middle-order and higher-order levels.

	LOWER ORDER C1	MIDDLE ORDER C2 & C3	HIGHER ORDER C4, C5 & C6
Theoretical	Recall (Knowledge)	Understand and apply	Analyse, evaluate and create
Practical	Routine procedures (Knowledge/Remembering)	Multi-step procedures (Understanding/Applying)	Problem-solving (Analysing/Evaluating/Creating)
Weighing	30%	40%	30%

Cognitive demand describes the type of thought process that is required to answer a question and is not necessarily the same as the level of difficulty of a question, such as the difficulty of the content knowledge that is being assessed.

DIFFICULTY LEVELS

As per the same booklet, the difficulty level of a question refers to the ease with which a learner is able to answer a question. It is described as follows:

LEVEL	DESCRIPTION
1	Easy to answer
2	Moderately challenging
3	Difficult to answer
4	Very difficult (It allows high achieving learners to excel above the others)

The difficulty level of a question is influenced by one or more of the following:

- The content (subject, concept, facts, principles or procedures), e.g.
 - Content that is learnt in Grade 10 and that is repeated and practised in Grade 11 and 12 usually becomes easier by Grade 12.
 - The number of steps required, or the length of the answer could influence difficulty.
- Stimulus (item or question)
 - The language, text or scenario used could influence difficulty.
 - Re-read required or limited time could influence difficulty.

- Task (process)
 - Short questions vs paragraphs or essays – answers that require extended writing are generally more difficult.
 - Steps provided or scaffolding of questions – open-ended questions are generally more difficult than structured questions, i.e. questions that lead or guide learners.
- Expected response
 - Mark scheme, memo, e.g. detail required in memo vs detail expected in question.
 - Allocation of marks.

Consult the Umalusi Exemplar Book on Effective Questioning: Computer Applications Technology for more information on difficulty levels.

PRACTICAL ASSESSMENT TASK (PAT)

PAT forms an important part of the learners’ learning experience as it consolidates the content done throughout the year and helps learners to make connections and see the relevance of what they learn. The DBE is providing guidelines for PAT each year. These guidelines are usually sent out to schools by the district or provincial CAT advisor.

EXAM PREPARATION – TIPS FOR THE TEACHER

Here are some tips on what you can do to prepare your learners for their exams.

- Prepare ahead and make sure that you have an organised schedule covering all the revision work throughout the year. Do not wait till the last minute and then try to cram everything in before the exam. This will also give you the time to include a wider variety of activities to keep the learners’ interest.
- Make sure that the learners know and understand what to expect in the exam. This does not only refer to the content of the exam, but also to what is expected of them with each section of the exam. This means they must know how to read and answer multiple choice questions, long questions, true/false questions, etc.
- Narrow the topics down as much as you can so that learners have a clear view of what to expect in the exam. You can even give them a list of topics that they can focus on – even if it is a list of all the topics they covered throughout the year. A list helps them to focus as they can tick items off as they go through the work.
- Make sure that the learners do the work during this period and not you. The more involved they are, the better they will learn.
- Keep your revision activities interesting and use a variety of activity types such as quizzes and other review games. It is here where you can use tools like Kahoot! or Google Quiz with great success. You can also have learners write quizzes for each other as they engage much deeper with the content when they have to write a quiz.
- Teach the learners exam techniques and the meaning of specific keywords that may be used in an exam.

CLUE WORD	WHAT YOU NEED TO DO	EXAMPLE
Analyse	Separate, examine and interpret	Analyse the correct use of word processing features in the following screenshot:
Categorise	Group concepts/ideas that are similar/have the same characteristics/functions or belong together. How should things be organised	Categorise the following computer devices: keyboard, CPU, printer, mouse, hard drive, SSD according to their main function.
Classify	Divide into groups or types so that things that are similar, are in the same group	Classify the following list of computer devices as input, output or storage devices
Comment on	Write generally about	Comment on the use of a wireless network in the following case:

THEORETICAL PAPERS ...CONTINUED

CLUE WORD	WHAT YOU NEED TO DO	EXAMPLE
Compare	Point out or show both similarities and differences between things or concepts. Note that stating the same fact in opposite form, will not earn you another mark.	Compare ROM with RAM.
Contrast/ Distinguish	Explain what the difference between certain things are.	Contrast ROM and RAM or Distinguish between a PAN and a HAN
Define	Give a clear meaning of the concept.	Define phishing.
Describe	State in words (using diagrams where appropriate) the main points of a structure or process.	Describe phishing.
Diagram	Make or draw a diagram.	Diagram a generic ICT system.
Differentiate	Use differences to qualify categories.	Differentiate between ROM and RAM.
Discuss	Give a clear, detailed description of the focus topic.	Discuss the use of a PAN in a home office.
Elaborate	Explain in detail	Elaborate on the advice given to Mr X regarding buying a laser printer.
Evaluate	Express an opinion based on your findings	Evaluate the merit of buying computer X for person Y
Examine	Give a clear, detailed description of the focus topic.	Examine the two methods
Explain	Give a clear, detailed description of the focus topic.	Explain how phishing works.
Identify	Name the essential characteristics	Identify the port used to connect the printer.
Illustrate	Give examples to demonstrate or prove something.	Illustrate the information processing cycle.
Interpret	Give the intended meaning of	Interpret the tone of the email message given below: I hate you when you do this J
Justify	Give clear, detailed reasons for taking a particular position.	Justify the use of a table instead of tab stops in the following instance:
List	Write a list of items, with no additional detail.	List the types of information sources one could use when doing research.
Motivate	Provide a reason or justification for an answer or statement	Motivate the use of line and paragraph spacing when working in Word.
Name/ Mention	Write a list of items, with no additional detail.	Name one storage device.
Outline	Give a general summary. It should contain a series of main ideas supported by secondary facts. Show the organisation of the idea.	Outline the information processing cycle.

THEORETICAL PAPERS ...CONTINUED

CLUE WORD	WHAT YOU NEED TO DO	EXAMPLE
Order	Provide a chronological or value-based answer by listing several items (terms or events in correct sequence).	Order the storage media according to their capacity
Prove	Show by using an argument or logic or fact that something is true.	Prove that the majority of people like X by looking at the following survey results:
Relate	Show the connection between things, indicating how one causes or is like another	Relate the following terms and explanations:
Review	Give a survey or summary in which you look at the important parts or major points and criticise if necessary. Comment on what is given.	Review Mr X's monthly computer maintenance tasks.
State / Give	Write down information without discussion.	State the functions of the operating system.
Suggest / Recommend	Give your opinion and back it up with facts, reason or an explanation.	Suggest a computer configuration for Mr X.
Summarise	Give a brief, condensed description of the main ideas. Like developing an abstract.	Summarise the problems experienced in the following case:
Trace	Follow the development, progress or history of something, normally from the point of origin, typically in chronological order.	Trace the error in the spreadsheet calculations.

Something to know: Note that some clue words include or refer to other clue words.

- Give learners various ideas on how to study based on the different learning styles, i.e. visual (read and write), auditory or kinaesthetic. There is a quick quiz that learners can do on their own to determine their learning styles: <https://www.thestudygurus.com/learning-styles/>
- You can refer to the following link to get ideas on how the various types of learners should study to get the best results: https://www.gavilan.edu/tutor/documents/StudyTipsforDifferentLearningStyles_000.pdf

LEARNING STYLES.

The term learning styles refers to the understanding that every student learns differently.

- Visual learners learn best through what they see and should use graphs, diagrams, mind maps and other graphical methods to learn.
- Auditory learners learn through what they hear and remember most things the teacher said in class. They should use audio and video clips or discuss or recite the information with someone.
- Read and write learners focus mostly on interacting with the text. They learn best by reading information and writing it out in their own words. They also learn by answering quizzes in writing as well as from annotated notes.
- Kinaesthetic learners learn by experiencing things and learn best by doing, using models, playing memory games, etc. They also learn by writing things down.

EXAM PREPARATION - TIPS FOR THE LEARNERS

The following general notes and tips on how to prepare for exams can be printed and given to the learners.

- Make yourself a schedule so that you will have enough time to study. Do not leave everything until it is too late to study properly.
- Make sure that your study area is organised. Chaos distracts the brain from what it should be focussing on.
- Have all your materials ready before you begin studying – pencils, pens, highlighters, paper, etc.
- Study smaller chunks of information at a time. You will remember them better and for a longer period of time. Trying to learn too much at one time will only result in a tired, unfocused and anxious brain.
- Use visual aids to study, for example, draw mind maps, flowcharts and diagrams to help you remember things better or explain your answers and the reasoning for giving that answer to somebody else.
- Focus on the core material as about 80% of most exams are likely to come from it. Going through old exam papers will help you determine what this is. It will not only help you to study better, it will also show you how exam questions are formulated, and which types of questions are asked.
- Revise new information within 24 hours after you learnt it. Any new information must be recapped, reviewed and reinforced within 24 hours, otherwise you will lose 80% of what you learnt.
- Organise study groups for the various subjects, but make sure that the group members are committed to their studies.
- Make sure that you take regular breaks as your brain loses focus after a while. The optimal time to study consists of periods of 2 hours, broken down into 25 minutes of studying followed by 5-minute breaks. Do not think or do anything study-related during your breaks. Take a walk outside. A change of scenery will stimulate your learning.
- Keep some healthy snacks to nibble on while you are studying. Natural, fresh and vitamin-rich food is good for improving your concentration and memory.
- Drink a lot of water while you are studying to make sure that you do not dehydrate. Staying hydrated is essential for your brain to work at its best.
- Plan the day of your exam beforehand, especially if you are studying at home. Make sure that you know how long it will take you to reach the school during that time of the day and add some extra time to make sure that you are not going to be late.
- Make sure that you sleep sufficiently (7 to 8 hours a night). Proper sleep turns what you learnt (short-term memory) into long-term memory.

STUDY SKILLS TO BOOST YOUR LEARNING

Mobile notes

Mobile notes are excellent tools for learning all the key concepts in the study guide. Mobile notes are easy to make, and you can take them with you wherever you go:

- Fold a blank piece of paper in half. Fold it in half again. Fold it again.
- Open the paper. It will now be divided into eight parts.
- Cut or tear neatly along the folded lines.
- On one side of each of these eight bits of paper, write the basic concept.
- On the other side, write the meaning or the explanation of the basic concept.
- Use different colours and add pictures to help you remember.
- As you learn, place the cards in three different piles:
 - I know this information well.
 - I am getting there.
 - I need more practice.
- The more you learn them, the better you will remember them.

Mnemonics

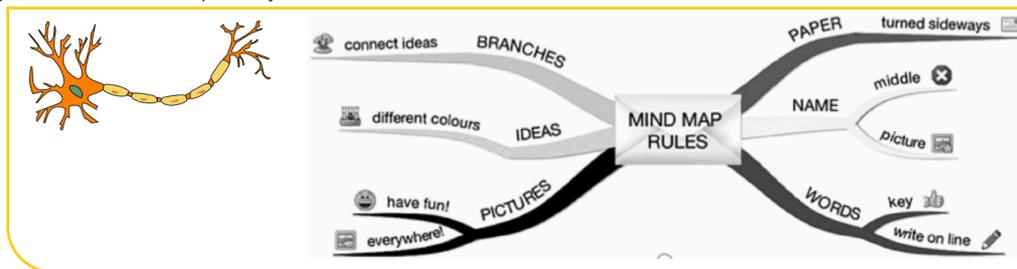
A mnemonic code is a useful technique for learning information that is difficult to remember. This is an example of a word mnemonic using the word BALANCE where each letter of the word stands for something else:

- B – Best – doing your best is more important than being the best.
- A – Attitude – always have a positive attitude.
- L – Load – spread the load so you do not leave everything to the last minute. Use a study timetable to plan.
- A – Attention – pay attention to detail. Only answer what is required.
- N – Never give up! Try, try and try again!
- C – Calm – stay calm even when the questions seem difficult.
- E – Early – sleep early the night before your exam. If you prepare well you will not need to cram the night before.

The more creative you are and the more you link your “codes” to familiar things, the more helpful your mnemonics will be.

Mind maps

Mind maps work because they show information that we have to learn in the same way that our brains “see” information. As you study, add pictures to each of the branches to help you remember the content. Make your own mind maps as you finish each section.



How to make your own mind maps:

- Turn your paper sideways so you have space to spread out your map in all directions.
- Decide on a name for your mind map that summarises the information you are going to put on it.
- Write the name in the middle and draw a circle, bubble or picture around it.
- Write only key words on your branches, not whole sentences. Keep it short and simple.
- Each branch should show a different idea. Use a different colour for each idea. Connect the information that belongs together. This will help build your understanding of the learning areas.
- Have fun adding pictures wherever you can. It does not matter if you cannot draw well.

ON THE DAY OF THE EXAM

(This section is provided by the Department of Basic Education.)

- Make sure you have all the necessary stationery for your exam, i.e. pens, pencils, eraser and calculator (with new batteries).
- Go to the bathroom before entering the exam room. You do not want to waste valuable time during the exam.
- Use the ten minutes reading time to read the instructions carefully. This helps to “open” the information in your brain. All questions are compulsory, unless indicated otherwise, but you do not have to answer them in order. Start with the question you think is the easiest to get going.
- Break the questions down to make sure you understand what is being asked. If you do not answer the question properly, you will not get any marks for it. Look for the key words in the question to know how to answer it.
- Try all the questions. As each question has some easy marks in, make sure that you do all the questions in the exam.

- Don't panic, even if the question seems difficult at first. It will be linked to something you have covered. Find the connection.
- Manage your time properly. Do not waste time on questions you are unsure of. Move on and come back if time allows.
- Check weighting – how many marks have been allocated for your answer? Do not give more or less information than is required.
- Write big, bold and clearly. You will get more marks if the marker can read your answer clearly.

STRUGGLING LEARNERS

You can support struggling learners by doing the following.

SCAFFOLD LEARNING TASKS OR ACTIVITIES

Scaffolding means that you break learning up into chunks and provide a tool or concrete structure for each. This can reduce the cognitive load of the instruction and support the struggling learner.

One of the first things you can do is to choose different activities for different groups of learners. For example, you can take a complex task and divide it into smaller subtasks. Together, these subtasks must achieve the same goal as the big task. After doing this, grade the activities or tasks, with the big task having the highest grading, and all the smaller tasks together having the same grading as the big task.

Have learners then choose whether they want to do the group of smaller activities or tasks or the one big activity or task. Advise struggling learners to do the smaller ones first and then challenge them to try the big one when they feel ready.

Getting the smaller activities or subtasks right could help the learners to feel competent. It allows them to always feel like they are working at a level of challenge that is hard but right for them and that they can accomplish. This will allow them to make much greater progress through learning environments.

Other ways to scaffold learning is to:

- Show and tell. Learners learn best by seeing rather than hearing about something.
- Tap into prior knowledge. You can do this by asking the learners to share their own experiences or ideas about something.
- Give them time to talk about what they learnt in a structured and controlled way.
- Teach them the vocabulary (subject jargon) before you teach them the content. You can do that by introducing the words with photos or in context of things they know and are interested in. You can also use analogies and metaphors to explain the words to them.
- Use visual aids like pictures, graphs, charts and diagrams or graphic organisers such as mind maps, concept maps or story maps.
- Check for understanding by discussing the content, pausing to let it sink in, and then asking a well thought-out question.

BUILD IN AUTONOMY (CHOICE)

- See the principles of gameful learning below.
- Let the learner choose which activities are most relevant, challenging and interesting to them.

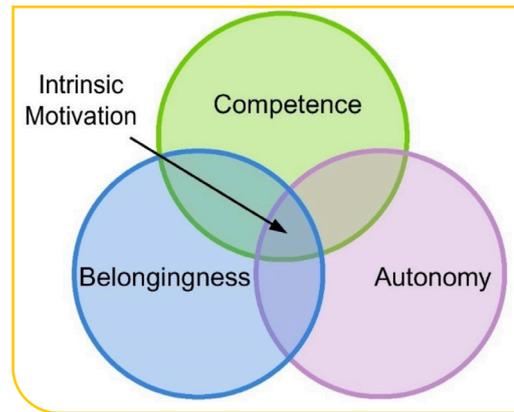
Here are the principles of gameful learning:

- Autonomy is critical, and this is the first of three principles that come from gameful learning.
- The next principle is a sense of belonging, and a really good game environment makes you feel like you are a part of something.
- The third principle is to support feelings of competence.

APPLY GAMEFUL LEARNING

Motivation plays an important role in learning and to be self-motivated, learners must:

- be able to make meaningful choices over what they are doing (autonomy)
- be challenged by a task, but still feel that they can succeed (competence)
- feel connected to those surrounding them (belongingness).



Supporting these feelings could eventually lead to self-determination and learners becoming self-directed.

Other research-based strategies for motivating learners include:

- becoming a role model for learner interest;
- getting to know learners;
- using examples freely;
- using a variety of learner-active teaching activities;
- setting realistic performance goals;
- placing appropriate positive emphasis on testing and grading;
- being free with praise and constructive criticism; and
- giving learners as much control over their own learning as possible (Bain, 2004; Nilson, 2003; DeLong & Winter, 2002). This element is also important when thinking about authenticity. If learners can learn ideas that are connected to their lives and produce representations of their knowledge in ways that matter, they are more motivated.

Gameful learning also relates to personalised learning that supports the notion that children learn best when their individual differences are taken into consideration. Personalised learning is based on the following three principles (Microsoft, 2014):

- It provides multiple means of representation.
- It provides multiple means of action and expression.
- It provides multiple means of engagement.

Another important principle of gameful learning is the freedom to fail (as seen with videogames): you can experiment, take risks and try things you have never done before, fail miserably...and do it again and again until, after much practice, you get it right. Unfortunately, this will not work in all classrooms as it requires a significant amount of grading to manage, and it can hinder the ability to keep a cohort on a specific content progression. But when you can structure learning opportunities in this way, learners' motivation to engage increases, and their learning outcomes improve.

LEARNER EXPERIENCE

Learners:

- respect and value teachers that are positive, enthusiastic about the subject, supportive and have access to a wide range of teaching aids;
- enjoy engaging, interactive and communicative teaching methods;
- value choice and classes that encourage independent learning and learner autonomy.
- want to understand what they are expected to learn – what they are learning, why they are learning it and what quality work looks like.
- enjoy things that interest them.

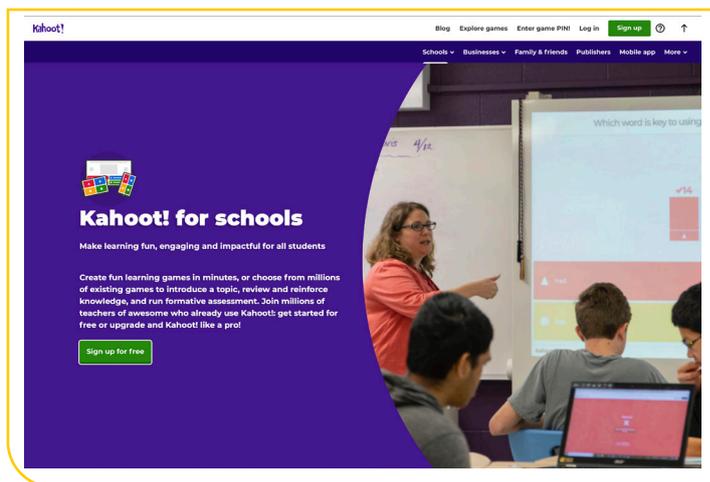
GENERAL TIPS, LINKS AND IDEAS

This section gives you various tips, ideas and links to interesting and/or informative websites.

KAHOOT!

Kahoot! is a free eLearning tool that can be used to create fun learning games, quizzes, surveys or discussion questions, called a Kahoot, in minutes. This can be used to teach, reinforce, assess or share information with learners.

Link: <https://kahoot.com/>



You can use Kahoot! in your classroom for the following reasons:

- As a class starter or ice breaker.
- To help learners with keywords, terminology or definitions.
- To assess learners' understanding of a subject before or after they learnt about it.
- To zero in on the needs of individual learners by getting a detailed report of which questions they missed.
- To direct classroom activity by organising small groups.
- To review for a test or exam.
- To end a class with Kahoot notes, a quick quiz or formative assessment.
- By encouraging learners to create their own kahoots, the content is reinforced.
- To help learners learn information in a sequential order.

HOW TO USE KAHOOT!

It is easy to use Kahoot!

- To get started, go to the <https://kahoot.com/> website and create a free account.



- Use a public kahoots or create your own.



By watching the following video, you can learn how to use Kahoot!

Link: <https://www.youtube.com/watch?v=de7G0WioH8E>

GOOGLE QUIZ

The Google Quiz is an online assessment tool that will self-mark learners' attempts and give feedback to teachers and learners.

The quiz can be done on desktop or mobile computers and learners need to have access to the Internet. Teachers will provide learners with the link to the quiz (as a URL or QR code).

The platform allows for:

- Learners getting instant feedback to their answers.
- Teachers getting a full report on the performance of the learner.

Link: forms.google.com

To learn more on how to use Google forms to create quizzes, watch the following video.

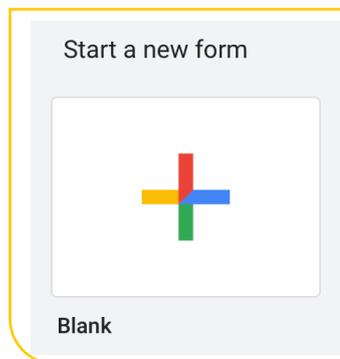
Link: <https://www.youtube.com/watch?v=Pdt8Vv7-3Xk>

For a more detailed explanation, you can use the following link.

Link: <https://www.youtube.com/watch?v=ayvhVM2BMv0>

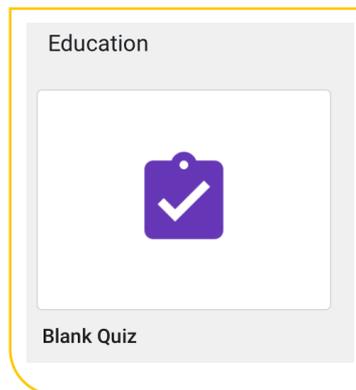
To create a new quiz:

1. Go to forms.google.com.
2. Click on **Blank** to open a new form.



To create a new quiz from Google Drive:

1. Click **New**, hover over More and click on the **Google Forms** arrow.
2. Click on **From a template**.
3. Scroll to the bottom and click **Blank Quiz**.



To follow a step-by-step tutorial on how to create a quiz, go to the G Suite Learning Centre.

Link: <https://gsuite.google.com/learning-center/products/forms/quizzes-get-started/#/>

You can also read the information on Teachers.Tech

Link: <http://teachers.tech/self-grading-quizzes-google-forms-google-classroom/>

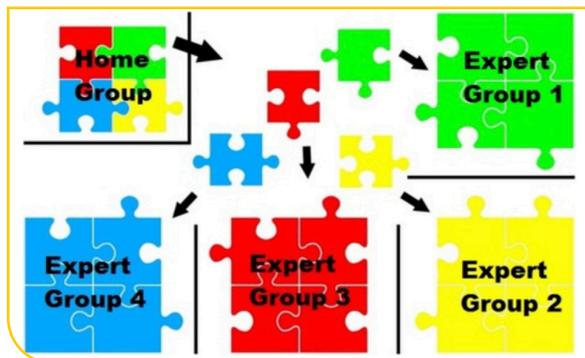
PUZZLEMAKER

You can use the following link to create crossword puzzles step-by-step.

Link: <http://puzzlemaker.discoveryeducation.com/CrissCrossSetupForm.asp>

JIGSAW ASSESSMENT TECHNIQUE

The cooperative learning strategy known as the jigsaw technique helps learners create his/her own learning.



To facilitate this, teachers arrange learners in groups. Each group is assigned to research a different topic. Group members then join with members of other groups and share the research about the information.

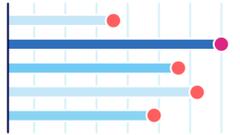
Afterwards, learners must complete a post-assessment questionnaire.

GRADECRAFT

Gameful learning is an educational tool based on the principles that work so well in games, applied to the learning environment. It is about taking elements from games and applying them to non-game settings.

To learn more about the principles upon which gameful learning is based, you can go to the following website: Gameful pedagogy – <http://www.gamefulpedagogy.com/>

Following are some of the tools you can use from Gradecraft.

 <p>Badges Badges can be used to recognize student achievement on a specific assignment or their excellence more broadly in your course. Badges are flexible: you decide how they're awarded, and how they relate to student progress.</p>	 <p>Leaderboards Students can choose to participate in anonymous, team-based leaderboards if they enjoy competition, or opt-out if they don't. As the instructor, you control if leaderboards appear at all.</p>	 <p>Unlocks & Gating Games don't start with a final boss battle—the same is true for learning: we want learners to acquire foundational knowledge before they move on to more complex work. With unlocks, you can determine what work must be done before students unlock additional opportunities.</p>	 <p>Integration with Existing Platforms We know that integrating with other platforms is key, so we support Learning Tools Interoperability (LTI) 1.1 as both a Tool Provider and Consumer. Your data is your data—and should always be available to you to download and dia into.</p>
 <p>Badges Badges can be used to recognize student achievement on a specific assignment or their excellence more broadly in your course. Badges are flexible: you decide how they're awarded, and how they relate to student progress.</p>	 <p>Leaderboards Students can choose to participate in anonymous, team-based leaderboards if they enjoy competition, or opt-out if they don't. As the instructor, you control if leaderboards appear at all.</p>	 <p>Unlocks & Gating Games don't start with a final boss battle—the same is true for learning: we want learners to acquire foundational knowledge before they move on to more complex work. With unlocks, you can determine what work must be done before students unlock additional opportunities.</p>	 <p>Integration with Existing Platforms We know that integrating with other platforms is key, so we support Learning Tools Interoperability (LTI) 1.1 as both a Tool Provider and Consumer. Your data is your data—and should always be available to you to download and dia into.</p>

Link: <https://www.gradecraft.com/>

To sign up with Gradecraft, go to the website.

Ready to Get Started with GradeCraft?

Are you an instructor who believes learning should be gameful?
Do you want to get started with your gameful course design?

[Sign up now!](#)

Although it is not a free tool, you can try it out on a free trial basis.

PUBLIC ACCESS

We're proud to offer GradeCraft to instructors anywhere in the world! We have **free trial accounts** available for any instructor wishing to try out GradeCraft. You'll be able to fully set up a course, explore our features, and try out how things work—the only thing you can't do is add students using the LTI connection.

[Sign up for a free trial](#)

You may also purchase a license (or upgrade your free trial at any time) if you find GradeCraft is right for you and your students.

[Learn more about licensing options](#)

Go to the following YouTube video to listen to an interesting presentation on gameful learning:

Link: [https://www.youtube.com/watch?time_continue=391&v=k\)NaJpQbwA0](https://www.youtube.com/watch?time_continue=391&v=k)NaJpQbwA0)

GENERAL TIPS [H3]

The following are just some general tips that you may want to apply:

- Ensure that you have additional examples other than what the textbook provides to illustrate concepts.
- Encourage learners to compare the world they know today with 30+ years ago - communication, work, family etc. If they explain something clearly with examples, they can often get good marks - e.g. communication using ICTs is much faster than sending a letter by post.
- Teach them the vocabulary (subject jargon) before you teach them the content.
- Read and follow tech blogs (teacher and learner) to stay up to speed with new developments, etc.
- Read and follow <http://www.techteachers.co.za/>
- Read <http://www.techteachers.co.za/category/successful-teacher/> to see what makes a good teacher.
- Become part of the C.A.T and I.T. Teachers group on Facebook <https://www.facebook.com/groups/cat.it.teachers>

ADDITIONAL RESOURCE SITES

The following links refer to sites that you can use for additional information on CAT.

- <http://www.techteachers.co.za/>
- www.gcflearnfree.org/subjects/technology
- www.bbc.com/education/subjects/zqmtsbk
- www.bbc.com/education/subjects/z34k7ty
- www.lifewire.com/
- thenextweb.com/
- toplink.weforum.org/knowledge/explore# (free registration)
- support.office.com/en-us/office-training-center
- www.gcflearnfree.org/subjects/office/

ADDITIONAL ACTIVITIES AND EXAM PAPERS

Various additional activities are provided on the following links or on the DVD at the back of this guide.

- <http://www.techteachers.co.za/practical-revision-activities-grades/>
- <http://www.ecexams.co.za>

HOW THE TEXTBOOK WORKS

The guided activities are the main teaching element in the practical textbook. These activities are a step-by-step procedure of how to do a specific task and should be done in class with the learners. After making sure that the learners know what to do, there are also activities that can be either done at school or at home.

In some guided activities, learners have to save their work at the end of an activity with a different file name and then use the renamed file in the next guided activity.

Screenshots used in the textbook have been created with different versions of Microsoft Office. In Office 2016 the active tab is shown with a white background whereas in Office 365 the active tab is underlined in blue.

DATA FILES

All data files for the practical activities are provided on a separate disk with this Teacher's Guide.

GENERAL CONCEPTS



CHAPTER OVERVIEW

Unit 1.1	Computers and their uses
Unit 1.2	Data, information, knowledge and wisdom
Unit 1.3	Convergence
Unit 1.4	Social implications: Environmental



The following learning outcomes are covered by this chapter:

- Describe the information processing cycle
- Describe the various reasons for using computers
- Describe the role and use of data, information, knowledge and wisdom as part of information management.
- Explain convergence.
- Explain the social implications of computer technology on the environment.

GRADE: 11

DATE:

TEACHING TIME: 2 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- QR reader

Vocabulary

These words, phrases and abbreviations appear in the text.

- **ICT system:** It stands for Information and Communication Technology and refers to the overall set-up of hardware, software, data and the people using it.
- **Input:** The first step in the information-processing cycle is when the computer receives data from the user. The data can be in the form of either information or instructions.
- **Storage:** The input data is then stored by the computer. This can be either permanently on a hard drive, or temporarily in the RAM (the computer's short-term memory).
- **Processing:** Once the data is stored, the computer can start manipulating the data. This is done according to instructions that are programmed into the computer.

Vocabulary

These words, phrases and abbreviations appear in the text.

- **Output:** The manipulated data can now be sent to an output device. This includes a screen that can display the data, as well as other devices, such as a printer.
- **VoIP:** Voice over IP programs make it possible for users to have conversations with their family and friends at a fraction of the cost of a telephone call.
- **Blog:** An online diary that allows users to share their daily experiences with others.
- **Wiki:** Specialised website that allows users to share their information.
- **Data:** Raw, unorganised numbers, signals, or facts.
- **Convergence:** A term used to describe a situation where multiple technologies are combined to deliver a new and more exciting product.
- **Pollution:** The factories that produce the computers contribute to noise, air and water pollution.
- **E-waste:** This type of waste refers to discarded electronic devices that are thrown away and transported to landfills.
- **Green computing:** The study of designing, manufacturing, using and disposing of hardware, software and networks in a way that reduces their environmental impact.



Activity 1.1

Memorandum

Note: The numbering in the Theory Book is incorrect, it should be Q1 and Q2.

1. Multiple choice

Write down the correct answer for each of the following questions.

- a. Which of the following is not a reason we use computers?

Answer: D

- b. Which of the following examples of computer uses does not help save time?

Answer: C

2. Matching items

Choose a term/concept from Column B that matches the description in Column A. Write only the letter next to the question number.

Answer: 2.1 D

2.2 A

2.3 C

2.4 D

2.5 C

3. True or false statements

Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.

- a. Computers have made it possible to talk to people face to face while being in different cities across the world.

Answer: True

- b. The use of automation increases the amount of people needed in the production process.

Answer: False, the use of the automation decreases the amount of people needed in the production process.

- c. Humans are more accurate, efficient and reliable than computers.

Answer: False, humans are less accurate, efficient and reliable than computers.

- d. Computers lower the costs for communication.

Answer: True

4. Short to medium questions

Answer the following:

- a. What is the difference between wikis and blogs? Give an example of each

Answer: Blogs are a form of online diary that allows the user to share their daily experiences with others and Wikis are specialised websites that allow users to share information.

- b. Explain what the storage and communication step in the information-processing cycle entails? Give two examples of storage in the information-processing cycle.

Answer: The Storage step is the input data that is stored by the computer. The two sources are either a hard drive, the RAM or the ROM. Communication is the final step of the information processing cycle and is the communication of the information to other sources. This can be done between two computers or over a massive network such as the internet.

- c. How does a computer contribute to saving the environment?

Answer: We save paper by saving documents on the computer and communicating through the internet. We save trees by saving paper.

- d. What are the negative implications of computers on society?

Answer: Computers use electricity and thus contribute to pollution. E-waste is where computers are being disposed of but contain non-biodegradable material. There are various health hazards that are connected with the use and/or improper use of computers.



Activity 1.2

Memorandum

1. What type of web tool is Wikipedia?
Answer: B
2. What is the difference between data and information?
Answer: Data is raw, unorganised numbers, signals or facts and information, in contrast with data, is facts and numbers that have been organised so that it is useful for people.
3. What software can be used to organise or interpret data in a school environment?
Answer: Database software or spreadsheet software. Microsoft Access or Excel are acceptable answers.
4. Explain to fellow learners what each step in the DIKW pyramid means and how it progresses from one step to the next.
Answer: Data, information, knowledge and wisdom (DIKW) pyramid. Data is raw, unorganised numbers, signals or facts and information is facts and numbers that have been organised so that it is useful for people. Remembering the information is knowledge. Applying that knowledge to make the right choice is wisdom.
5. You just received your CAT test results and comments. The averages of each question and of the test as a whole were given.
 - a. Explain how you use the data and information to learn from the test and the experience to further deepen your wisdom, for example how can you and your teacher benefit from the information and how would you learn out of your mistakes?
Answer: The student's own answer. The student should mention how class statistics can help the teacher evaluate teaching styles as well as show which parts of the curriculum the students are struggling with. The student can evaluate how they fared against the class as well as which sections they struggled with. They can also privately evaluate how well they did against how long they studied for the test.



Activity 1.3

Memorandum

1. Which one of the following devices is not an example of convergence?
Answer: C
2. Explain what you understand about technological convergence and give four examples thereof.
Answer: The student's own words and examples. Convergences is various technological devices combined to make a new device.
To list a few examples: Smartphone, Smart TV, Smart Fridge, Computers in cars consoles.
3. Explain how convergence of devices benefits the user.
Answer: It is cheaper to buy a converted device then to purchase all the different components. It is more efficient to do different tasks on one device.
4. What technologies or components has been integrated into the following devices:
Note to the teacher: The learner must list at least two components per device.
 - a. Multi-functional printer
Answer: Scanner, printer, Bluetooth, copier, fax machine
 - b. A smart device, other than a television or fridge
Answer: Student's own choice but most smart devices have a network adapter, Bluetooth and CPU
 - c. Virtual reality
Answer: Speakers, display goggles, head motion tracking sensors, CPU, gyroscopes
 - d. Google glass
Answer: HD camera, CPU, Telephone, Video recorder, Network adapter



Activity 1.4

Memorandum

1. Which one of the following is a potential threat to the environment, caused by the widespread use of technology?
Answer: A
2. What is meant with the term “e-waste”?
Answer: The term refers to discarded electronic devices that are thrown away and transported to landfills.
3. What other ways are there to save energy when you use your computer? List at least two.
Answer: Any two but not limited to the following:
 - Adjust screen brightness to the brightness of the room.
 - Use black google, or any black background.
 - Turn on Standby mode.
 - Turn off the computer when done with tasks.
4. Does the selection of the type of printer also have an impact on green computing? Explain your answer.
Answer: Yes, the quality of the printer and power consumption of each printer differs.
5. Do you think that green computing will have any effect on environmental problems? Give reasons for your answer.
Answer: Student's own answer. The following are possible reasons for a 'yes' answer.
 - Green computing helps minimise CO2 emissions by using green technology and IT systems that harness renewable energy sources, instead of drawing out power from fossil-fuelled electric grid.
 - Conserving resources means less energy is required to produce, use, and dispose of products.
 - Green initiatives and policies are imposed on computer manufacturers to lessen the manufacturing of e-waste products that deplete, degrade and spoil the environment.
 - Green policies are implemented to encourage recycling of e-waste by individuals and businesses.

Part 1: Multiple choice

- 1.1 Which of the following devices is NOT an example of a dedicated device? (1)
Answer: A
- 1.2 Which of the following computers has the most processing power? (1)
Answer: C
- 1.3 Which of the following computers is portable? (1)
Answer: D
- 1.4 Which step in the information processing cycle makes use of the computer's CPU? (1)
Answer: C
- 1.5 Which of the following devices makes use of convergence? (1)
Answer: A

Part 2: True or false

Indicate if the following statements are 'True' or 'False'. Choose the answer and write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. (You may not simply use the word 'NOT' to change the statement.)

- 2.1 A compact computer with a complete system is known as a supercomputer. (1)
Answer: False. A compact computer with a complete system is known as a microcomputer. ✓ OR A compact computer with a complete system is known as a personal computer. ✓
- 2.2 Social networks have helped us to connect people to each other and have thus increased the distance between people. (1)
Answer: False. Social networks have helped us to connect people to each other and have thus reduced the distance between people. ✓
- 2.3 Wikis allow us to share our daily experiences with our friends. (1)
Answer: False. Blogs allow us to share our daily experiences with our friends. ✓
- 2.4 An example of a microcomputer is a laptop. (1)
Answer: True. ✓
- 2.5 People can share their knowledge of the world on social media. (1)
Answer: False. People can share their knowledge of the world on wikis. ✓

Part 3: Matching items

Choose a term/concept from COLUMN B that matches a description in COLUMN A. Write only the letter next to the question number (e.g. 1-A). (6)

Answer: 3.1 B 3.2 E 3.3 B 3.4 H 3.5 C 3.6 D

Part 4: Short and medium questions

- 4.1 When you turn on a computer, what happens at each stage of the processing cycle? (4)
Answer: Use the following as an assessment guideline:
- *Input: You press the power button on the computer. ✓*
 - *Storage: The computer fetches the instructions it needs to start up the computer's operating system from the ROM (BIOS). ✓*
 - *Processing: The CPU interprets these instructions and sends the relevant signals to the relevant components of the computer. ✓*
 - *Output: The computer's screen turns on and shows that the operating system is loading until it gets to the login screen. ✓*
 - *Communication: The internal components of the computer like the power button, CPU, monitor, ROM and RAM communicate through digital signals fetched and sent by the CPU. ✓ OR The computer automatically connects with any devices (such as the keyboard and mouse of a Desktop PC) that are connected to it during startup.*

4.2 How do you properly dispose of your old electronic devices? (2)

Answer: E-waste: This type of waste refers to discarded electronic devices that are thrown away and transported to landfills. Most of these devices contain non-biodegradable materials and heavy metals (lead, cadmium and mercury) that are toxic. The toxins can leak into the ground and contaminate the groundwater.

4.3 Describe what convergence is. (2)

Answer: Convergence is a term used to describe a situation where multiple technologies ✓ are combined to deliver a new, more exciting product. ✓

4.4 As technology has evolved computers have changed and, in some cases, improved our lives and way of living.

a. List FIVE reasons why people use computers. (5)

Answer: Any five of the following:

- Saving time ✓
- Saving labour ✓
- Communication costs ✓
- Efficiency ✓
- Accuracy and reliability ✓
- Effect on time and distance ✓

TOTAL: [38]

GENERAL CONCEPTS



CHAPTER OVERVIEW

Unit 2.1	Buying the correct hardware
Unit 2.2	Input devices
Unit 2.3	Storage devices
Unit 2.4	Processing devices
Unit 2.5	Output and communication devices
Unit 2.6	Troubleshooting
Unit 2.7	New technologies



The following learning outcomes are covered by this chapter:

- Evaluate hardware devices.
- Suggest input, output, storage and communication devices, as well as CPU and RAM; including specifying basic specifications in terms of processor, memory and storage for:
 - home users
 - SOHO users
 - mobile users
 - power users
 - disabled users.
- Fix ordinary hardware problems.

GRADE: 12

DATE:

TEACHING TIME: 6 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- QR reader

Vocabulary

These words, phrases and abbreviations appear in the text.

- **Home user:** Someone who buys a computer for personal use at home.
- **Soho (small office or home office) user:** Someone who uses a variety of hardware and devices for their business activities.
- **Mobile user:** Someone who travel a lot and requires devices that are easy to use and easy to transport.
- **Power user:** Someone who needs a computer with high processing capacity.
- **Disabled user:** Someone with a disability that uses computer devices to ease their daily lives.
- **Ultrabook:** Small, very powerful notebooks with long battery lives.
- **Ergonomic consideration:** There are various health issues that can be caused by using a computer.
- **OCR:** Optical character recognition is a technology used to recognise text inside a digital image.
- **Megapixels:** The measurement of resolution.
- **Keystroke logging:** This is a method used by hackers to record your keystrokes on the computer.
- **Storage capacity:** Determines how much information you can save on the device.
- **Storage speed:** Determines how quickly new information can be written to the device or read from the device.
- **Volatility:** Determines if the device will lose the data when turned off.
- **Reliability:** Consistently performing according to its specifications.
- **Durability:** Determines how likely a device is to break down.
- **Central processing unit (CPU):** One of the most important parts of the computer and responsible for receiving and carrying out the computer's instructions, as well as allocating more complicated tasks to other chips that will better handle the task.
- **Gigahertz of the processor:** Gigahertz refers to the CPU frequency and is an indication of the processor's speed.
- **Random access memory (RAM):** A piece of hardware (chip) responsible for temporarily storing data.
- **Subwoofer:** A loudspeaker designed to reproduce low-frequency sound (for example, bass sounds).
- **Erratic mouse movement:** When the mouse pointer jumps across the screen and does not move properly.
- **Resolution:** This is the number of pixels on the computer screen. It plays an important role in determining image quality
- **Holographic:** 3D images.
- **Blockchain technology:** This technology has the potential to change the ways in which we process and store data. Eg. Bitcoin.



Activity 2.1

Memorandum

1. Multiple choice
 - a. Which one of the following is a technology commonly used to connect a variety of different devices to a computer?
Answer: C
 - b. The ____ retains the data stored on it even if the power goes off.
Answer: B
 - c. Which hardware device can create electronic copies of documents by capturing an image?
Answer: B



d. A(n) ... is NOT an example of optical storage.

Answer: C

e. While editing videos on a mobile device, most of the battery life will be used by the_____.

Answer: B

2. Matching items

Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.

2.1 E

2.2 F

2.3 A

2.4 C

2.5 B

3. True or false statements

Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.

a. A scanner captures media such as pictures, videos and sound.

Answer: False - video devices

b. A fingerprint scanner scans documents such as photographs and pages of text and convert it into a digital format.

Answer: False - normal scanner

c. A monitor displays or sends data from a computerised device to other users.

Answer: False - a multifunction device or Fax modem or DLP device

d. Speakers convert data on a computer to sound.

Answer: True

4. Short and medium questions

Answer the following questions:

a. What is hardware? Name at least three different types of hardware devices?

Answer: Hardware are the physical components that together make a desktop PC. Any three but not limited to the following: mouse, keyboard, monitor, motherboard, hard drive, speakers, etc.

b. What are the two memory components on a motherboard (state their acronyms) and what is the difference between the two?

Answer: Random Access Memory is very high-speed storage that temporarily stores data the CPU is using and Read Only Memory is non-volatile memory that the computer uses to start up.

c. What is the difference between a modem, router and a switch?

Answer: A router connects computers to a network and the internet. A modem connects computers to a network and the internet. A switch connects many computers on the same, internal network.



Activity 2.2

Memorandum

1. Multiple choice
 - a. Which ONE of the following is the abbreviation for the largest unit used to measure storage?
Answer: D
 - b. For which type of user is the following list of components intended? Core 2 Duo processor, 4 GB memory, 500 GB hard drive, DVD reader.
Answer: C
 - c. An Ultrabook is a preference for which travelling users?
Answer: A
 - d. Mobile users require a device that has which of the following features?
Answer: C
 - e. Which of the following is not an example of a computer user?
Answer: A
2. Matching items
Choose a term/concept from COLUMN B that matches the description in COLUMN A.
Write only the letter next to the question number.

2.1 D	2.2 F	2.3 H	2.4 B	2.5 A
--------------	--------------	--------------	--------------	--------------
3. True or false statements
Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.
 - a. The type of user that uses the most graphic processing power is a home user.
Answer: False - power user
 - b. Stephen Hawking was a power user.
Answer: False - disabled user
 - c. Screen resolution determines how much information they can view on a screen at a time.
Answer: True
4. Short questions
Answer the following questions:
 - a. What are the different types of users? Give an example of a hardware component that is most important to each type of user.
Answer: Examples are as per the student's own answer. Following are some of the most likely components.

Home user	HDD, network card
SOHO	Printer, scanner
Mobile	Mobility, CPU, 3G
Power	CPU, GPU, RAM
Disabled	Wireless components, CPU
 - b. What does the acronym SOHO stand for?
Answer: Small office or home office
 - c. Which type of user uses the most processing power?
Answer: A power user OR disabled user
 - d. What is the difference between a SOHO user and a home user?
Answer: Small office or home office (SOHO) users use a variety of hardware and devices for their business activities and a home user uses a computer for personal and social means.

5. Scenario

The specifications below appeared in an advertisement for a notebook computer. Study the specifications and answer the questions that follow:

- a.** Would the computer described above be suitable for a power user such as a video-editing professional? Substantiate your answer by giving two reasons to support your answer.

Answer: No, the RAM is not enough, and the graphics card is not good enough; it is an on-board graphics card. The low processing power can also be mentioned.

- b.** Give two reasons why a notebook computer would be more suitable than a desktop computer for learners in a school.

Answer: Any two of the following:

- *The portability factor enabling students to take the notebook home and practise.*
- *Provides a one-on-one computing environment.*
- *Fosters collaboration with peers and teachers even out of the classroom.*
- *Promotes skills such as critical thinking, independent research and cross-technology proficiency.*
- *There are a number of educational apps and programmes available meaning far more versatility and range in terms of resources.*

ADDITIONAL INFORMATION

1. WHAT IS OCR?

OCR stands for Optical Character Recognition and is a technology that is used to recognise and convert any written or printed text inside an image, such as scanned documents and photos, into machine readable text. OCR has evolved to much more than recognising and converting printed text. It is currently also used in automatic number plate recognition, meter reading, voucher scanning, access control and many more.

2. WHAT IS A CASE STUDY?

In most instances, case studies are stories based on real-life situations that are used as a basis for learning. They can come in different forms, for example with some being basic “what would you do?” type of questions, whereas others are very detailed and require analysis and problem solving.

Their main purpose is to:

- Engage the learners in working on ill-structured or ambiguous, complex, real or realistic problems or issues.
- Teach learners to explore the topic and use critical thinking to come to a solution, decision, or action, rather than relying on teachers to explain the problem or issue and report the solution.

3. HOW MUST I HANDLE A CASE STUDY?

In this book, case studies are used to get the learners to think beyond what they must know and to teach them how to apply their knowledge to a real-life problem. Because of this, it is NOT for exam purposes but can rather be used for the enrichment of the learners.

Read the case study to the learners in class. Then let them:

- discuss the questions in class;
- discuss the questions in groups; or
- answer the questions individually in their workbooks.

Group discussions

- Normal pedagogical practises apply here.
- Language can be a barrier to the success of a group discussion. In this case, have the learners answer it individually in their workbooks.
- If you want to know more about group discussions, you can look at the following webpage:

Link: <https://www.education.gov.gy/web/index.php/teachers/tips-for-teaching/item/1665-how-to-make-group-discussions-interactions-work-in-the-classroom>



Case Study

The following questions can be either:

- discussed with the whole class;
- discussed in smaller groups or pairs; or
- completed individually in the workbooks.

1. Has something like that ever happened to you or do you know someone to whom it happened?

Possible discussion points:

Any example of where the learner or someone they know tried to use voice recognition, for example:

- Telling a GPS in South Africa to go to a non-English location such as Ditholo.
- Talking too slow or too fast for the software to understand.
- Stuttering while using voice recognition.

2. What do you think are the main disadvantages and problems that can be caused by voice recognition software.

Possible discussion points:

- Lack of accuracy and misinterpretation speech must be clear and distinct.
- Accents may cause misinterpretation.
- Some versions might require training and set-up.
- Background noise can influence performance
- Alterations to your voice, such as a cold, might cause problems when using the software.
- Programs do not understand the context of language the way humans do. This may lead to errors due to misinterpretation.
- It can be hacked with pre-recorded verbal messages.

Tip: If you have access to YouTube, you may want to play the following advertisement of voice recognition software that went wrong:

3. What are the advantages. See if you can come up with other examples where voice recognition software is used to make life easier.

Possible discussion points:

- Works well for people with physical or cognitive disabilities.
- Can capture speech much faster than the average person can type.
- Can be used for specialised voice commands.
- Eliminates handwriting and spelling problems.
- It can help with basic computer tasks, such as browsing and scrolling.



Activity 2.3

Memorandum

1. Multiple choice

a. Which of the following components can be used as an integration medium?

Answer: B

b. Carpal Tunnel Syndrome is caused by too much pressure on the wrists. Which of the following devices is most likely to give you CTS?

Answer: C

c. Which of the following is a limitation of voice recognition?

Answer: B

d. Which of the following is an advantage of the computer mouse?

Answer: D

2. Matching items

Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.

2.1 C

2.2 A

2.3 H

2.4 F

2.5 D



- a. Explain how you use the data and information to learn from the test and the experience to further deepen your wisdom, for example how can you and your teacher benefit from the information and how would you learn out of your mistakes?

Answer: The student's own answer. The student should mention how class statistics can help the teacher evaluate teaching styles as well as show which parts of the curriculum the students are struggling with. The student can evaluate how they fared against the class as well as which sections they struggled with. They can also privately evaluate how well they did against how long they studied for the test.

3. True or false statements

Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.

- a. It is an advantage for keyboards that disabled users might find it difficult to enter information.

Answer: False - a disadvantage

- b. Your wrist must be in a slanted position to use the keyboard correctly.

Answer: False - straight position

- c. An optical mouse is very expensive.

Answer: False - not very expensive OR very cheap

- d. The user must be computer literate to make full use of a digital camera.

Answer: True

- e. A touch screen is an input and an output device

Answer: True

4. Answer the following questions:

- a. What is the difference between a touch screen and a touch pad?

Answer: Touch screen like a smartphone is an input and output device and a touch pad is situated on a laptop and is an input device.

- b. What are two advantages and limitations of scanners?

Answer: Any two of the following:

Advantages	Limitations
Images and documents can be stored and printed later.	The quality of the scanned document is limited by the resolution of the scanner as well as the quality of the original document.
Makes it possible for the user to edit stored documents.	Unable to scan 3D objects.
Document quality might be improved by using special editing software.	Prone to wear and tear, and therefore prone to technical difficulties.

- c. How do integrated systems work?

Answer: Integrated systems have different components and systems in one device that fills a function that each individual component could not do. How the integrated system works depends on the function or purpose of the integrating systems, but it is mostly to increase productivity and efficiency.

- d. How do wireless input devices work and what are two advantages of using them?

Answer: Wireless keyboards and mice use a receiver that is plugged into the USB slot on a computer. The input device then communicates with the computer, using wireless transfer of data. Any two of the following: Saves space as there are no wires. Aesthetically better than wired input devices. Allows flexibility of use as you can make use of the device at a distance.

- e. Which type of user will benefit the least from wireless inputs and explain why?

Answer: Power users, the movements are slower with wireless inputs and this delay is not wanted during gaming.

5. Read through and understand the following scenarios to provide an appropriate solution:

- a. Since your father is technologically impaired, he came to you to explain to him what he must know before buying a webcam for work. List the advantages and limitations of a webcam.



Answer: Student's own answer, but the most likely answer is Skype.

Advantages	Limitations
The camera can be left on constantly and activated when the user requires.	Most webcams produce poor quality videos.
Allows people to have face to face conversations without the need to travel.	The webcam needs to be connected to the computer.
Can take pictures without the need of film.	Feed when video chatting can be choppy or pixelated.
Low cost and high convenience.	Webcam-based calls run a greater risk of technological failure due to dropped connections or incompatibility.
Compatible with various platforms such as Windows, Mac, Linux and even some gaming systems like the Sony PlayStation.	Hackers can activate your webcam and watch you without you knowing it. Security information can also be stolen.

- b. Your parents decide to buy an entry-level computer with internet so that your grandmother can order her clothes and food online, and have them delivered. Explain to your grandmother how to use the keyboard and mouse ergonomically so that she does not suffer from pains. Give her at least seven tips.

Answer: Any seven of the following tips:

- Make sure that your keyboard is at the correct height, just above the level of your lap, so that your arms tilt downward when typing. In many cases this may mean that you should get an adjustable keyboard tray so that your keyboard can be tilted down and away from you.
- Keep your wrists in the neutral (straight) position. If you have to bend your wrist up and down the whole time, it compresses structures in your wrists, causing pain and injuries such as carpal tunnel syndrome and tendonitis.
- Adjust the height of your chair to make sure that your elbows are at a slight open 90-degree angle or greater. Elbows that are bent at less than 90 degrees can cause arm and wrist pain.
- Keep your shoulders relaxed and your elbows at your side. This means that your shoulders should not be raised, and your arms should be roughly parallel to the floor.
- Keep a light touch on your keys when typing as the tendons of your fingers are connected near your elbow. Hitting the keys too hard may cause inflammation of the elbows.
- Do not use arm or wrist rests while you are typing.
- Align your body to the keyboard, depending on whether you use the letters or the numbers the most. If you use the letters the most, centre the keyboard so that the letter B is about in line with your belly button. However, if you use your numeric keypad (or numpad) the most, move the keyboard more to the left.
- Use keyboard shortcuts or macros for common, repetitive tasks to prevent overusing your hands and wrists.
- As computer mice come in different sizes and shapes, make sure that the mouse fits comfortably in your hand and is easy to use. Rather use a symmetrical shaped mouse than a curved one.
- Do not grip the mouse hard. Hold it loosely.
- Make sure that you are holding your mouse correctly, i.e. rest your hand over the mouse and place your index finger on the left button of the mouse. You can rest your thumb and pinkie on the sides of the mouse.
- Keep your mouse at the correct height and distance from your body, close to the keyboard.
- Make sure that your elbow is bent and close to your body.
- Use your whole forearm, not only your hand, to move the mouse. If you move only your hand, it will put strain on your wrist.
- Keep your wrist straight. This will prevent your wrist from bending in an unnatural position.
- Do not use a wrist rest, as that doubles the pressure inside the carpal tunnel.
- Do not click too hard, but rather use a soft touch to manipulate the mouse.
- Adjust the speed at which your mouse moves, the time required between double-clicks, and the size of the cursor if you have problems controlling the mouse.



Case Study

The following questions can be either:

- Discussed with the whole class.
- Discussed in smaller groups or pairs
- Completed individually in the workbooks.

1. Find out within your group who has lost important information due to not backing it up?

Possible discussion points. Let learners discuss examples of where they have lost information, for example:

- Deleting files accidentally.
- Viruses and damaging malware.
- Mechanical damages of hard drive.
- Power failures.
- Theft of computer.
- Spilling coffee, and other water damages.

Note to the teacher: Think of some examples where it happened to you or someone you know to get the discussion going.

2. How did that make you feel and what was the impact thereof on your life?

Note to the teacher: Think of some examples where it happened to you or someone you know to get the discussion going.

3. What could you have done differently?

Note to the teacher: Think of some examples where it happened to you or someone you know to get the discussion going.

4. Are you backing important information up? On which device and how do you keep that device safe?

Possible examples:

- External hard drive
- Cloud
- Flash drive/USB memory stick
- Bootable backup or clone.



Activity 2.4

Memorandum

1. Multiple choice:

- a. What current technology is replacing the DVD?

Answer: C

- b. What is the average capacity of a DVD?

Answer: D

- c. Which of the following is NOT a storage device?

Answer: B

- d. Which one is an internal hard drive's average rotational speed?

Answer: C

- e. Which of the following is a limitation of an internal hard drive?

Answer: B

- f. Which of the following is a limitation of an external hard drive?

Answer: C

- g. Which of the following is an advantage of solid-state drives?

Answer: A



- h. Which of the following is an advantage of flash drives?
Answer: B
- i. Which of the following is an advantage of optical drives?
Answer: A
- j. Which of the following is not an advantage of cloud storage?
Answer: A

2. Matching items

Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.

Answer: 2.1 C 2.2 F 2.3 A 2.4 D 2.5 G

3. True or false statements

Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement.

- a. Another name for a flash disk is a thumb drive.
Answer: True
- b. A flash drive is the least robust storage device.
Answer: False - most
- c. An internal hard drive has the highest storage capacity.
Answer: True
- d. A hard drive has a shorter life span than a solid-state drive.
Answer: False – longer
- e. Cloud storage is for free for a specific amount.
Answer: True

4. Short questions

Answer the following questions:

- a. What is the difference between internal and external hard drives?
Answer: An internal hard drive is situated inside the computer box in a fixed position. An external hard drive is portable but usually has less storage capacity, and is more expensive.
- b. What is the difference between an HDD and a SSD?
Answer: Solid State Drive is a storage device that has no moving parts while a hard drive (HDD) has a larger storage capacity than the SSD, but is slower in terms of memory retrieval.
- c. How would you explain cloud storage to a grade 10 CAT learner?
Answer: Cloud storage is a system where your data is stored on a remote server that you can access over the internet.
- d. What five points must you take into consideration when choosing a storage device? Explain the five points briefly.
Answer:
- *Its storage capacity, which determines how much information you can save on the device.*
 - *Its storage speed, which determines how quickly new information can be written to the device or read from the device.*
 - *Its volatility, which determines if the device will lose the data when turned off. You do not want a device that will lose all data in case of a power outage.*
 - *Its reliability and durability which determines how likely the device is to break down. When you store thousands of hours' worth of work or years' worth of photographs on a storage device, you do not want it to break unexpectedly.*



5. Scenario

Read through and understand the following scenarios to provide an appropriate solution.

- a. Your parents gave you R1 500 to buy a storage device for your computer. Explain the factors involved for your decision to either buy a hard drive or a SSD. State your choice at the end.

Assessment tool

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner mention the advantages of HDD and SSD?	
Did the learner mention the disadvantages of HDD and SSD?	
Did the learner compare the advantages and disadvantages of HDD and SSD?	
Did the learner come to a conclusion based on their comparison?	

- b. Your uncle wants to open up a store that sells music CDs and DVDs and clean CDs. Give him your advice on the relevance and future of CDs and DVDs. Give your uncle your opinion on whether it is wise to open such a store and why.

Assessment tool

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner discuss the relevance of CDs and DVDs in the future?	
Did the learner discuss why it would or would not be wise to open a CD/DVD store?	
Did the learner mention potential future developments such as Blue Ray and virtual reality?	
Did the learner indicate a possible adjustment that would make the store successful?	

ADDITIONAL INFORMATION

1. WHAT IS A GIGAHERTZ?

When referring to a computer processor or CPU, gigahertz (GHz) is the measurement of the clock frequency or clock cycle of the CPU per second; it is the amount of time between two pulses of an oscillator. This determines the speed of the CPU.

Generally speaking, the higher the number of pulses per second, the faster the computer processor will be able to process information, for example a 4 GHz processor performs 4 000 000 000 clock cycles per second.

The first computer's CPUs operated in kilohertz, for example the Intel 4004 operated at 740 kHz. Later processors operated in megahertz, such as the Intel Pentium, which could manage speeds of up to 300 MHz. Today's computers operate in the gigahertz range such as 3,8 GHz or higher.

One gigahertz is equal to 1 000 000 000 hertz or 1 000 MHz.



Activity 2.5

Memorandum

1. Multiple choice:
 - a. How much faster can RAM be than the fastest storage device?
Answer: A
 - b. Most modern computers use this type of RAM.
Answer: C
 - c. Which amount of RAM is recommended for a professional user?
Answer: A
 - d. Which of following can be used to decide on a CPU?
Answer: C
 - e. Which of the following is responsible to temporarily store data?
Answer: A
2. Matching items
Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.
Answer: 2.1 A 2.2 D 2.3 C 2.4 B 2.5 H
3. True and false statements
Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down
 - a. A home computer or entry level user does not need a GPU.
Answer: True
 - b. All types of RAM fit on a motherboard.
Answer: False – certain types
 - c. A GPU is the core of any computer
Answer: False – CPU
 - d. A GPU is located on the motherboard.
Answer: False – graphics card



- e. The more cores a CPU has, the more prone it is to gain heat and slow down processing speed.

Answer: True

4. Short questions

Answer the following questions:

- a. What is the CPU responsible for?

Answer: It is responsible for receiving and carrying out the computer's instructions and allocating more complicated tasks to other chips that will better handle the task.

- b. What must you consider when evaluating a CPU?

Answer: Gigahertz (speed) of the processor and the number of cores the CPU has.

- c. What is the difference between a CPU and a GPU?

Answer: The central processing unit is responsible for receiving and carrying out the computer's instructions and calculations while the graphics processing unit is a specialised processing unit responsible for display functions.

- d. What is RAM and what does it do?

Answer: Random access memory or RAM is a piece of hardware (chip) responsible for temporarily storing data. It acts as a helper to the GPU and CPU by storing the information that is currently being used and loading the data that they may want to use next.

- e. What must you consider when evaluating a GPU?

Answer: Consider what you are going to use the computer for.



Case Study

Virtual reality is one of the most exciting and interesting advances of technology. It is a type of output device that makes use of a specially designed headset to fully immerse the user in a high-quality 3D virtual world by using both sight and sound.

What sets virtual reality apart from other 3D viewing devices is that it is not limited to just normal 3D images. The virtual reality headset adjusts your vision, depending on where you look in real life, changing the picture you see as you look at different things. This gives the device a much more realistic feeling.

Discuss the following questions in class.

1. Who in your group has experienced virtual reality? How does it feel?
Watch the following video (link in the Theory Book).
2. Would you like to have virtual reality available to you? Why or why not?
3. What can virtual reality be used for except gaming? Do some research on the internet and find at least five different applications.

After the learners have watched the video pose question 1 and 2 to the class.

3. Health care, space travel, museums, automotive manufacturing, education.

For additional information - <https://www.livescience.com/53392-virtual-reality-tech-uses-beyond-gaming.html>



Activity 2.6

Memorandum

1. Multiple choice:
 - a. What is the refresh rate of a computer screen is measured in?
Answer: B
 - b. What is the most limiting factor when buying an output device?
Answer: A
 - c. Which of the following is not an output device?
Answer: C
 - d. Which of the following is an important factor when buying a printer?
Answer: C
 - e. Which of the following is not a factor when buying speakers?
Answer: D
2. Matching items
Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.
Answer: 2.1 B 2.2 H 2.3 E 2.4 A 2.5 G
3. True or false statements
Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.
 - a. The bigger the screen size, the better it is for your eyes.
Answer: False – worse
 - b. When a screen is described as 1 920 1 080, it means that the screen has 1 920 pixels along the height of the monitor.
Answer: False – width
 - c. It is possible to listen music on your computer without a dedicated soundcard.
Answer: True
 - d. The price of any output device is always a factor when evaluating the output device.
Answer: True



- e. Having more memory in a printer increases the printing speed.

Answer: True

4. Short and medium questions

Answer the following questions:

- a. Define an output device and give three examples of it.

Answer: An output device is any device that takes the data that has been stored on a computer and makes it available to the user. Any three output devices. The following are suggestions: computer screen, printer and speakers.

- b. How does a speaker system with a subwoofer compare to a speaker without one?

Answer: A system with a subwoofer can reproduce lower frequencies and a more powerful bass than a speaker system without a subwoofer, but it takes up more space.

- c. What are the three most important aspects you must look at when buying a monitor?

Answer: Pixels, screen size and refresh rate.

- d. What five aspects must you look at when buying a printer?

Answer: Any five of the following:

- *How quickly it can print: Budget printers should be able to print about 3 to 6 colour pages per minute.*
- *The paper type and size used by the printer: Make sure to select a printer based on the type of documents you have to print.*
- *Printer resolution: This is normally measured in dots per inch (dpi) and affects the sharpness of the text and images on the paper. A resolution of 600 dpi should be sufficient for the average user.*
- *How much it costs to print a page: Colour printers are more expensive to operate and will cost more per page. This is also true for printers with a higher resolution.*
- *Memory: All printers come with a limited amount of memory. Having more memory increases the printing speed. This will only be noticeable if you are planning on printing pages with large images or tables on a regular basis.*
- *Wireless capabilities: Most modern printers come with Wi-Fi capabilities. This makes it possible for the user to print documents without the need to be physically connected to the printer.*
- *Ink cartridges: Make sure that ink cartridges are available for when you have to replace them.*

- e. Virtual reality equipment is becoming more affordable. In what way can virtual reality be used? Name two pieces of equipment that one would need for virtual reality.

Answer: The virtual reality headset adjusts your vision, depending on where you look in real life, changing the picture you see as you look at different things. This gives the device a much more realistic feeling and has many applications like real life simulations. Important equipment can be the goggle display, speakers, the CPU and the motion sensors (gyroscope).



Activity 2.7

Memorandum

1. Multiple choice:
 - a. What application do you use to close a non-responsive program?
Answer: B
 - b. The window of this option displays the available disk space on your computer.
Answer: C
 - c. Which system settings allows you to change the screen's resolution?
Answer: D
 - d. Which of the following will cause your scanned document to be of poor quality?
Answer: A
2. Matching items
Match column B with column A
Answer: 2.1 C 2.2 E 2.3 A 2.4 B 2.5 G
3. True or false statements
Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.
 - a. An SSD should be defragmented once in a while.
Answer: False – hard drive
 - b. A lower resolution lets the images and text look smaller.
Answer: False – bigger
 - c. A lack of disk space can slow down your computer.
Answer: True
 - d. SSDs should never be optimised or defragmented.
Answer: True
 - e. Having a higher screen resolution can slow down your computer.
Answer: True
4. Short and medium questions
Answer the following questions:
 - a. Give three possible causes to erratic mouse movement and how to fix it.
Answer: The following:
 - *The mouse is dirty. The performance of an optical mouse might be affected by dirt inside the mouse. Removing the dirt by cleaning the mouse should fix the issue. Be sure to find out how to clean the mouse properly before you do it.*
 - *Bad surface. An irregular or shiny surface might interfere with the optical laser that is used by your mouse. This can be fixed by getting a mouse pad or book to work on.*
 - *Wireless mouse batteries. If you are using a wireless mouse, the issue might be caused by low battery power. Replacing the batteries should fix the issue.*
 - b. Describe three of the most common occurring scanning problems and the causes thereof.
Answer:
 - *The scanned document is cut off or skew. This is caused by a document that is not properly aligned. To fix it, reposition the document on the scanner.*
 - *Poor image quality. This can be due to the following reasons: Dirty scanner surface; Inability of the OCR software to read the text.*
 - *Connection errors. This is most likely caused by a poorly attached connection. Make sure to properly connect the scanner to fix the issue.*



- c. What causes a black screen to occur?

Answer: This can have multiple causes:

- *The most likely problem is the monitor.*
 - *The cable from the monitor to the pc is not connected properly.*
 - *Your video card's drivers.*
 - *The display may be turned off by cutting power to the graphics chip (GPU) when it overheats.*
- d. You are a learner who has just finished writing a very important essay for an assignment. However, the printer that you are using to print the essay is not working. What could be causing this problem?

Answer: The printer is not printing because of a bad connection, it has run out of ink or the printer has not been installed on your computer.

Part 1: Multiple choice

- 1.1** Which of the following is an example of memory? (1)
Answer: A ✓
- 1.2** Which of the following is NOT a communication device? (1)
Answer: C ✓
- 1.3** Which of the following networks would a home user use? (1)
Answer: C ✓
- 1.4** Which of the following storage is NOT physical? (1)
Answer: C ✓
- 1.5** Which of these problems has to do with the computer's software? (1)
Answer: D ✓

Part 2: True or false

Indicate if the following statements are 'True' or 'False'. Choose the answer and write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. (You may not simply use the word 'NOT' to change the statement.)

- 2.1** SOHO users are people who work at home and in small offices. (1)
Answer: True. ✓
- 2.2** A smartphone is ideal for a mobile user. (1)
Answer: True. ✓
- 2.3** When you use a keyboard make sure that your elbow does not bend a lot. (1)
Answer: False. When you use a keyboard make sure that your wrist does not bend a lot. ✓
- 2.4** A digital camera captures photographs and stores them on an internal hard drive. (1)
Answer: False. A digital camera captures photographs and stores them on a digital memory card. ✓
- 2.5** Cache is located on the hard disk while RAM is located on the CPU. (1)
Answer: False. Cache is located on the CPU while RAM is located on the motherboard. ✓

Part 3: Matching items

Choose a term/concept from COLUMN B that matches a description in COLUMN A. Write only the letter next to the question number (e.g. 1-A). (5)

Answer: 3.1 D ✓ 3.2 B ✓ 3.3 F ✓ 3.4 E ✓ 3.5 C ✓

Part 4: Categorisation questions

Classify the following pieces of hardware as either input, processing, output or communication devices. (10)

Answer:

- 4.1** *Input device ✓*
- 4.2** *Output device ✓*
- 4.3** *Output device ✓*
- 4.4** *Processing device ✓*
- 4.5** *Storage device ✓*
- 4.6** *Input device ✓*
- 4.7** *Communication device ✓*
- 4.8** *Storage device ✓*
- 4.9** *Input device ✓*
- 4.10** *Communication device ✓*

Part 5: Medium questions

5.1 Provide THREE examples of an input device a paralysed person would use. (3)

Answer: Some possible answers:

- Microphone ✓
- Eye-motion sensor ✓
- Sip-and-puff device ✓

5.2 How do you access and use the Optimise Drives tool? (5)

Answer: You must do the following:

1. Open your computer's Start Menu. ✓
2. Enter the words Optimise Drives in the search box. ✓
3. Click on the Defragment and Optimise Drives application. ✓ The Optimise Drives window should open.
4. Click on the Optimise button to begin optimising your hard drive. ✓

At the bottom of the Optimise Drives window, enable the Scheduled Optimisation option by using the Change Settings button. ✓

5.3 If you want to watch a video on YouTube what hardware do you need? Mention ONE piece of hardware you will need for each step of the information processing cycle. (5)

Answer: Use the following as an assessment guideline:

- Input: Keyboard ✓ and mouse ✓
- Storage: Internal hard drive ✓
- Processing: CPU ✓ and RAM ✓
- Output: Screen ✓, Speakers ✓, Headphones ✓
- Communication: Network or Wi-Fi card ✓

5.4 Which do you think is better, wired or wireless input devices? Give a reason for your answer. (2)

Answer: Student's own answer.

Use the following examples as an assessment guideline:

- Wired input devices ✓, since they are directly connected to the computer, they do not get lost easily ✓
- Wireless input devices ✓, since they have no cables, they do not create tripping hazards. ✓

TOTAL: [40]

SOFTWARE AND SOCIAL IMPLICATIONS

CHAPTER OVERVIEW

Unit 3.1	Uses of common applications
Unit 3.2	Software enhancing accessibility, efficiency and productivity
Unit 3.3	Interpreting system requirements
Unit 3.4	Common software problems
Unit 3.5	Social implications: User-centred design

The following learning outcomes are covered by this chapter: 

- Explain why software is important.
- Identify some of the most commonly used software applications.
- Describe how software can enhance accessibility, efficiency and productivity.
- Understand the difference between web-based and installed applications.
- Interpret software system requirements.
- Describe some of the most common software problems.
- Explain the risk of using flawed software.
- Discuss user-centred design.
- Understand the social implication of software design.

GRADE: 12

DATE:

TEACHING TIME: 4 hours

Resources	Each learner should have access to: <ul style="list-style-type: none"> • CAT 12 textbook • Workbook • QR reader
Vocabulary	These words, phrases and abbreviations appear in the text. <ul style="list-style-type: none"> • Installed applications: Programs that are permanently installed onto your computer. • Minimum: The lowest specifications needed to let the program work. • Recommended: The specifications that the program should function best on.



Activity 3.1

Memorandum

1. Multiple choice

- a. Which of the following are some of the features of email software?

Answer: C

- b. Which of the following are some of the features of spreadsheet software?

Answer: B

- c. Which of the following are some of the features of presentation software?

Answer: C

2. Matching items

Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.

Answer: 2.1 F 2.2 E 2.3 A 2.4 H 2.5 G 2.6 C 2.7 B 2.8 D

3. True or false statements

Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.

- a. Firefox is a web-browser developed by Microsoft.

Answer: False – Mozilla

- b. Wikipedia is a free, online reference software.

Answer: True

- c. Google maps is a free reference software, but it cannot work without an internet connection.

Answer: False – can

- d. The serial key required for activating installed software is legally and freely given on the software application's website.

Answer: True

- e. One of the biggest concerns when working with data is the internet connection.

Answer: False – security

4. Short and medium questions

Answer the following questions:

- a. What advantages does web-based applications have over installed applications?

Answer: There is no installation required. The application does not take a lot of hardware space. There is no back-up required. Web based applications can be accessed anywhere where there is internet.

- b. A big disadvantage of web-based software is that an internet connection is required. Is this a limiting factor for most South Africans? Give a reason for your answer.

*Answer: Yes, less than half the population of South Africa has internet access. OR
No, most South Africans with computers have some access to the internet.
Teacher's note: No mark is allocated if a justifiable reason was not given.*

- c. List one example of each type of free software.



word processing	LibreOffice
Spreadsheet	LibreOffice
Database	MySQL
Presentation	Apache OpenOffice Impress
reference software	Dictionary by Farlex, Wikipedia, Google Maps
e-mail	Microsoft Outlook, Mozilla Thunderbird, Gmail
document management	Microsoft OneDrive
web browsers	Opera, Firefox, Chrome

- d. Name and explain four features of word processing software and give instructions on the necessary steps that have to be taken in order to use these features.

Answer:

- *A variety of different graphics can be used to enhance visual aspect of the document.*
 - *Create templates that can be used to standardise documents.*
 - *Spell checker that will check your spelling and grammar.*
 - *Thesaurus that will suggest similar words to the word that you are currently using.*
- e. While installing software, you were not required to enter a product key. Give a reason as to why this occurred.

Answer: Open source and free software programs usually do not require a product key when installing.



Activity 3.2

Memorandum

1. Matching items

Match column B with column A

Answer: 1.1 C 1.2 B 1.3 B 1.4 H 1.5 F

2. Short and medium questions

Answer the following:

a. Give three advantages of note-taking software.

Answer: The answer includes but is not limited to the following:

- Your notes are stored on your computer, preventing them from getting lost.
- Your notes are always at hand and can be accessed as long as you have your smartphone or computer with you. There is also no risk of running out of pages to write on.
- The note-taking software enables you to search for specific topics and information. This makes it much easier to work through the notes.

b. How does note-taking software help the environment?

Answer: Using note-taking software on a computer instead of traditional means minimises the usage of paper and in return less trees are cut down to make paper. Used paper becomes waste, thus there is also less waste when using note-taking software.

c. Give three advantages of voice recognition software.

Answer: Any three of the following:

- Helps people with physical disabilities to use a computer.
- Makes it possible to make phone calls without having to touch a phone (This is very useful when driving, as you should never handle your phone while you are driving).
- Can be used to search for information on the internet, for example using Siri or Alexa to search for a recipe while cooking.
- Improves productivity as you can talk much faster than you can type or write.
- Improves security, as your voice can be used as a security measure to help protect your data.

d. Name an example of free and paid-for voice recognition software.

Answer:

- Free – Windows 10 Speech recognition
- Paid – Dragon Professional Individual

e. One of the advantages of voice-recognition software is that it increases productivity. Explain through the use of an example why this is so.

Answer: Student's own answer. Generally, the fact that most people talk faster than they can type which saves time, and the possibility of talking while walking, must be mentioned.



Activity 3.3

Memorandum

1. True or false statements
Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down
 - a. If your software does not meet the system requirements, it means that the software will not work.
Answer: False – may still work
 - b. Running out of RAM may cause programs to stop working.
Answer: True
 - c. Certain programs cannot work if you do not have the right operating system.
Answer: True
 - d. Modern laptops (after 2009) meet systems requirements for Office packages (for example, Microsoft Word, Microsoft Excel and Microsoft PowerPoint).
Answer: True
 - e. A computer will not function properly if it contains software instructions that cannot be performed by the hardware.
Answer: True
2. Scenario
Look at the different advert of computers and software and answer the following questions.
 - a. What difference does it make to your computer when you run a program that meets the minimum requirement, compared to a program that is run at the recommended requirements?
Answer: Minimum requirements is the minimum hardware specifications that the software needs to meet to work on the computer. Recommended requirements is the average hardware requirements that the software needs to meet to run fairly smoothly.
 - b. Does the Dell laptop have the minimum requirements for Windows 10? Show how you came to this answer.
Answer: Yes. Windows 10 Home is already installed on the laptop.
 - c. What does OS mean in the Call of Duty game requirements?
Answer: Operating System
 - d. What does display resolution 1366 x 768 mean?
Answer: The maximum display quality the laptop can show is 1366 pixels horizontally and 768 pixels vertically.
 - e. What is meant with "Touch Display"?
Answer: It shows whether the laptop (computer) screen allows the user to interact with the laptop (computer) by using their finger or stylus.
 - f. What type of software is Photoshop?
Answer: Photoshop is paid imaging editing software.
 - g. Can the Call of Duty: Modern Warfare 2 and Photoshop CC 19 be installed on the laptop?
Answer: Photoshop CC 19 – Yes, the laptop adheres to minimum requirements if it has access to the internet.
Call of Duty: Modern Warfare 2 – No, the laptop does not meet system requirements in term of RAM, processing speed and graphic capabilities.



- h. List the different processors names in the adverts, sort them from fastest to slowest in terms of speed.

Answer: List only the CPUs with name and speeds given:

- Intel Core 2 Duo E8500 3.16GHz
- Intel Core i3-530 2.9GHz
- Intel Celeron - N3060 2.48 GHz.

Bonus marks can be allocated if the student inscribed the following speeds with the following processors:

- AMD Phenom II X4 810 is 2.6 GHz
- AMD Athlon II X3 415e is 2.5 GHz



Activity 3.4

Memorandum

1. True or false statements

Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement.

- a. Software updates include improvements to program performance, stability and improved access.
Answer: True
- b. Software developers use write-only files by selling their software on CDs/DVDs.
Answer: True
- c. Faulty software leaves space for people with malicious intent to exploit the user.
Answer: True
- d. Flawed software can lead to problems, such as security risks, underperformance and overperformance.
Answer: True

2. Short and medium questions

Answer the following questions:

- a. What is the difference between SP1 and SP2 of the same software?
Answer: Service Pack 2 is a newer version than Service Pack 1. SP2 can contain improvements on any issues experienced with SP1.
- b. How does read-only files work?
Answer: Read-only files are files that have been set to allow the user to only read or move the file. It is useful to:
 - protect data from being changed by others; and
 - prevent accidental changes to data.
- c. Is it possible for a home user to change a file's attribute to or from "Read-only"? If so, explain how this can be done.
Answer: Yes, it is possible. Follow the listed steps:
 - Go to the file you are trying to edit.
 - Right-click the file and select Properties from the options list. This will open a new properties window.
 - At the bottom of the properties window, under attributes, cancel the read-only option selection.
 - Click OK at the bottom of the properties window.
- d. Name and describe five risks associated with using flawed software.
Answer:
 - Security risks: Faulty software might not be fully secure and can contain flaws that people with malicious intent can exploit in order to access your computer and steal your data.
 - Underperformance: Faulty software might cause your computer to underperform due to slow system response and transaction rates.
 - No performance: Faulty software can lead to program and computer crashes. This might require you to restart your computer.
 - Navigation risks: Faulty software can cause programs that make use of GPS (global positioning satellite) to give inaccurate results. This can lead to the user getting lost and wasting a lot of time trying to determine how to get to his or her destination.
 - Economical risks: Faulty software used to make payments to workers can lead to some workers getting paid more than intended, while others might not get paid at all.

- e. How can you minimise the risk of faulty or flawed software?

Answer: Update regularly. Report faulty software. Read forums or comments made about software before installing it.

3. Scenario

Bongi has recently downloaded a music album. She has a certain way of naming her music files but is having trouble trying to rename them.

- a. Why do you think Bongi is having this problem? Name at least two possible causes.

Answer: Any two of the following:

- *The file is being used in another program.*
- *The read-only attribute is on.*
- *The downloaded file is corrupted.*
- *The naming of the files includes special characters on the keyboard that are not allowed to be used.*

- b. Explain in detail how Bongi should go about fixing the problems mentioned in your previous answer.

Answer: Any two of the following, depending on how they answered in a:

She should take the following steps to change the read-only attribute:

- *Go to the file you are trying to edit*
- *Right-click the file and select Properties from the options list. This will open a new properties window.*
- *At the bottom of the properties window, under attributes, cancel the read-only option selection.*
- *Click OK at the bottom of the properties window.*
- *She should close the program that uses the file before she renames it.*
- *She should delete the files and download them from a more trusted site.*
- *She should change her way of naming music.*



Activity 3.5

Memorandum...continued

1. Matching items

Choose a term/concept from COLUMN B that matches the description in COLUMN A.

Write only the letter next to the question number.

Answer: 2.1 G 2.2 E 2.3 A 2.4 C 2.5 H

2. Short and medium questions

Answer the following questions:

- a. You are tasked to create a presentation about your favourite game. Which process will you use to design and create the presentation? Explain how this process works.

Answer: User-centred design (UCD). It is a design process whereby the developers design software based on the focus and needs of the users.

- b. Make a freehand drawing to explain the four phases of the process.

- c. Is this process something you do once off, or something that should be done on a continuous basis?

Answer: Continuous process.

- d. Will you be able to use the same process when designing and creating a new website?

Answer: Any four of the following:

- Meeting the expectations of customers: This will lead to an increase in sales and lower costs caused by returns and customer supper.
- Safer products: Because UCD focuses on the user products can be designed for specific tasks. This reduces the risk that the product will be used for the wrong task.
- No training: UCD allows products to be designed in a user-friendly manner. This reduces the amount of training needed to use the product and ensures that customers are not frustrated by using it.
- User-centred design plays an important role when designing a new website, as users need to be able to navigate and find what they are looking for without having any problems. The following factors should be considered when designing a website: visibility; accessibility; legibility; language.
- Users find it easy to enter data into the database.
- Presentations are easier to present and understand.

Question 1: Multiple choice

- 1.1** Which of the following is an online spreadsheet software? (1)
Answer: B ✓
- 1.2** Which of the following is a limitation of installed software? (1)
Answer: A ✓
- 1.3** Which of the following has a built-in antivirus? (1)
Answer: A ✓
- 1.4** Which of the following would be the output equivalent of voice recognition software, when used by blind users? (1)
Answer: B ✓
- 1.5** Which of the following is NOT an advantage of UCD? (1)
Answer: B ✓

Question 2: True or false

Indicate if the following statements are 'True' or 'False'. Choose the answer and write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. (You may not simply use the word 'NOT' to change the statement.)

- 2.1** Software tells the computer's hardware what to do. (1)
Answer: True. ✓
- 2.2** Reference software makes use of templates. (1)
Answer: False. Word processor software makes use of templates. ✓
- 2.3** You will always have access to installed software when compared to web-based software. (1)
Answer: False. You will always have access to web-based software when compared to installed software. ✓
- 2.4** Word processor software and reference software make use of dictionaries. (1)
Answer: False. Word processor software and reference software make use of thesauruses. ✓
- 2.5** PDFs are used by word processor software to restrict user access to documents. (1)
Answer: False. PDFs are used by document management software to restrict user access to documents. ✓

Question 3: Matching items

Choose a term/concept from COLUMN B that matches a description in COLUMN A. Write only the letter next to the question number (e.g. 1-A). (5)

Answer: 3.1 F ✓ 3.2 C ✓ 3.3 A ✓ 3.4 G ✓ 3.5 B ✓

Question 4: Categorisation questions

Determine which of the following software is used by the following applications: (8)

Answer:

- 4.1** *Presentation software ✓*
- 4.2** *Reference software ✓*
- 4.3** *Document management software ✓*
- 4.4** *Web browser ✓*
- 4.5** *Database software ✓*
- 4.6** *E-mail software ✓*
- 4.7** *Reference software ✓*
- 4.8** *Spreadsheet software ✓*

Question 5: Scenario-based questions

Recently, Sizwe's computer programs have been running very slowly and providing him with constant error messages. Since he bought his computer two years ago, he has never allowed his computer to access the internet.

- a.** What kind of software problem do you think Sizwe has? (1)
Answer: Out-dated software ✓ OR Software that needs to be updated. ✓

- b.** Give two reasons why it is important for Sizwe to address this problem? (3)

Answer: Use the following as an assessment guideline:

Some possible answers:

- Updates can be used to fix any problems that have been identified once the software has been released. ✓
- Updates include improvements to program performance, stability and security. ✓
- Updates include new program features. ✓
- Installing program updates is very important as it keeps your program running safely and efficiently. ✓
- Updating software prevents others from exploiting your computer ✓ as malicious people tend to target older, flawed versions of software that contain unpatched security flaws.

- c.** Now that Sizwe has started to access the internet more regularly he has noticed that some websites do not work on his current web browser. Mention TWO things that could be causing this problem. (2)

Answer: Use the following as an assessment guideline:

Some possible answers:

- His browser might need to be updated. ✓
- His browser might not have the features or add-ons these websites require to run. ✓

- d.** Sizwe decides to update all the software on his computer, but some of them do not want to update. Give TWO reasons why this might be happening and provide a solution to each problem. (4)

Answer: Use the following as an assessment guideline:

Some possible explanations:

- The software might be flawed ✓ so he should report the problem to the developer of the software. ✓
- His computer might not have the minimum system requirements needed to install the new updates ✓ so he might need to upgrade his hardware. ✓

- e.** Explain to Sizwe the difference between minimum requirements and recommended requirements. (4)

Answer: Minimum requirements are the lowest specifications needed to let the program work, ✓✓ while recommended requirements are the specifications that will allow the program to function at its best. ✓✓

5.2 The Tinder dating app revolutionised online dating, so much so that it made a social-cultural impact.

- a.** Do you think that the creator of the app used the UCD process when creating the app? Give two reasons for your answer.

Answer:

Meeting customers' expectations: This will lead to an increase in sales and lower costs caused by returns and customer support.

Safer products: Because UCD focuses on the user, products can be designed for specific tasks.

This reduces the risk that the product will be used for the wrong task. (2)

- b.** Provide two advantages of using the UCD process.

Answer: UCD makes it easier for a user to enter data into a database, as it ensures that the user enters the correct information where needed. The following factors should be considered when designing a database:

- Purpose of the database.
- Type of data being stored.
- Data fields required for data entry.
- Data validation techniques to protect data entry. (2)

TOTAL: [40]

NETWORKS

CHAPTER OVERVIEW 

Unit 4.1 Networks

Unit 4.2 Internet services

Unit 4.3 Internet connections

The following learning outcomes are covered by this chapter: 

- Discuss a wide area network.
- Explain what the internet is.
- Identify and explain various internet services.
- Identify and explain government internet services.
- Discuss the concepts of broadband and bandwidth.
- Explain throttling and shaping.

GRADE: 12

DATE:

TEACHING TIME: 4 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- QR reader

Vocabulary

These words, phrases and abbreviations appear in the text.

- **Wide area network (WAN):** A network that covers a large geographical area, such as a neighbourhood or a city.
- **Local area network (LAN):** A computer network that covers a small area, such as a house or office.
- **Wireless access point (WAP):** A hub of wireless devices that allows wireless devices to connect to each other in a local network.
- **FTP (File Transfer Protocol):** Used to transfer and manipulate files on the internet.
- **HTTP (HyperText Transfer Protocol):** An internet-based protocol for sending and receiving webpages.
- **HTTPS (HTTP Secure):** Secure HTTP protocol. Used mainly for ecommerce.

Vocabulary

These words, phrases and abbreviations appear in the text.

- **IMAP (Internet Message Access Protocol):** Used for e-mail messages on the internet.
- **IRC (Internet Relay Chat):** Used for internet chat and other communications.
- **POP3 (Post Office protocol Version 3):** Used by e-mail clients to retrieve messages from remote servers.
- **SMTP (Simple Mail Transfer Protocol):** Used for e-mail messages on the internet.
- **VOIP: (Voice Over Internet Protocol):** Used to transmit voice data (phone calls) over the internet.
- **Voice over Internet Protocol (VoIP):** Converts sound into data. The data is then transmitted over the internet to the recipient where it is converted back to sound.
- **Mobile network provider (MNP):** Users pay a monthly fee to be able to access the internet. E.g. Vodacom, MTN.



Activity 4.1

Memorandum

Write down the correct answer for each of the following questions.

1. Multiple choice:

- a. Which one of the following is not networking equipment?
Answer: B
- b. An advantage of wide area networks is that everyone on the network can access the same data and...
Answer: C
- c. A disadvantage of wide area network is that the setting up of it can ...
Answer: C

2. Matching items

Match column B with column A:

Answer: 2.1 H 2.2 D 2.3 A 2.4 F 2.5 B

3. True or false statements

Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement.

- a. An extender is a piece of hardware that can be added to a computer and makes it possible to connect to a network.
Answer: False – A network adapter
- b. The internet is the best-known LAN.
Answer: False – WAN
- c. A WAN is a computer network that covers a small area.
Answer: False – large
- d. To create a wireless network, you only need two types of networking equipment: a wireless access point and a wireless network adapter.
Answer: True
- e. In modern computers, the network adapters are built into the motherboard.
Answer: True

4. Short questions

Answer the following questions.

- a. What is a WAP and why is it important in a wireless network?
Answer: A wireless access point (WAP) is like a hub for wireless devices. It allows wireless devices to connect to each other in a local network, but does not connect the local network to the internet.
- b. In your own words describe what the internet is and why it is important in modern society.
Answer: The internet is a computer network that consists of billions of connected devices, allowing people to share information, obtain entertainment or chat to one another.
- c. What role does an ISP play when connecting to the internet?
Answer: An (ISP) Internet Service Provider is a company that allows the user to connect to their network. Through this network the user is able to connect to the internet. Any two of the following: M-Web, Afrihost, Telkom, Vodacom, MTN, etc.
- d. Large networks have changed the way we share and store information. Name three additional advantages of large networks.
Answer: Any three of the following:
- *sharing hardware*
 - *providing access to entertainment*
 - *providing access to services*
 - *connecting people.*



- e. If you are looking to create a home network, what equipment will be needed. Will this change when you look to connect the network to the internet?

Answer: Any three of the following:

- Network adapter
- Network cables
- Router
- Switch
- Hub.

- f. What are the advantages and disadvantages of using a wireless network instead of a wired network when connecting to the internet?

Answer:

ADVANTAGES:

CONVENIENCE – The wireless nature of such networks allow users to access network resources from nearly any convenient location within their primary networking environment (a home or office). With the increasing saturation of laptop-style computers, this is particularly relevant.

MOBILITY – With the emergence of public wireless networks, users can access the internet even outside their normal work environment. Most chain coffee shops, for example, offer their customers a wireless connection to the internet at little or no cost.

PRODUCTIVITY – Users connected to a wireless network can maintain a nearly constant affiliation with their desired network as they move from place to place. For a business, this implies that an employee can potentially be more productive as his or her work can be accomplished from any convenient location.

DEPLOYMENT – Initial setup of an infrastructure-based wireless network requires little more than a single access point. Wired networks, on the other hand, have the additional cost and complexity of actual physical cables being run to numerous locations (which can even be impossible for hard-to-reach locations within a building).

EXPANDABILITY – Wireless networks can serve a suddenly-increased number of clients with the existing equipment. In a wired network, additional clients would require additional wiring.

COST – Wireless networking hardware is at worst a modest increase from wired counterparts. This potentially increased cost is almost always more than outweighed by the savings in cost and labor associated to running physical cables.

DISADVANTAGES

SECURITY – To combat this consideration, wireless networks may choose to utilize some of the various encryption technologies available. Some of the more commonly utilized encryption methods, however, are known to have weaknesses that a dedicated adversary can compromise.

RANGE – The typical range of a common 802.11g network with standard equipment is on the order of tens of meters. While sufficient for a typical home, it will be insufficient in a larger structure. To obtain additional range, repeaters or additional access points will have to be purchased. Costs for these items can add up quickly.

RELIABILITY – Like any radio frequency transmission, wireless networking signals are subject to a wide variety of interference, as well as complex propagation effects that are beyond the control of the network administrator.

SPEED – The speed on most wireless networks (typically 1-54 Mbps) is far slower than even the slowest common wired networks (100Mbps up to several Gbps). However, in specialized environments, the throughput of a wired network might be necessary.

- g. Give an example of where HTTPS protocol is used and how does it differ from HTTP?

Answer: HTTPS is mainly used for ecommerce. It is used when the data sent over the network must be secure and protected, for instance when online banking is done. It works the same as Hypertext Transfer Protocol but is more secure.



Activity 4.2

Memorandum

1. Multiple choice:
 - a. Which one of the following is not an example of FTP services?
Answer: D
 - b. Which one of the following is an example of instant messaging?
Answer: C
 - c. When you are in control of what you watch and when you want to watch it.
Answer: C
2. Matching items
Choose a term/concept from COLUMN B that matches the description in COLUMN A.
Write only the letter next to the question number.
Answer: 2.1 F 2.2 H 2.3 G 2.4 D 2.5 B
3. True or false statements
Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement.
 - a. Netflix is more popular than M-Net.
Answer: True
 - b. ShowMax is an example of a streaming service.
Answer: True
 - c. Electronic payments give the user a free, simple and secure way to do their tax returns from home.
Answer: False – e-filing.
 - d. Instant messaging allows the user to make voice calls over the internet.
Answer: False – VoIP
4. Short and medium questions
Answer the following:
 - a. What is the difference between cloud computing and grid computing?
Answer: Cloud computing is a type of service that allows the user to store information on the internet instead of on their own computer while grid computing is a method of increasing your processing power by using other computers' resources as your own.
 - b. Explain e-filing and give one advantage thereof.
Answer: E-filing is a platform that allows the user to submit income tax returns online. This saves time you do not have to physically file your taxes at SARS.
 - c. Why would people want government internet services and mention a government institution that makes use of the internet?
Answer: To save time by not having to go to the government offices and wait in line for service. SARS, elections website. There are other institutions not listed here.
 - d. List four advantages, one disadvantage and three examples of instant messaging.
Answer: Any four advantages and one disadvantage

**Activity 4.2****Memorandum...continued**

<i>Advantages</i>	<i>Disadvantages</i>
<i>Messages are free to send.</i>	<i>Messages are not always saved.</i>
<i>Messages are delivered immediately after being sent.</i>	<i>It is an informal method of communication and might not be suited for business related communications.</i>
<i>You can see if the message has been delivered.</i>	<i>There is a pressure to respond immediately as people can see when you read their message.</i>
<i>You can see when your message has been read.</i>	<i>Can be distracting as one message can lead to a whole conversation.</i>
<i>You can send a variety of messages, including text messages, pictures, videos, music and web links.</i>	<i>Low security, as IM services use a public network.</i>
<i>You can create group conversations in order to discuss a specific topic or plan events.</i>	

Any three but not limited to the following:

- WhatsApp
- Telegram
- Google Hangouts
- Facebook Messenger
- iMessage
- WeChat.
- Slack.

- e. Give two examples of apps that makes use of the following internet services:

Answer:

<i>I. VoIP</i>	<i>WhatsApp, Google Hangouts, Discord</i>
<i>II. FTP</i>	<i>FileZilla, ProFTPd, WinSCP</i>
<i>III. Cloud computing and grid computing</i>	<i>Google Gmail, Google Maps</i>
<i>IV. Cloud-based file sharing</i>	<i>Dropbox, MediaFire, Google Drive, iCloud</i>
<i>V. Streaming</i>	<i>YouTube, Twitch, Netflix, Showmax</i>

Note to Teacher: The examples are not limited to the few tabulated above.



Activity 4.3

Memorandum

1. Multiple choice:
 - a. Which one of the following is NOT an internet service provider?
Answer: B
 - b. Which one of the following is NOT an example of broadband?
Answer: C
 - c. Which one of the following is NOT an option for fast internet users whose speed is more than 20Mb/s?
Answer: A
2. Matching items
Choose a term/concept from COLUMN B that matches the description in COLUMN A.
Write only the letter next to the question number.
Answer: 2.1 G 2.2 A 2.3 H 2.4 E 2.5 B
3. True or false statements
Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.
 - a. Everything you do on the internet affects data.
Answer: True
 - b. Axxess is not an ISP for fibre connections.
Answer: True
 - c. You need an ONT device if you want to use DSL internet.
Answer: False – a router OR fibre option
 - d. Speed of internet is not important when choosing an internet connection.
Answer: False – very
 - e. High quality videos use about 1 TB/h of data.
Answer: False – 1GB/h
4. Short and medium questions
Answer the following questions:
 - a. What is the difference between uploading and downloading?
Answer: Uploading is the process of putting web pages, images and files onto a web server while downloading is the process of getting web pages, images and files from a web server.
 - b. What is broadband?
Answer: Broadband is a high data rate connection that allows the user to send data over multiple channels.
 - c. What is the difference between shaped and unshaped internet connection?
Answer: Priority is given to services like e-mail, internet browsing and FTP for a shaped internet connection. Other internet protocols like file sharing and online gaming receive a lower priority and will run slower at times when the network is busy. Unshaped internet access treats all protocols the same with the same speed.



- d. What four things must you consider when choosing an internet connection?

Answer: You need to consider the following:

- *Speed of the internet.*
- *Data cap of your connection.*
- *Cost of the internet.*
- *Equipment you will need to connect to the internet.*

- e. Explain the Fair Usage Policy.

Answer: A fair-usage policy (also called a reasonable-usage policy or an acceptable-usage policy) is a data limit placed on “uncapped” internet accounts. According to this policy, your internet account will not be capped or limited unless you use too much data, in which case your internet access may be slowed (throttled) to the point where it is unusable.

Question 1: Multiple choice

- 1.1 What type of network is the internet? (1)
Answer: C ✓
- 1.2 Which of the following protocols send webpages? (1)
Answer: B ✓
- 1.3 Which of the following is NOT a service provided by Internet Service Providers? (1)
Answer: D ✓
- 1.4 Which of the following is an example of an FTP? (1)
Answer: A ✓
- 1.5 Which of the following is an advantage of government internet services? (1)
Answer: A ✓

Question 2: True or false

Indicate if the following statements are 'True' or 'False'. Choose the answer and write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. (You may not simply use the word 'NOT' to change the statement.)

- a. HANs can be public and private. (1)
Answer: False. WLANs can be public and private. ✓ OR LANs can be public and private. ✓
- b. A WAP can be used to create a wireless network. (1)
Answer: True. ✓
- c. FTP is used to connect computers in a network. (1)
Answer: True. ✓
- d. Google Drive is Google's instant messaging platform. (1)
Answer: False. Google Talk is Google's instant messaging platform. ✓
- e. 4G connections are a new technology of broadband. (1)
Answer: False. 5G connections are a new technology of broadband. ✓

Question 3: Matching items

- 1. Choose a term/concept from COLUMN B that matches a description in COLUMN A. Write only the letter next to the question number (e.g. 1-A). (5)
Answer: 3.1 E ✓ 3.2 C ✓ 3.3 J ✓ 3.4 D ✓ 3.5 F ✓

Question 4: Categorisation questions

Look through the following advantages and disadvantages and indicate which internet service they belong to. (5)

Answer:

- 4.1 Cloud computing ✓
- 4.2 Streaming ✓
- 4.3 VoIP ✓
- 4.4 Grid computing ✓
- 4.5 Cloud-based cloud sharing ✓

Question 5: Scenario-based questions

- 5.1 What does the term uncapped for package 1 mean? (1)
Answer: Uncapped means that there is no limit on the amount of data that can be downloaded or uploaded.
- 5.2 Explain why you would never be throttled on package 2 or 3? (1)
Answer: Package 2 and 3 are both capped accounts.

5.3 What does it mean when your internet connection is shaped? (2)

Answer: On a shaped account, priority/speed is different for various services.

Note: Accept specific examples such as e-mails, web browsing, internet banking and "normal" downloads via a web browser getting full speed and data-intensive activity such as torrenting/online gaming that gets less speed.

5.4 Which one of these packages has the highest speed? (1)

Answer: Package 2/LTE

5.5 Refer to package 2: What does out-of-bundle rates refer to? (1)

Answer: Using more data than the bundle/package supplies.

Nkosi has to hold Skype conferences for his company for the next month. Recently, the company has been having serious problems with big clients; therefore, an emergency meeting can occur at any time, which means he must make sure he is readily available.

5.6 What should Nkosi consider when buying an internet connection for the next month? (4)

Answer: He should consider the following factors:

- *Speed of the internet. ✓*
- *Data cap of the connection. ✓*
- *Cost of the internet. ✓*
- *Equipment he will need to connect to the internet. ✓*

5.7 What internet specifications do you think would be best for him in this situation? Give a suggestion for each factor. (4)

Answer: Use the following as an assessment guideline:

Possible suggestions for each factor:

Speed of the internet (only ONE of the following):

- *Between 10 MB/s ✓ to 20 MB/s or more ✓.*
- *Data cap of your connection (only ONE of the following):*

- *300 GB/month ✓ or Uncapped ✓.*

Cost of the internet (only ONE of the following):

- *Mobile internet like 3G ✓ and LTE ✓ or Fibre ✓.*

- *Equipment you will need to connect to the internet (look at equipment under the Fibre and 3G, 4G and LTE options of the provided table).*

Possible example:

- *Computer: A laptop. ✓*
- *Internet connection channel: A wireless connection. ✓*
- *Internet communication device: A mobile router. ✓*
- *Internet service provider (ISP): Telkom ✓*

5.8. Compare the difference between capped data and uncapped data. (4)

Answer: Capped data is when an internet connection has a data cap, ✓ meaning a network service provider limits the size of the amount of data you use. ✓

On the other hand, uncapped data is when an internet connection does not have a data cap, ✓ meaning a network service provider does not limit the size of the amount of data you use. ✓

5.9 Explain to him what the purpose of a WAP is. (2)

Answer: A wireless access point allows wireless devices to connect to each other ✓ in a local network, ✓ but does not connect the local network to the internet. ✓

TOTAL: [40]

SOCIAL IMPLICATIONS OF NETWORKS

CHAPTER OVERVIEW

Unit 5.1	Computer-related crimes
Unit 5.2	Security issues
Unit 5.3	Security and safeguards
Unit 5.4	Impact of technology on the global community

The following learning outcomes are covered by this chapter: 

- Discuss computer-related crimes, attacks and frauds.
- Describe security problems.
- Identify how to avoid security threats.
- List and describe safeguards against cyber attacks.

GRADE: 12

DATE:

TEACHING TIME: 2 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- QR reader

Vocabulary

These words, phrases and abbreviations appear in the text.

- **Keylogger:** Records every key you press on your computer and sends the information to a hacker on the internet.
- **Pop-up window:** A form of advertising normally found on the internet. The advertisement consists of a small window that suddenly appears (pops up) with a message asking the user to click, in order to claim a prize, gain information on a product, or go to a website for a special offer.
- **Malware:** Malicious software used by cybercriminals.
- **Zombie:** This is when malware bots completely take over the user's computer, allowing the hacker to take control.



Activity 5.1

Memorandum

1. Multiple choice:
 - a. When a thief knows and sells the information about what you like and do not like, or do and not do, what do you call this type of identity theft?
Answer: D
 - b. Which of the following is not an internet scam?
Answer: B
 - c. You have received an email from your bank saying that the bank is converting to an electronic system and asks you to type in your banking details so that it can be saved on their system. Which of the following scams fit this scenario?
Answer: A
2. Matching items
Choose a term/concept from COLUMN B that matches the description in COLUMN A.
Write only the letter next to the question number.
Answer: 2.1 F 2.2 D 2.3 A 2.4 B 2.5 G
3. Short questions
Answer the following question:
 - a. What steps can be taken to protect yourself from computer hardware theft?
Answer: Any of the following:
 - Never leave your laptop or mobile device unattended in a public place.
 - Make sure to use passwords as a security measure.
 - Make use of a cable to lock your equipment to a table or desk in the office.
 - Install a tracking system in your computer box.
 - b. Explain bandwidth theft.
Answer: Bandwidth theft can refer to two different crimes. The first is the theft of bandwidth by a third-party gaining access and using your internet connection without your knowledge. The second type of bandwidth theft is hotlinking. Hotlinking is when someone takes a file or video from their website and links it to your website
 - c. What steps can be taken to protect yourself from bandwidth theft where a third party gains access to your internet connection?
Answer: Do the following to protect yourself from bandwidth theft:
 - Protect your network by making use of a username and password.
 - Make sure to keep your username and password secret and do not share it with people you do not trust.
 - If you suspect that someone has obtained access to your network, make sure to change your username and password.
 - d. Explain how other people can misuse your personal information.
Answer: When a thief has your personal information, the thief can open accounts, take out loans and buy things in your name and you are stuck with the debt.



- e. Describe two examples of internet scams.

Answer: Any two of the following:

Type	Description
<i>Phishing and e-mail spoofing</i>	<i>Phishing and e-mail spoofing attacks try to obtain sensitive information (such as usernames, passwords and banking details) by sending e-mails to users that look like official e-mails. These e-mails will either directly request the sensitive information or redirect users to an official-looking website where their information will be stolen.</i>
<i>Nigerian letter</i>	<i>The Nigerian letter scam tries to get the users assistance in transferring a large amount of money in return for a percentage. Once the user replies, the sender will request that the user pay a certain amount of money, to cover taxes, lawyers and other fees, before the transaction can take place. Once the user pays this money, the sender disappears.</i>
<i>Congratulations, you have won</i>	<i>This scam works by sending the user a message or e-mail indicating that they have won a big prize. The only thing that the user needs to do in order to claim the prize is supply them with credit card information and pay for shipping.</i>



Activity 5.2

Memorandum

1. Computer viruses often get the blame when we experience problems with our computers. Briefly explain what a computer virus is.
Answer: A computer virus is a malicious software program loaded onto a user's computer without the user's knowledge and performs malicious actions. It can self-replicate, inserting itself onto other programs or files, infecting them in the process.
2. How does a computer worm work?
Answer: A worm is a computer program that has the ability to copy itself from machine to machine. Worms use up computer processing time and network bandwidth when they replicate, and often carry payloads that do considerable damage. Worms normally move around and infect other machines through computer networks.
3. Which one is not anti-virus software?
Answer: C, E, G
4. Why is spam a type of harassment?
Answer: A spam email is usually blind copied to thousands of other recipients – which means that the “to” field won't include a recipient's email address. But, if the “to” field has only one particular email, then this, coupled with the content could make this grounds for harassment



Activity 5.3

Memorandum

1. Your anti-virus program reports that it has quarantined a virus. What does this mean?
Answer: When an antivirus places an infected file in quarantine, it deletes the file from its original location and makes changes to it so that it cannot run as a program. It then transfers it to a hidden folder that other programs (or yourself as the user) cannot access where it stays until you choose to deal with it.
2. Provide THREE measures you can take to avoid computer viruses, besides installing anti-virus software and keeping the software up to date.
Answer: Any of the following:
 - Perform daily scans
 - Disable autorun
 - Disable image previews in Outlook
 - Don't click on email links or attachments
 - Use a hardware-based firewall
3. Give TWO examples of firewall software.
Answer: Learners' own answers. Accept all reasonable answers.
4. Your father says that he makes a point of updating his anti-virus software twice a year. Explain to him why this approach is not sufficient.
Answer: Your security software should be set to check for updates at least once a day; this will already be the default setting for most current security programs, although it's worth investigating your program's settings to make sure this is the case.
5. A pop-up appeared on you're aunt's computer saying that she should download an antivirus program from the internet, as viruses had been detected on the computer. Why should she not respond to this warning, if viruses are so dangerous?
Answer: Computer viruses spread through downloads from the internet. So if you have not bought an antivirus program, you should not download it from the internet.
6. Give the name of one popular anti-virus software package.
Answer: Learners' own work. Accept all reasonable answers.

Question 1: Multiple choice

- 1.1 Which of the following is NOT a computer-related crime? (1)
Answer: B ✓
- 1.2 What does DoS stands for? (1)
Answer: A ✓
- 1.3 Which of the following can be used to launch DoS attacks? (1)
Answer: B ✓
- 1.4 Which of the following is NOT a result of telecommunications technologies? (1)
Answer: C ✓
- 1.5 What is the purpose of a firewall? (1)
Answer: A ✓

Question 2: True or false

Indicate if the following statements are 'True' or 'False'. Choose the answer and write 'true' or 'false' next to the question number Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. (You may not simply use the word 'NOT' to change the statement.)

- a. Malware is software that can be used to cause harm to the users' computer or computer network without the user's knowledge. (1)
Answer: True. ✓
- b. Identity theft is when someone uses your credentials to access your personal information. (1)
Answer: True. ✓
- c. You can prevent adware by being careful when installing new applications. (1)
Answer: True. ✓
- d. All bots are malicious. (1)
Answer: False. All zombies are malicious. ✓

Question 3: Matching items

Choose a term/concept from COLUMN B that matches a description in COLUMN A.

Write only the letter next to the question number (e.g. 1-A). (5)

Answer: 3.1 G ✓ 3.2 F ✓ 3.3 I ✓ 3.4 M ✓ 3.5 K ✓

Question 4: Fill in the missing words

Fill in the missing word(s) in the following statements. Provide only ONE word for each space.

- a. Businesses create online advertisements ✓ for products in order to reach more customers. (1)
- b. Distributed computing power ✓ technologies saves the user both _____ and money, as they do not have to invest in expensive processing equipment. (2)
Answer: time ✓
- c. People can use _____ _____ to meet new people from anywhere in the world. (1)
Answer: social media ✓
- d. Cellular phones allow people to communicate over _____ distances, and thus save people money. (1)
Answer: long ✓

Question 5: Short questions

State if the following are internet attacks or not. (5)

Answer: 5.1 No ✓ 5.2 No ✓ 5.3 Yes ✓ 5.4 Yes ✓ 5.5 No ✓

Question 6: Scenario-based questions

6.1 Carlos recently downloaded a game online. Everything seemed fine at first, until he discovered a new hidden file on his computer. He soon started to notice that his hard drive memory was starting to get used up, even though he was not installing any large files on his computer. Carlos has not been educated about computer security, so he is not sure what to do.

a. What type of threat(s) has Carlos been exposed to? (2)

Answer: Trojan ✓ and a worm ✓.

b. What can Carlos use to get rid of this threat(s)? (1)

Answer: Antivirus or anti-malware. ✓

c. Suggest THREE precautionary measures Carlos could take to safeguard himself against internet attacks? (3)

Answer: Possible answers:

- Firewall ✓
- Antivirus ✓
- Anti-spyware ✓

d. Name FIVE things Carlos could do in the future to protect himself from this type of threat(s). (5)

Answer: He can do the following:

- Keep his software up to date, especially his antivirus software. ✓
- Not install or run any programs he does not know or trust. ✓
- Not download executable email attachments. ✓
- Run a virus scan on any flash disk that he does not know, before using it. ✓
- Ensure that his computer's firewall is turned on. ✓

6.2 Mary downloads a lot of programs as a programmer and animator. Since Mary creates and maintains content for professional companies, she worries that her client's private information could be at risk.

a. What would be the best safeguard for her current situation? (1)

Answer: Any one of the following:

- Anti-spyware. ✓
- Firewall. ✓

b. Mention THREE benefits of the safeguard you suggested? (3)

Answer: Use this as an assessment guideline:

Possible answers:

Anti-spyware (some possible answers):

- It detects spyware. ✓
- It removes spyware. ✓
- It prevents spyware. ✓
- It monitors the content you browse on the internet for malicious programs. ✓

Firewall (some possible answers):

- It monitors all incoming traffic on a network. ✓
- It monitors all outgoing traffic on a network. ✓
- It blocks any traffic that is not within the defined security rules. ✓
- It prevents malware from spreading over a computer network. ✓

TOTAL: [40]

SYSTEM SOFTWARE AND COMPUTER MANAGEMENT



CHAPTER OVERVIEW

Unit 6.1	Computer management
Unit 6.2	The role of the operating system
Unit 6.3	Management of files
Unit 6.4	Troubleshooting your computer
Unit 6.5	Factors that influence performance



The following learning outcomes are covered by this chapter:

- Describe the role of the operating system.
- Discuss file management.
- Identify and explain the uses of operating system utilities.
- List the factors that influence computer performance.

GRADE: 12

DATE:

TEACHING TIME: 4 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- QR reader

Vocabulary

These words, phrases and abbreviations appear in the text.

- **Folders:** The location where the files are stored on your computer.
- **Caching:** A small, temporary form of storage that is created in a fast form of memory in order to allow data to be accessed more quickly.
- **Disk cache:** A small amount of RAM that is built into a hard-disk drive. It stores data that is being sent or received by the hard-disk plates for a short period of time.
- **Web cache:** A small area on a computer's hard drive where images and pages from the world wide web are stored for a short period.

ADDITIONAL INFORMATION

1. WHAT DOES META MEAN?

In computer and information sciences the prefix (word that comes before another word) 'meta' is used to describe something more about the concept or that is related to the concept. For example, an image may include metadata that describes how large the picture is, what its resolution or colour depth is, when it was created, etc. And a text document's metadata can describe how long the document is, who the author is, when it was written, and so forth.

In the textbook, meta is used as follows - The DETAILS tab contains the files' meta information (sometime called metadata). This includes the title of the document and the name of the author.

In this sense it is used to provide more or other information about the DETAILS tab, such as the title of the document, who the author is, when it was created, etc.



Activity 6.1

Memorandum

1.
 - a. Which one of the following file extensions are NOT used when you type a report?
Answer: C
 - b. Which of the following file extensions are NOT part of Microsoft Office package?
Answer: A
 - c. Which attribute allows the user to view, but not edit the file?
Answer: B
 - d. Which of the following tabs is not found on the File Properties window?
Answer: D
2. Choose a term/concept from Column B that matches the description in Column A. Write only the letter next to the question number.
Answer: 2.1 D 2.2 A 2.3 F 2.4 B 2.5 H
3. Answer the following questions.
 - a. Define computer management.
Answer: Computer management is a process to manage, monitor and optimise your computer so that it performs at maximum capacity.
 - b. List two positive outcomes of computer management.
Answer: Any two of the following:
 - Better organisation
 - Being self-sufficient
 - More cost-effective procedures of projects
 - Faster transaction
 - Increase in sales
 - Cheaper operations cost.



- c. Describe the four tabs visible when the File Properties window is displayed.

Answer:

<i>Tab</i>	<i>Description</i>
<i>General</i>	<i>The general tab contains information about the file type, the file location, the size of the document, and when the document was created, modified and accessed. It also indicates the attributes of the document, including read-only and hidden.</i>
<i>Security</i>	<i>The security tab contains information on who has access to the document as well as what they are allowed to do.</i>
<i>Details</i>	<i>The details tab contains the file's meta information. This includes the title of the document and the name of the author.</i>
<i>Previous versions</i>	<i>This tab indicates any previous versions of the document.</i>

- d. You want to hide a folder on the school's PC. List the steps that you will take in order to hide the folder.

Answer:

Step 1: Right click on the folder that you want to hide.

Step 2: At the bottom on the General tab, tick the Hidden box.

Step 3: Click Apply.

- e. How do you change the attribute of a file so that you can edit it?

Answer:

Step 1: Right click on the folder that you want to hide

Step 2: At the bottom on the General tab untick the Read-Only box

Step 3: Click Apply



Activity 6.2

Memorandum

1. Write down the correct answer for each of the following questions.
 - a. Which tab provides information on the applications that automatically become active once your computer is turned on?
Answer: A
 - b. Which tab provides more information on which users are currently signed in to the computer and how much resources they are using?
Answer: C
 - c. Which of the following is NOT a GUI?
Answer: D
 - d. Which of the following is a shortcut used to open Task Manager?
Answer: B
 - e. Which application do you use to find out how the computer is using its resources?
Answer: A
2. Match the entries in Column B with those in Column A.
Answer: 2.1 C 2.2 E 2.3 A 2.4 G 2.5 B
3. Answer the following questions.
 - a. Explain the role of the operating system.
Answer: An operating system is a group of system software that is responsible for controlling your computer's hardware and software, providing people with a user interface to interact with, and managing the computer's resources.
 - b. List the three categories into which the functions of the operating system are divided.
Answer:
 1. Starting the computer.
 2. Providing a user interface.
 3. Managing programs.
 - c. Provide two ways in which to open Task Manager.
Answer:
 1. Open Task Manager by pressing **Ctrl+Shift+Esc** on your keyboard.
 2. To open the Task Manager:
 - Open the Start menu and enter the words "task manager".
 - Click on Task Manager.
 - d. Define multitasking in terms of a computer operating system.
Answer: Multitasking operating systems allow the computer to run multiple processes (tasks) or applications at the same time, allowing the user to run multiple applications at the same time.
 - e. Discuss the difference of single user versus multiple users. Give a user type and a disadvantage that is associated with each.
Answer: Single user operating systems are normally designed for home and private use as these computers make use of software that is licensed for a single user only. A single user operating system will allow you to create multiple user profiles. However, it will still be limited to only one active user.
Home user.
Multiple user operating systems allow more than one user to access and use the computer system at the same time. SOHO user OR Power user (if graphics is involved in the business).



Activity 6.3

Memorandum

1. Briefly explain the following
 - a. Spooling
Answer: Pooling is a specialised form of multi-programming for the purpose of copying data between different devices, for example a computer application and a printer.
 - b. Firewall
Answer: A firewall is a network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.
 - c. Spoofing
Answer: A spoofing attack is a situation in which a person or program successfully identifies as another by falsifying data, to gain an illegitimate advantage.
 - d. File compressors
Answer: File compressors are able to “package” a file (or files) to use less disk space.
2. Choose a term or concept from Column B that matches the description in Column A. Write only the letter next to the question number.
Answer: 2.1 D 2.2 F 2.3 H 2.4 B 2.5 C
3. Answer the following questions:
 - a. Give two main reasons why it is good to constantly keep your computer programs updated.
Answer: Software updates are important because they often include critical patches to security holes. Many harmful malware attacks take advantage of software vulnerabilities in common applications, like operating systems and browsers.
 - b. List two reasons why file compression is rarely used.
Answer: 1. Compressed files cannot be used immediately; they first need to be decompressed. Not only does this waste time every time you open up a file; it uses up the space you saved when you compressed the files in the first place.
2. The files most likely to use up your storage space are already compressed. This includes most video and music files. As such, compressing them further does not help.
 - c. Explain “converting” and give an example of when it is implemented.
Answer: To change a file from one form to another, for example, converting a Word document to a PDF.



Activity 6.4

Memorandum

1. Choose a term or concept from Column B that matches the description in Column A. Write only the letter next to the question number.
Answer: 1.1 B 1.2 A 1.3 C
2. Answer the following questions:
 - a. Explain the process of fragmentation and defragmentation.
Answer: When you save a file onto your computer, the computer breaks the file up into smaller pieces. This is done so that the file can be stored on your hard drive. Unfortunately, the file pieces are not always stored in the same location, but rather spread over several locations. When this happens, it is known as fragmentation.
Fragmentation occurs from files being constantly written, deleted and resized, and can lead to several problems. These include a slow computer, long boot-up times, random computer crashes and the computer freezing. In order to prevent these problems from happening, you can defragment your hard drive. This process reorganises your hard drive by taking all the pieces of data that are spread across your hard drive and reorganising it so that the pieces are closer to each other.



- b. Explain how a troubleshooting wizard works.

Answer: Troubleshooting wizards are system utilities that come standard with your operating system. The tool allows you to quickly check if your operating system or hardware is functioning as required. If a problem is encountered, the wizard will attempt to fix it. If the wizard cannot fix the problem, it will ask you some questions in order to determine the cause of the problem. Examples of problems that can be fixed using the troubleshooting wizards include network connection problems, printing problems and software compatibility problems.



Activity 6.5

Memorandum

1. Which of the following refers to cache located on the CPU?

Answer: B

2. Answer the following questions.

- a. Define RAM.

Answer: Random access memory or RAM is responsible for temporarily storing the data that is being used by the computer's processor.

- b. Explain what influences the speed of a CPU.

Answer: The Gigahertz of the processor. Gigahertz refers to the CPU frequency, and is an indication of the processor speed. The number of cores.

- c. What can potentially happen if you open too many applications at the same time?

Answer: If you open too many applications at the same time, all available resources will be used up and your computer's processing speed will slow down significantly. This might even lead to some applications freezing entirely.

- d. Describe how cache improves performance.

Answer: Processing speed. Caching is a small, temporary form of storage that is created in a fast form of memory in order to allow data to be accessed more quickly.

- e. List three ways in which you can free up disk space.

Answer:

1. Delete any files that you don't need any more.
2. Use the disk Clean-up application to help create some additional space.
3. Buy an additional hard drive

- f. What is meant by a CPU's generation, and how does this affect its speed?

Answer: The term Generation is applied when new and significant architecture and factory processing changes were made within the same family of processors. It can potentially increase the processing speed of the CPU.

- g. Does the heat of the CPU affect performance? If so, then how does it affect performance, and what equipment is used to counter the heat?

Answer: Yes, the hotter the CPU the slower the performance. It can also damage the CPU. Fans are used to increase airflow and cool down the CPU. Re-apply thermal paste.

Question 1: Multiple choice

- 1.1 Where can you search for additional information about a file? (1)
Answer: A ✓
- 1.2 Which of the following tabs is only found in the Properties window of a folder? (1)
Answer: D ✓
- 1.3 When a computer is started up the operating system is loaded into the. _____ (1)
Answer: B ✓
- 1.4 Which of the following is not on a smartphone's GUI? (1)
Answer: D ✓
- 1.5 Which of the following troubleshooting utilities is used to increase your computer's storage capacity? (1)
Answer: B ✓

Question 2: True or false

2. Indicate if the following statements are 'True' or 'False'. Choose the answer and write 'true' or 'false' next to the question number Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. (You may not simply use the word 'NOT' to change the statement.)
- 2.1 Multitasking operating systems allow more than one user to access and use the computer system at the same time. (1)
Answer: False. Multiple user operating systems allow more than one user to access and use the computer system at the same time. ✓
- 2.2 A new computer's performance increases over time. (1)
Answer: False. A new computer's performance decreases over time. ✓
- 2.3 The write-only attribute allows the user to view but not edit the file. (1)
Answer: False. The read-only attribute allows the user to view but not edit the file. ✓
- 2.4 Print management allows a printer to print documents that are much smaller than the amount of memory the printer has. (1)
Answer: False. Spooling allows a printer to print documents that are much larger than the amount of memory the printer has. ✓
- 2.5 CPU cache is high-speed memory stored on CPU that is larger than RAM. (1)
Answer: False. CPU cache is high-speed memory stored on CPU that is smaller than RAM. ✓

Question 3: Matching items

- Choose a term or concept from Column B that matches a description in Column A. (5)
Answer: 3.1 K ✓ *3.2 F* ✓ *3.3 L* ✓ *3.4 A* ✓ *3.5 D* ✓

Question 4: Medium and long questions

- 4.1 How can a wizard be used to improve the troubleshooting process? (3)
Answer: The tool allows you to quickly check if your operating system ✓ or hardware is functioning as required. ✓ The wizard will attempt to fix any problems encountered. ✓ If the wizard cannot fix the problem ✓, it will ask you some questions ✓ to determine the cause of the problem. ✓
- 4.2 What is a multitasking operating system? (2)
Answer: Multitasking operating systems allow the computer to run multiple processes (tasks) ✓ or applications at the same time. ✓

4.3 Mention TWO situations where your computer can run out of resources. (2)

Answer: Use the following as an assessment guideline:

Some possible examples:

- *Using multiple high-intensity processes at the same time. ✓*
- *Running a high-intensity process when your hard drive is full. ✓*

4.4 Mention ONE profession that would use a single user operating system. Give a reason for your answer. (2)

Answer: Student's own answer.

Use the following as an assessment guideline:

Possible example:

- *Freelance graphic designer ✓ because they are their own boss. ✓*

4.5 Mention ONE profession that would use a multiple user operating system. Give a reason for your answer. (2)

Answer: Student's own answer.

Use the following as an assessment guideline:

Possible example:

- *Publishing company ✓ because most of the computers will make use of the same type of software. ✓*

TOTAL: [21]

INTERNET COMMUNICATION
TOOLS

CHAPTER OVERVIEW

Unit 7.1 Electronic communication

Unit 7.2 Web browsers

Unit 7.3 Computer communications

Unit 7.4 Communication devices



The following learning outcomes are covered by this chapter:

- Explain what digital communication is.
- Identify and discuss the different types of digital communications.
- Describe the most common features of a web browser.
- Discuss some of the most popular communication devices.
- List and describe the uses of computer communications.

GRADE: 12

DATE:

TEACHING TIME: 4 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- QR reader

Vocabulary

These words, phrases and abbreviations appear in the text.

- **Netiquette:** Short for “internet etiquette”, it refers to the generally accepted rules or code of conduct on how to communicate respectfully with others over the internet.
- **Asynchronous communication:** A message can be sent without the message receiver being available at the time.
- **Geotagging:** The process of attaching geographical data (obtained using a GPS) to media and websites.
- **Holographic phones:** Opens many new possibilities for communication as images can now be viewed in 3D.
- **5G connection:** This new type of wireless connection will greatly increase the speed of mobile communications, reduce latency and costs, and help with energy savings.
- **Blockchain technology:** This technology has the potential to change the ways in which we process and store data. E.g. Bitcoin.



Activity 7.1

Memorandum

1. Write down the correct answer for each of the following questions.
 - a. Which of the following is NOT an additional email feature?
Answer: D
 - b. Which of the following is NOT a type of electronic communication?
Answer: B
 - c. Which of the following is the most common netiquette when using electronic communication?
Answer: A
2. Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.
Answer: 2.1 B 2.2 D 2.3 G 2.4 A 2.5 H
3. Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.
 - a. Do not say things to people you would not say to them in real life.
Answer: True
 - b. On the internet, there is no need to show people respect.
Answer: False – a need
 - c. When joining an existing conversation, speak about the subjects relevant to you.
Answer: False – that are already chatted about.
 - d. Make sure your messages are clearly written and easy to understand.
Answer: True
 - e. Things posted on the internet can last forever. This means that things you post as a teenager or young adult will not affect the rest of your life.
Answer: False – will
4. Answer the following questions.
 - a. Explain the world wide web to your peer.
Answer: The world wide web has allowed us to access information and data on the internet through the use of websites and hyperlinks.
 - b. List the disadvantages of electronic communication.
Answer:
 - Requires an active internet connection.
 - Depending on the type of communication, it can use a lot of data and bandwidth.
 - People can become addicted to certain forms of digital communication.
 - Can expose a person to cyberbullying and abuse.
 - c. Explain the advantages of email.
Answer:
 - Free to register an account and send messages.
 - Asynchronous communication – senders do not need to be available at the same time as receivers.
 - Messages can be sorted and organised and saved for future reference.
 - Files can be attached to the messages.
 - Can send a single message to multiple people.



- d. Define “netiquette”.

Answer: Netiquette refers to internet etiquette. It means to use good manners in online communication.



Activity 7.2

Memorandum

Practical activity

1. To create bookmarks, you can do the following:
 - a. Open your Google Chrome browser.
 - b. Create four bookmarks.
 - c. Pin your bookmarks on the browser.
2. A variety of plug-ins can be installed on web browsers.
 - a. Why would you use or need browser plug-ins?
 - b. Give ONE common example of a browser plug-in.



Activity 7.3

Memorandum

Write down the correct answer for each of the following questions.

1. Which one of the following is NOT an example of a web browser?
Answer: A
2. Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.
Answer: 2.1 D 2.2 E 2.3 B 2.4 F 2.5 A
3. Define a bookmark.
Answer: A bookmark is a saved shortcut that tells your browser to go to a specific website address.
4. State TWO disadvantages of adware, other than the fact that it might be annoying.
Answer:
Installs itself secretly without your consent
Is difficult or impossible to uninstall
Installs itself in other programs or changes your web browser settings so it can display more ads while you are surfing the internet
Monitors your activities or collects your personal information and can sell this information to third parties



Activity 7.4

Memorandum

1. Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.
Answer: 1.1 C 1.2 A 1.3 F 1.4 G 1.5 B
2. Christy wants to create a website to share her make-up tips with others. Do some research and write a short essay that includes the following information:

- a. Advise Christy on what type of computer communication she should use?

Answer: Vlogging

- b. Inform Christy of two advantages of this type of computer communication?

Answer: Any two of the following:

- Easy to connect with an audience.
- Do not have to create your own website.
- Does not need to be professional.

- c. Inform Christy of two disadvantages of this type of computer communication?

Answer: Any two of the following:

- Requires basic recording equipment.
- Requires basic video editing knowledge.
- Can be very time consuming.

3. Answer the following:

- a. List three advantages and one disadvantage of blogging.

Answer: Any three advantages and one disadvantage of the following:

ADVANTAGE	DISADVANTAGE
Easy to set up.	Can be time consuming to keep updated.
Place to share a personal opinion.	If open to the public, can receive rude or spam comments.
Can be either large or small.	
Does not need to be professional.	
Visitors understand the layout.	

- b. Explain how you would create and publish a blog using Microsoft Word.

Answer: Follow the steps listed below:

Open Microsoft Word.

1. Click file and go to New.
2. Select Blog post from the list of new documents. This will open a preview of the Blog post.
3. Click Create. This will open the Register a Blog Account window.
4. Click Register Now.
5. Select the service where you have registered a domain name from the Blog dropdown list and click Next.
6. Fill in the details of your domain and click OK. This will allow you to start creating your blog in Word.
7. Once you are done creating content for your blog, click Publish.



Activity 7.4

Memorandum...continued

- c. Give one disadvantage of Wiki websites.
Answer: Any one of the following:
- Anyone can edit the information which can lead to misinformation.
 - Open to spam and vandalism if not moderated.
 - Needs an active internet connection.
- d. Explain what geotagging is.
Answer: Geotagging is the process of adding geographical identification metadata to various media.
- e. Explain how cyber bullying works and give opinion on how to prevent cyber bullying without taking away the technology?
*Answer: Cyber bullying is a form of bullying or harassment using electronic means.
Students own answer on how to prevent cyberbullying. Educating children should be mentioned.*



Activity 7.5

Memorandum

1. Choose a term/concept from COLUMN B that matches the description in COLUMN A.
Write only the letter next to the question number.

Answer: 1.1 B 1.2 E 1.3 G 1.4 A 1.5 C

2. Answer the following questions.

- a. What is the difference between a smartphone and a tablet?

Answer: The smartphone is a type of computer that a person can carry in their pocket and Tablets are small handheld computers that are smaller than a laptop but bigger than a smartphone. The smartphone can make calls, but the tablet can.

- b. Name and describe four functions of a smartphone.

Answer: Any four of the following:

- *Making and receiving calls:* The first and main function of the smartphone is that of a cellular telephone.
- *Sending and receiving written messages:* Smartphones can send traditional SMSs, instant messages, and emails.
- *Sending and receiving audio messages:* Through the use of voice recordings, the user can send short audio messages or voice notes.
- *Video conferencing:* Smartphones allow the user to make and receive video calls. This is made possible by the fact that smartphones come equipped with a built-in camera.
- *Social networking:* One of the most popular features of the smartphone is the ability to install third party software such as social networking applications.
- *GPS:* Every smartphone comes equipped with a GPS. Using the GPS in combination with software such as Google maps allows the user to navigate to their destination.
- *Connect to the internet.*

- c. Describe the three different digital communication methods that enabled global communication.

Answer:

- *Written communication such as instant messaging and email.*
- *Audio communication such as VoIP*
- *Video communication such as video conferencing.*

Question 1: Multiple choice

- 1.1 Which of the following is a disadvantage of electronic communication? (1)
Answer: C ✓
- 1.2 Which of the following is NOT proper netiquette? (1)
Answer: C ✓
- 1.3 Which of the following uses asynchronous communication? (1)
Answer: A ✓
- 1.4 Which web browser comes preinstalled on Windows XP? (1)
Answer: B ✓
- 1.5 Which of the following can be used to prevent a person from accessing dangerous content on the internet? (1)
Answer: C ✓

Question 2: True or false

Indicate if the following statements are 'True' or 'False'. Choose the answer and write 'true' or 'false' next to the question number. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. (You may not simply use the word 'NOT' to change the statement.)

- 2.1 It is proper etiquette to be careful about the things you say to people online. (1)
Answer: False. It is proper netiquette to be careful about the things you say to people online. ✓
- 2.2 When you write instant messages you must not use slang and symbols. (1)
Answer: False. When you write instant messages, you must not use slang and abbreviations. ✓
- 2.3 VoIP requires more bandwidth than instant messaging. (1)
Answer: True. ✓
- 2.4 During VoIP, mute yourself when you are not speaking. (1)
Answer: False. During video conferencing mute yourself when you are not speaking. ✓
- 2.5 You can import bookmarks from one web browser to another. (1)
Answer: True. ✓

Question 3: Medium questions

- 3.1 Which of the following types of electronic communication describes the disadvantages in the table below the best? (6)

COMMUNICATION TECHNIQUES
Blogs
E-mail
Wikis
VoIP
IM
Video conferencing

Answer:

	DISADVANTAGE	COMMUNICATION TECHNIQUES
a.	Anyone can edit the information which can lead to misinformation.	Wiki
b.	It is an informal method of communication and might not be suited for business related communications.	IM
c.	It uses a significant amount of data which can be expensive.	VOIP
d.	Can be time consuming to keep updated.	BLOGS
e.	Designed for letter writing, rather than having conversations.	EMAIL
f.	You need an active internet connection.	VIDEO CONFERENCING

3.2 Name two web browser features that you can use daily. (2)

Answer: Student's own answer.

Use the following examples as an assessment guideline:

- Bookmarks ✓ because I am always coming across new useful websites that I do not use often. ✓
- Ad blockers ✓ because I do not like seeing websites with 'clutter' since it makes them harder to navigate. ✓

3.3 Describe three different digital communication methods that enables you to connect globally. (3)

Answer:

1. Written communication such as instant messaging and e-mail.
2. Audio communication such as VoIP
3. Video communication such as video conferencing.

3.4 What is geotagging? Give an example of when you would make use of geotagging. (2)

Answer: Geotagging is the process of attaching geographical data (obtained using a GPS) to media and websites. This includes attaching latitude and longitude coordinates, timestamps, altitude, distance and place names to videos, photos, messages and QR codes.

3.5 Briefly explain how companies can benefit from knowing your search history. (2)

Answer: Company policies are binding to employer and employee so they have a right to know your search history when utilising the companies computers during working hours. ✓

TOTAL: [40]

GENERAL CONCEPTS

CHAPTER OVERVIEW

Unit 8.1 Social networking sites and technologies

Unit 8.2 Impact of technology

The following learning outcomes are covered by this chapter: 

- Discuss the impact that social media has had on the community.
- Identify and list the benefits and harm of technology.
- Explain what information overload is.
- Describe the impact of virtual reality.

GRADE: 12

DATE:

TEACHING TIME: 2 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- QR reader

Vocabulary

These words, phrases and abbreviations appear in the text.

- **Digital footprint:** The information about a particular person that exists on the internet as a result of their online activity OR every time you click on a website, download a file, or update your social media status you are busy creating a trail of virtual data known as a digital footprint.
- **Virtual reality:** A type of output device that makes use of a specially designed headset to fully immerse the user in a high-quality 3D virtual world using both sight and sound.
- **Augmented reality:** It does not fully immerse the user in a 3D virtual world, but rather adds digital elements to the real world. These elements can be viewed and interacted with by making use of a camera or smart phone.



Activity 8.1

Memorandum

1. Write down the correct answer for each of the following questions.
 - a. Which of the following is NOT a social networking site?
Answer: D
 - b. Which of the following is a business networking site?
Answer: C
 - c. Which of the following social network platforms can be used to obtain an income?
Answer: B
2. Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.
NOTE: Check this question and use the omission as a question to the learners to figure out.
Answer: 2.1 C 2.2 A 2.3 B 2.4 GoFundMe
3. Answer the following questions.
 - a. Discuss the positive and negative aspects of social networking. Do you think that the good outweighs the bad?
Answer: Positive aspects:
 - *It can be used for education. YouTube has become a platform where people can find educational videos on a variety of subjects.*
 - *It can be used to raise awareness. Sites like Facebook and Twitter have made it easier than ever for people to raise awareness of a special cause.*
 - *It encourages creativity. Using a little creativity, social networking sites such as Youtube and Instagram have allowed users to create a professional career out of social media.*
 - *It can be used to increase your professional visibility. Social networking sites such as LinkedIn, allow the user to create a professional profile that can be viewed by potential employers.*
 - *It can be used to build a community. Social networking sites allow the user to find and create communities of people with similar interests, religious views, or nationalities.*
 - *It can be used to help a cause. Raising funds to start a business, to help someone, or simply trying to get an education has never been easier. Social networking sites such as GoFundMe allow the user to create a profile explaining their situation and why they are in need of funds.**Negative aspects:*
 - *It can create a false sense of relationships.*
 - *It can affect your privacy.*
 - *It can affect your productivity.*
 - *It can lead to peer-pressure.*
 - *It can affect your actions.*
 - b. Define the term “crowdfunding”.
Answer: Crowdfunding allows users to fund a project or venture by raising small amounts of money from a large number of people, typically via the internet.
 - c. Define anonymity and explain why it can have a negative effect on online communication.
Answer: The name/identity of the person communicating is unknown. Some people might take advantage of the anonymity of the internet to bully and ridicule someone.



Activity 8.2

Memorandum

1. Answer the following questions.
 - a. What is a digital footprint and how can the average user obtain one?
Answer: The information about a particular person that exists on the internet as a result of their online activity OR every time you click on a website, download a file, or update your social media status you are busy creating a trail of virtual data known as a digital footprint.
 - b. When is a person described as a Hikikomori?
Answer: Hikikomori are reclusive people who have withdrawn from society and make use of computers and the internet to isolate them-selves in their home.
 - c. Are there any benefits in using e-commuting? If so, what are they?
Answer: Any three of the following:
 - No commuting to work and back home.
 - More productivity from employees.
 - Employees stay at the company longer.
 - Reduction in operation costs.
 - Reduction in monthly expenses for employee.
 - d. Discuss three positive and three negative effects that technology has had on modern society.
Answer: Any three of the following Positive effects)
 - Health problems.
 - Environmental problems.
 - Social effects.
 - Crime and abuse.
Answer: Any three of the following (Negative effects)
 - Health problems.
 - Environmental problems.
 - Social effects.
 - Crime and abuse.

Question 1: Scenario-based questions

Ntuli has been given a big project that needs within a few days. This project has left him stressed because he has to do a lot of research, before he can complete the five main parts of his project. After doing his re-search Ntuli found that he had approximately 326 pages worth of research to go through.

- a. What could Ntuli suffer from as a result of this project? (1)

Answer: Information overload. ✓

- b. What four things can Ntuli do to prevent or reduce this problem. (4)

Answer: Possible answers:

- *Prioritise tasks ✓*
- *Group tasks ✓*
- *Do not multitask ✓*
- *Take breaks ✓*

- c. When Ntuli completes his school project he is very proud of it. He decides he wants to share it online so he can get people's opinion of his work. What could he use to do this? (1)

Answer: Social media ✓

- d. Mention four things Ntuli should be cautious of when sharing his project online. (4)

Answer: Use the following as an assessment guideline:

Some possible answers:

- *Social media can create a false sense of relationships. ✓*
- *Social media can affect his privacy. ✓*
- *Social media can lead to unwanted peer pressure. ✓*
- *Social media can affect his actions and behaviour. ✓*

Question 2: Categorisation questions

Which of the following statements are negative side effects of social media, technology and virtual reality?

Answer:

- 2.1 *It can lead to peer pressure. – Social media ✓*
- 2.2 *It can cause cybersickness. – Virtual reality ✓*
- 2.3 *It can create a false sense of relationships. – Social Media ✓*
- 2.4 *It can lead to crime and abuse. – Technology ✓*
- 2.5 *It can lead to information overload. – Technology ✓*
- 2.6 *It can affect your privacy. – Social Media ✓*
- 2.7 *It can lead to addiction. – Virtual reality ✓*
- 2.8 *It can affect your productivity. – Social media ✓*
- 2.9 *It can affect your actions. – Social media ✓*
- 2.10 *It can affect the environment. – Technology ✓*

TOTAL: [20]

INFORMATION MANAGEMENT: PAT

CHAPTER

9

CHAPTER OVERVIEW

Unit 9.1 Problem solving cycle

Unit 9.2 Information management

The following learning outcomes are covered by this chapter: 

- Discuss the different methods that can be used to collect data.
- Process and analyse data.
- Present data.

GRADE: 12

DATE:

TEACHING TIME: 4 + 2 + 8

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- QR reader



Activity 9.1

Memorandum

1. Multiple choice:
 - a. Which of the following is part of reading an academic article on the problem?
Answer: A
 - b. Which of the following is the first step in problem solving?
Answer: D
 - c. What are raw, unorganised numbers or facts called?
Answer: C
2. Matching items
Choose a term/concept from COLUMN B that matches the description in COLUMN A.
Write only the letter next to the question number.
Answer: 2.1 A 2.2 E 2.3 G 2.4 B 2.5 C
3. Answer the following questions:
 - a. What must be included in a problem statement?
Answer: It must contain what is known about the problem, and what information is missing or needed in order to determine the problem.
 - b. List the five steps of problem-solving.
Answer:
Step 1: Define the problem.
Step 2: Identify possible solutions.
Step 3: Choose a solution.
Step 4: Implement the solution.
Step 5: Review the solution.
 - c. Give four examples of information sources.
Answer: Wikis, internet articles, printed media such as books, and standard operating procedures.
 - d. Explain how an interview can lead to solving a problem.
Answer: An interview with a person of interest to the problem will shed light on the problem from their perspective. Interviewing is a data gathering tool that is used to provide valuable data if the right questions are asked.



Activity 9.2

Memorandum

1. Matching items

Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter next to the question number.

Answer: 1.1 B 1.2 D 1.3 A 1.4 G 1.5 C

2. Short and medium questions

Answer the following:

a. List four guidelines to keep in mind when preparing a questionnaire.

Answer: Any four of the following:

- Decide what you are trying to learn from the questionnaire.
- Identify potential questions that will help you get the information you need.
- Use closed questions (yes/no) as well as open questions (questions that require a description).
- Keep your questions short and simple to avoid confusion.
- Ask your questions in a way that will not guide people to a specific answer.
- Keep your questionnaire as short as possible.
- Make sure to test the questionnaire to ensure that it achieves what you are aiming for.

b. Explain the difference between primary and secondary data.

Answer: Primary data sources include information gathered and analysed by the person who collected the data. Secondary data sources include information obtained from sources that already existed.

c. What is the purpose of an executive summary?

Answer: The purpose of the executive summary is to summarise and explain the report in a way that makes the reader want to read the report. It usually includes a brief statement of the problem, some background information, your analysis and possible solutions, and the main conclusions.

d. Explain the three sections of a report.

Answer:

- *Introduction:* The introduction is used to state the purpose of the report and provide background on the issue. It is important that you make use of your knowledge of the subject to provide a clear description of the problem that has occurred and the solution that was implemented.
- *Body:* The body is used to describe the effect of the solution that was implemented. This can include a database containing all the data regarding the solution to the problem. However, simply supplying the data is not sufficient. You also need to process and analyse the data into useful information. You should then present the information clearly and to the point. To do this, you can extract the core meaning of the data and write it in your own words. You can use graphs and tables to simplify the information.
- *Conclusion:* This section is used to indicate whether the solution was a success and if any other solutions might be needed. If the solution was not successful, you need to include which steps you are planning to follow in order to make sure that the problem is resolved.

e. Discuss the structure of a report. Make sure to elaborate on the three sections.

Answer:

Part 1: Front section

This part of the formal report serves to help the reader understand what the report is about as well as what is included with the report. This section contains the following:

- *Title page:* The function of the title page is to indicate what the report is about, who wrote the report, when the report was written, and for whom the report was written.



- *Transmittal letter:* This letter explains what information is being discussed in the report, and mentions any additional resources that have been included.
- *Table of contents:* The table of contents gives the reader an overview of the document's contents. It also allows the reader to go directly to the section he or she is interested in.

Part 2: Main section

This section contains the main report. It includes the following:

- *Executive summary:* The purpose of the executive summary is to summarise and explain the report in a way that makes the reader want to read the report. It usually includes a brief statement of the problem, some background information, your analysis and possible solutions, and the main conclusions.
- *Introduction:* The introduction states the purpose of the report and provides background on the issue.
- *Body:* The body describes the solution that was implemented, as well as its effects.
- *Conclusion.* In this section, the writer indicates whether the solution was a success and if any other solutions might be needed.

Part 3: Back section

The last section of the formal report is used to provide additional information that the reader might require. This includes the following:

- *References:* This is a list of the resources that were used during the writing of the report. The reader can use these references for additional reading or to confirm the findings of the report.
- *Appendices:* The appendices include all documentation that was too large and bulky to be contained within the main report. This includes data sources such as spreadsheets and databases. These documents are normally included to provide evidence for the findings of the report.
- *Glossary:* This is an alphabetised list of terms, definitions and abbreviations used in the report. The main function of the glossary is to provide the reader with a quick reference to terms they might not recognise.

3. Which of the following criteria must be used to create a good presentation or website? State whether it is a presentation, website, or both. Copy the table into your exercise book and write the correct answer in the right-hand column.

Answer: Keep it simple – Both; Use graphics and charts – Presentation; Make sure it is understandable – Website; Keep it short – Presentation; Ensure it looks beautiful – Both; Use the notes – Presentation; Do not use too many animations – Presentation; Make it useful – Website; Choose a font size and colour that is easy to read – Presentation.

Scenario

Your local community has decided to run a campaign on healthy lifestyles. Amongst the activities they are organising is a triathlon race. They have asked you to help in sending invitations, creating documents that explain the event, recording results, keeping records of athletes and creating a website to market the event.

Question 1

Word processing

Study the questionnaire below and answer the questions that follow.

- 1.1** Identify any ONE closed question in the questionnaire. Explain why you say that the question is a “closed” question.

Answer:

- Question A: Indicate your gender (Male or Female).
- Question B: Do you eat healthily? ✓

Both questions have one single, definitive answer. ✓✓ (2)

- 1.2** Explain why it would be difficult to analyse the answers to Question B in a spreadsheet.

Answer: Question B is an open-ended question, with many possible answers, ✓ which will be difficult to quantify. ✓ (2)

- 1.3** Explain why Question D on the questionnaire is not a good survey question. (2)

Answer: Question D is in fact two questions in one: Do you love sport? Do you love living outdoors? ✓ How does a respondent answer if he/she loves sport, but not living outdoors? It is better to have them as two separate questions. ✓

- 1.4** The questionnaire does not have an introduction. Give ONE element that should be included in the introduction of a survey.

Answer:

- What the survey is about.
- How respondents must complete the survey.

Any ONE ✓

- 1.5** The above questionnaire was done as a word processing form. Explain how you would capture the responses to the questionnaire in a spreadsheet or database.

Answer: The user needs to collect the answers to the form, just the data ✓, save it as a csv file ✓ and import it into a spreadsheet or database. ✓

QUESTION 2

In the PAT of 2018 learners were asked to investigate the problem of fake news. A learner asked the following question in her survey:

“How often do you see fake news?” Answer 1 to 5 where:

1 = Not at all 2 = Not frequently 3 = Sometimes 4 = Regularly 5 = A lot

- 2.1** The learner captured the responses from each person who completed her questionnaire in a spreadsheet. Some of the results are shown in the image on the left.

The respondents answered using the numbers 1 to 5. The learner used a spreadsheet function to convert the number to its matching description.

What spreadsheet function did she use to do this? (Please fix spacing)

Answer: VLOOKUP or INDEX/MATCH ✓ (1)

[REFER LEARNERS TO THE ARTWORK IN THE THEORY BOOK]

2.2 The learner then made a summary of all the responses to the question. What spreadsheet function did she use to do this?

Answer: COUNTIF ✓ (1)

2.3 The learner created a graph of the results shown in 2.2.
[REFER LEARNERS TO THE ARTWORK IN THE THEORY BOOK]

a. Write an argument to include in a report based on the information in the graph.

Answer: All respondents had seen fake news at some time. ✓ Many (42%) had seen fake news sometimes. ✓ The next biggest response was those who had seen fake news a lot (21%) ✓ (3)

b. The number 0% appears on the graph but is not linked to a “pie slice”. Why is this the case?

Answer: No respondents answered “Not at all” ✓ (1)

c. What other type of graph could you use where it would be clearer which data item this is?

Answer: A bar (column) graph ✓ (1)

QUESTION 3

In the PAT of 2016 learners were required to investigate the problem of water shortages. A learner captured data about the capacity of dams which supply the Greater Cape Town area in a database table. The data spanned a period of three years from 2014 to 2016. The learner then created the following query:

[REFER LEARNERS TO THE ARTWORK IN THE THEORY BOOK]

The output of the query is shown in the figure above.

3.1 Suggest two query design techniques that will produce a meaningful outcome. (1)

Answer: Learners' own work. Accept all reasonable answers.

3.2 Write down the criteria to include all the dam names that start with the letter ‘S’ and the dams that have exceeded capacity > than 80% in 2015.

Answer: Learners' own work. Accept all reasonable answers.

QUESTION 4

As part of the PAT you are required to create a website. The image below shows a small part of the HTML.

[REFER LEARNERS TO THE ARTWORK IN THE THEORY BOOK]

The image below shows the output on the browser screen.

[REFER LEARNERS TO THE ARTWORK IN THE THEORY BOOK]

4.1 What is the problem with the browser display? (2)

Answer: The text is very difficult to read ✓ because both colours are dark blue / not enough contrast between the two colours. ✓

4.2 Make ONE change to the HTML above to correct the problem. (1)

*Answer: Change the value of the bgcolor attribute to a lighter colour. OR
Change the value of the font colour attribute to a lighter colour, e.g. white.
Any ONE ✓*

4.3 A learner in your class says that if an image is on the internet, it is fine to use that image in your PAT website because it is for schoolwork. Is the learner correct? Justify your answer. (2)

*Answer: The learner is incorrect. ✓ Using images from the internet without acknowledging them is plagiarism. ✓
Do not award the first mark if no reason is given.*

PART A

PRACTICAL CONTENT



ADVANCED TECHNIQUES IN
WORD PROCESSINGCHAPTER OVERVIEW 

Unit 1.1	Line breaks
Unit 1.2	Bookmarks
Unit 1.3	Reviewing and tracking changes
Unit 1.4	Electronic forms

The following learning outcomes are covered by this chapter: 

- Apply pagination techniques in a word document.
- Apply bookmarks to keep your place in a word document.
- Identify mistakes and indicate changes in a document by using reviewing and tracking tools.
- Create and use electronic word document forms to gather data.

GRADE: 12

DATE:

TEACHING TIME: 6 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader

INTRODUCTION

In this chapter learners will be taking a closer look at some of the more specialised functions of a word processor. This include using bookmarks to help navigate a document, using line breaks to better shape paragraphs, and using the review and track changes options to edit documents. Finally, they will take a look at file management and how they can prepare and publish documents.

Activity 1.1 Memorandum

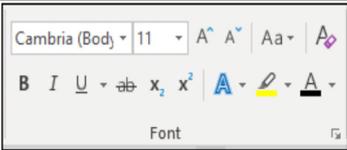
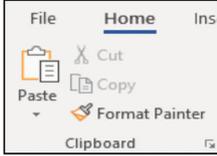
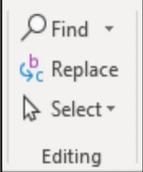
Open the *Act1.1(Advanced Techniques).docx* document. The image below shows the HOME tab.



1. Use the following editing options on the HOME tab and complete the following questions:

Editing option	Questions
	<p>1.1 Convert the text “GOLD: A RESOURCE” to a WordArt of your choice. See to it that the text appears in Sentence Case.</p> <p>1.2 Make use of a word-processing feature to change the text that appears in yellow highlight (paragraph2) to upper Case.</p> <p>1.3 Strikethrough all instances of the word “west” (irrespective of the case).</p>

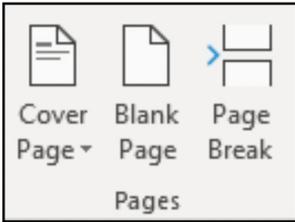
1. Continued...

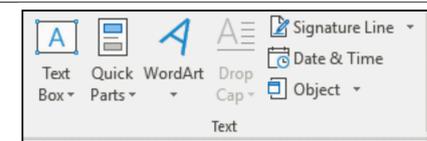
Editing option	Questions
	<p>1.4 Copy the text at the top of page 5 (highlighted in blue) and paste it as an image at the end of the page.</p> <p>1.5 Make use of an editing feature to format every instance of the word “price” to appear in red and underlined.</p>
	<p>1.6 Sort the data in “Breakdown per month” table so that the months appear alphabetically.</p>
	<p>1.7 Apply the Heading 1 style to the text “INDEX” that appears on the last page.</p> <p>1.8 Modify the Heading 2 style so that all the headings for this style appear in blue and font size 13.</p>
	<p>1.9 Insert a footnote on the word “east” to read “the direction from which the sun rises”</p> <p>1.10 Replace all instances of the word “centred” with the word “placed”.</p>

The im

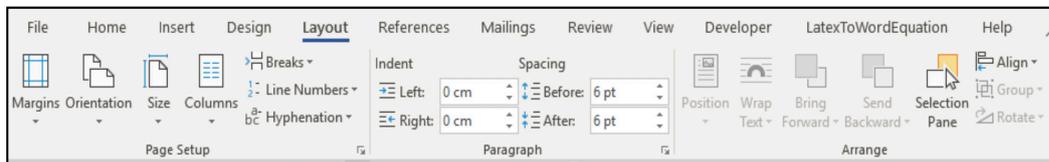


2. Use the following editing options on the INSERT tab and complete the following questions:

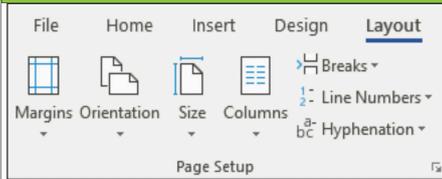
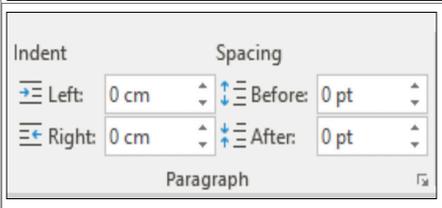
Editing option	Questions
	<p>2.1 Insert a cover page of your choice to the document.</p> <p>2.2 Remove the page break after the paragraph with the heading “Middle Ages”.</p>
	<p>2.3 Insert a header row to the table on page 6 with the text that appears at the top of the table (Month, 2011, 2012, 2013, 2014, 2015)</p>

	<p>2.4 Modify the image of Mansa Musa so that it displays correctly.</p> <p>2.5 Insert a column graph below the table on page 6 that illustrates the breakdown per month (every month) for the years 2011 and 2012.</p>
	<p>2.6 Insert page numbers to the document so that the even numbers appear on the left and the odd numbers on the right in the footer.</p>
	<p>2.7 Insert a field on the cover page that indicates how many pages the document has.</p> <p>2.8 Modify the embedded Excel Worksheet on page 6 so that it has all the information as displayed in the table.</p>

The image below shows the LAYOUT tab.



3. Use the following editing options on the LAYOUT tab and complete the following questions:

Editing option	Questions
	<p>3.1 Modify the margins of the document so that the Top and Bottom margins are at 2 cm.</p> <p>3.2 Modify the orientation of the last page of the document so that only that page (page 7) appears in landscape.</p>
	<p>3.3 Modify the paragraph spacing of the text highlighted in green so that it appears as:</p> <ul style="list-style-type: none"> ○ Left-aligned ○ Left indentation is at 1.5 cm ○ Spacing before the paragraph is at 10 pt ○ Exactly 15 pt line spacing.

Save and close your document.

ASSESSMENT TOOL

Refer to the solution in the Grade 12 folder.



Activity 1.2

Memorandum

Open the file called *Act1.3 (Old Sultan)* and perform the following activities:

1. Activate track changes.
 2. Replace “Sultan” with “Tiny”.
 3. Replace “wolf” with “weasel”.
 4. Reject every second change of “Sultan” with “Tiny”.
 5. Leave a comment at each rejection to say that you rejected the name “Tiny”.
 6. Save the document.
 7. Compare it to the original document.
- Save and close the file.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Did the learner activate track changes?	
Did the learner replace “Sultan” with “Tiny”?	
Did the learner replace “wolf” with “weasel”?	
Did the learner reject every second change of “Sultan” to “Tiny”?	
Did the learner leave a comment at each rejection indicating the they rejected the name “Tiny”?	
Did the learner create a comparison to the original document?	



Activity 1.3

Memorandum

1. Open the file called *Act1.3 (Old Sultan).docx* and perform the following activities:
 - 1.1 Insert a section break before the paragraph, “The blackmail”.
 - 1.2 Make sure that the paragraph “The revenge” is kept on the same page.
 - 1.3 The paragraph “The end” should be on its own page.
 - 1.4 Insert automatic page numbering in the left of the footer from page two onwards.
 - 1.5 Apply widow and orphan control to the text.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Did the learner insert a section break before the paragraph, “The blackmail”?	
Did the learner keep the paragraph “The revenge” on the same page?	
Did the learner ensure that the paragraph “The end” is put on its own page?	
Did the learner insert automatic page numbering in the left of the footer from page two onwards?	
Did the learner apply widow and orphan control to the text?	



Activity 1.5

Memorandum

Open the file called *Act1.5(Water).docx* and perform the following activities:

1. Add a date field next to the word “Date”. Make sure that it will always be the current date.
2. Correct the spelling of “Female” in the dropdown form field control next to the text “Gender”.
3. Add a check box form field control to the left of the text “Older than 60”.
4. Add the text form field control next to the text “Number of adults in the household”.
5. Edit the format of the control next to “How much do you pay a month?” so that it will always display an “R” in front of the amount(s) displayed.
6. Apply leader tabs at the bottom of the form so that it displays as below.

Save and close your document.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Did the student add a date field containing the current date to the word “Date”?	
Did the student correct the spelling of “Female” in the dropdown form field?	
Did the student add a check box field control left of the text “Older than 60”?	
Did the student add the text form field control next to the text “Number of adults in the household”?	
Did the student edit the format of the control next to the text “How much do you pay a month?” so that it will always display an “R” in front of the amount(s)?	
Did the student apply leader tabs at the bottom of the form so that it displays as indicated?	

Open the *Chapter 1_Revision Activity* word processing document, which contains an overview of some of South Africa's famous visual artists.

1. Follow the instructions below to change the cover page.
 - a. Insert your name & surname in the author placeholder. (1)
 - b. Change the format of the date field to June 12, 2019. (1)
 - c. Apply any shadow style of your choice to the picture. (1)
2. Change the page numbers of the document as follows:
 - a. Start the numbering on the page after the table of contents with 1. (1)
 - b. Change the page numbering format to "Page X of Y". (1)
 - c. The cover page and the table of contents page should NOT be numbered. (1)
3. Insert an automatically generated table of figures on the second page below the text "Figures". (2)
4. Remove the comment on the third page. (1)
5. Display only page 5 on a landscape page. (2)
6. Insert a cross reference to the caption "Figure 3: Irma Stern" to replace the text "(Insert cross reference here)" at the end of the document. (2)
7. Find the text "Gallery Viewing Form" on the last page of the document and do the following:
 - a. Find the check box form field next to the text "Female" and set the default value of the check box to checked.
 - b. Add "Thursdays" as an option to the combo box control next to the text "Days".
 - c. Format the text form field control next to the text "Cell Number" to:
 - i. Accept only numbers
 - ii. Display only 10 characters
 - iii. Display help text "Cell" when the Help key (F1) is pressed
 - iv. Add a text form field next to Name & Surname and make sure that when the user types their name and surname will appear in capital letters. (7)
8. There are several methods to import data into Word. Describe the electronic form method and supply an example. (2)

Answer: Use the following checklist as an assessment guideline:

Question	Criteria	Yes/No
1	Cover page	
a.	Name & surname inserted in author placeholder	1
b.	Date field: June 12, 2019	1
c.	Shadow applied	1
2.	Page numbering	
a.	Page after table of contents numbered as 1	1
b.	Page format changed to 'Page X of Y' format	1
c.	Page numbers removed from first and second page	1
3.	Table of figures inserted on page 2	2
4.	Comment removed on page 3	1
5.	Page orientation <ul style="list-style-type: none"> ● Page 5 displays in landscape orientation ● Rest of the document in portrait orientation 	2
6.	Cross-reference (Figure 3: Irma Stern) <ul style="list-style-type: none"> ● Cross reference replaces text '(Insert cross reference here)' ● Reference to the figure 'Irma Stern' 	2

Question	Criteria	Yes/No
7.	Check box: Female <ul style="list-style-type: none">• Default value set to checked Combo box: Days <ul style="list-style-type: none">• 'Thursdays' added to combo box Text form field: Cell Number <ul style="list-style-type: none">• Type: Number• 10 characters Help text inserted on F1 key <ul style="list-style-type: none">• 'Cell' entered Text form field added next to Name & Surname <ul style="list-style-type: none">• Format: Capital letters	7
8.	Check learner's description makes sense.	2

TOTAL [22]

MAIL MERGE

CHAPTER OVERVIEW 

Unit 2.1 Mail merge

Unit 2.4 Objects

The following learning outcomes are covered by this chapter: 

- Use mail merge to merge a word document with a datafile.
- Import data as a linked or embedded object.

GRADE: 12

DATE:

TEACHING TIME: 4 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader

INTRODUCTION

In this chapter learners will look at how data can be merged with a word processing document without having to retype any of it. This not only saves time and effort, but also ensures that the data is kept intact and that no mistakes are made. They will discuss some of the techniques they can use to import the data, such as mail merge, as well as how to embed and link the data to a word document.



Activity 2.1

Memorandum

Do the following on your computer and save it as *Act2.1(Your initials and surname)*.

You are turning 18 on the 10th of the month and are planning a party for the coming Saturday evening.

1. Create an invitation (your main document) to your friends, inviting them to the party. To make it easier, you decided to do a mail merge for the invitation.
2. Add the following fields in the invitation:
 - Your guest's name
 - Contact Number of guest
 - Name of partner
3. Make the mailing list for at least 12 names. Type a new list.
4. Save the merged document as *Act2.1(Merged)*.
Save and close all documents.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Did the learner created an invitation?	
Did the learner created a mailing list with at least 12 names?	
Did the learner created a mail merge using the invitation and mailing list?	
Did the learner save the merged document as Act2.1(Merged)?	



Activity 2.2

Memorandum

Open a new word document and complete the following activity:

1. Open the *Act2.2(Dance)* word document and complete the following activity.
2. Prepare a mail merge using the spreadsheet Score.
3. Insert merge fields for the "Name", "Surname" and "Final score" in the appropriate positions.
4. Complete the merge and save the merged document as *Act 2.2 Merged*.
Save and close all documents.

Criteria	Yes/No
Did the learner import data into Excel from the text file?	
Did the learner insert merged fields for Name, Surname and Final score.	
Did the learner save and merge the document as <i>Act 2.2 Merged</i> ?	



Activity 2.3

Memorandum

Complete the following activity:

1. Open a new Excel document and import the data from the file *Export.txt* into Excel. Save the document as *Export_Salary*.
2. Use this data as your data source to create a mail merge.
 - a. Insert merge fields for Name, Player ID, Game, and Salary.
 - b. Complete the merge and save the document as *Act2.3(Merged)*.
 Save and close your document.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Did the learner import data into Excel from the text file?	
Did the learner insert merged fields for Name, Player ID, Game and Salary?	
Did the learner save and merge the document as <i>Act 2.3(Merged)</i> ?	



Activity 2.4

Memorandum

Open new word document and complete the following activity:

1. Import that data from the *Export_Salary.docx* document that you created in the previous example. The data must be imported as a linked table.
2. Format the table as follows:
 - a. Add a border with a thickness of 2 to the table.
 - b. Change the spacing between the cells to 1.
 - c. Change the background colour of the first row to any colour of your choice.

Save and close the file as *Act2.4(Export_Salary)*.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Did the learner import the data as a linked table?	
Did the learner add a border with a thickness of 2?	
Did the learner change the spacing between cells to 1?	
Did the learner change the background colour of the first row?	

The development of South Africa has always been closely connected to the country's gold resources. You found an article about gold, but it needs to be edited and a mail merge needs to be performed.

Open the *Chapter 2_Revision Activity* word processing document and do the following changes.

1. Change the page size of the document to A4. (1)
2. Set the top margin of the page to 2 cm AND the gutter position to left. (2)
3. Find the heading "AN UNSPEAKABLE LOVE OF GOLD" at the beginning of the document.
 - a. Create a new style called "LoveGold" as follows:
 - Base the new style on the "Heading 1" style.
 - Centre the text of the new style horizontally.
 - Apply any type of paragraph border.
 - Apply the new style to the heading. (5)
4. Find the SmartArt diagram towards the end of the document. Complete the diagram to appear as follows:

- a. Fill the last shape with the 1Gold_Goud picture.
- b. Add the text "Gold Bricks" to the last shape.
- c. Change the SmartArt layout to a chevron shape as in the example above.
- d. Add the text "Processing Gold" as a caption to the diagram, as shown above. (4)
5. Copy the graph from the *Graph spreadsheet* to page 2 of this document at the placeholder. Make sure that changes to the graph in the source document can be updated in your word document. (3)
Save and close the document.
6. A statement must be prepared for clients of a jewellery business. Open the *Statem_Staat* document which will be used for a mail merge.
 - a. Link the *Statem_Staat* document with the data source, the tbClients table, in the *Acc_Rek* database.
 - b. Replace the text in the cell next to the "BILL TO" area to display the initials and surnames of the clients listed in the tbClients table.
 - c. Replace the text in the cell next to the "CITY" area to display only the city of the clients from Durban listed in the tbClients table.
NOTE: Ensure that the merge fields have the correct spacing.
 - d. Complete the merge and save the document as *Statement_Merge*. (5)
- . Close the *Statem_Staat* and *Statement_Merge* documents.

Answer: Use the following checklist as an assessment guideline:

Question	Criteria	Yes/No
1.	<ul style="list-style-type: none"> Page size: A4 	1
2.	Margins: Top: 2cm Gutter: Left	2
3.a	New Style: <ul style="list-style-type: none"> “LoveGold” Based on Heading 1. Text centred horizontally. Paragraph border applied. Applied to heading: “AN UNSPEAKABLE LOVE OF GOLD”. 	5
4.	SmartArt: <ul style="list-style-type: none"> Shape filled with 1Gold_Goud picture. Text added “Gold Bricks”. Changed to chevron shape. Caption added “Processing Gold”. 	4
5.	Graph copied from Graph spreadsheet. Updated object.	3
6.	Mail Merge	
a.	Initial & surname and City merge fields inserted in correct position.	5
b.	Only clients from Durban.	
c.	tbClients table used as data source.	
d.	Merged document saved as Statement_Merge.	

TOTAL [20]

APPLYING WORD PROCESSING SKILLS

CHAPTER OVERVIEW

Unit 3.1 Advanced word processing techniques

Unit 3.2 File management

Unit 3.3 Integration techniques

The following learning outcomes are covered by this chapter: 

- Apply advanced word processing techniques in a word document
- Prepare and publish a document.
- Explain integration techniques.

GRADE: 12

DATE:

TEACHING TIME: 2 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader

INTRODUCTION

In this chapter learners will be taking a closer look at some of the more advanced techniques that one can use in order to improve a document.



Open the document *Act3.1(Effect)* and complete the following activity.

1. More information should be added to the cover page. Complete the cover page as follows:
 - a. Insert your name and surname under the heading “Author” in the text content control. Make sure not to change the document properties.
 - b. Add the Climate picture found in the Chapter 3 folder in the picture control.
 - c. Apply the “Global” style to the title “10 Most Common Effects of Global Warming”.
2. Adjust the quote “One of the most controversial topics in today’s age is global warming” so that it will NOT appear in the table of contents. Note that the table of contents contains only one level of heading styles.
 - a. Update the entire table of contents on page 2.
3. Locate the text “global warming” in the first paragraph of the document and apply any text outline to this text.
 - a. Make sure not to use WordArt/Fontwork.
4. Apply automatic numbering to the heading “Rising Sea Levels”.
Save and close the document.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Did the learner include the Name and Surname in the content control?	
Did the learner insert the Climate image in the picture control?	
Did the learner apply the “Global” style to the title “10 Most Common Effects of Global Warming”?	
Did the learner adjust the style of the quote “One of the most controversial topics in today’s age is global warming” so it does not appear in the table of contents?	
Did the learner update the table of contents?	
Did the learner apply any of the other style except for heading 1?	
Did the learner apply any text outline?	
Did the learner apply automatic numbering to heading ‘Rising Sea Levels’?	



Activity 3.2

Memorandum

Open the document *Act3.2(Gold)* and complete the following activity:

1. Change the page size of the document to A4.
 2. Set the top margin of the page to 2 cm AND the gutter position to left.
 3. Format the first two paragraphs in the document as follows:
 - a. Change the line spacing of the first paragraph in the document to multiple, set at 1.2.
 - b. Indent the FIRST line of the second paragraph to 2 cm.
 4. Replace all occurrences of the text “Nano” with the text “nano” in small caps.
 5. Find the word “alchemists” in the sixth paragraph of the document.
 - a. Replace the word with a synonym from the list of suggestions given by the word processor.
- Save and close the document.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Page size: <ul style="list-style-type: none"> ● Page size changed to A4. 	
Margin: <ul style="list-style-type: none"> ● Top margin set to 2 cm. ● Gutter position set to left. 	
Line spacing: <ul style="list-style-type: none"> ● First paragraph line spacing set to multiple. ● Set at 1.2 pt. 	
Spacing: <ul style="list-style-type: none"> ● First line indent applied to second paragraph. ● Set at 2 cm. 	
Find and replace: <ul style="list-style-type: none"> ● Text “nano” replaced with “NANO” in small caps. ● Four occurrences of “nano” replaced. 	
Thesaurus: <ul style="list-style-type: none"> ● “Alchemist” replaced with word from suggested list: experimenters, transformers, pseudoscientists, etc. 	



Activity 3.3

Memorandum

Open new word document and complete the following activity:

1. Import the data from the Data.xlsx spreadsheet to the word document as an embedded object.
2. Export the word document as a PDF.
Save and close the documents as *Act3.3(Data)*.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Did the learner insert the data as an embedded object?	
Did the learner export the word document to pdf?	

A document was created to give background information on cyber bullying. Open the Chapter 3 Revision_Activity word processing document and do the following changes:

1. Format the first page as follows:
 - a. Insert a table of contents and do the following:
 - Display TWO levels in the table of contents.
 - Use all other default settings. (2)
2. Format the document as follows:
 - Change the bottom page margin to 2 cm.
 - Add a page border of your choice to the document.
 - Include a watermark in the document as follows:
 - Use the Bully image in your folder.
 - Apply a washout effect.
 - Set the scaling to 150%. (5)
3. Find all occurrences of the words “cyber bullying” and ensure that these two words appear as ONE word, in other words “cyberbullying”. (2)
4. Justify the text of only the first paragraph in the document and change the line spacing of the first paragraph to Multiple 1.2. (2)
5. Insert the table Incidents from the Report spreadsheet as a linked object under the heading Cyber Bullying Statistics. (2)
6. Locate the sentence ‘Despite the ...’ to ‘... foundation’ at the bottom of page 2. Apply a 2 pt shadowed border and green shading (highlight) to this paragraph. (2)
7. Locate and select all the text below the heading ‘Reducing cyber bullying statistics’ at the bottom of page 3.
 - a. The selected text must appear in two equal columns with a space of 0.5 cm between the columns.
 - b. With a line between the two columns. (3)
8. Export and save a copy of this document as a PDF document with filename: Export_PDF. (2)
Save and close all documents.

Answer: Use the following checklist as an assessment guideline:

Question	Criteria	Yes/No
1.	First page: <ul style="list-style-type: none"> ● Table of contents added. ● Display 2 levels. 	2
2.	Margins: <ul style="list-style-type: none"> ● Bottom 2cm ● Page border added ● Watermark: <ul style="list-style-type: none"> ○ Bully image ○ Washout effect ○ Scaling 150%. 	5
3.	Find & replace: <ul style="list-style-type: none"> ● All occurrences of “cyber bullying” replaced with “cyberbullying”. 	2

Question	Criteria	Yes/No
4.	First paragraph: <ul style="list-style-type: none">• Body text is fully justified.• Line spacing at Multiple 1.2.	2
5.	Table Incidents inserted as a linked object.	2
6.	Paragraph borders and shading: <ul style="list-style-type: none">• 2 pt shadowed border.• Green shading (highlight).	2
7.	Columns: <ul style="list-style-type: none">• All text below the heading 'Reducing cyber bullying statistics' appears in 2 equal columns.• Spacing between columns is set to 0.5 cm.<ul style="list-style-type: none">○ Line between two columns.	3
8.	Document exported as a PDF Filename: Export_PDF	2

TOTAL [20]

ADVANCED FUNCTIONS IN SPREADSHEETS

CHAPTER OVERVIEW

Unit 4.1 Advanced functions

Unit 4.2 Date and time calculations

The following learning outcomes are covered by this chapter: 

- Use advanced functions in order to analyse data.
- Use text functions to modify your data.

GRADE: 12

DATE:

TEACHING TIME: 8 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader

INTRODUCTION

In this chapters learners will learn how to import data from other sources or manually enter it into a worksheet. Once it has been collected, the user can use a variety of functions and formulas to process and analyse the data quickly and efficiently. The analysed data can then be represented as graphs or even exported to other applications to be used in presentations. Programs such as Excel enable the user to save a lot of time and effort.



Activity 4.1

Memorandum

Open the document *Act4.1(Policy).xlsx* and complete the following activity:

1. Format the worksheet as follows:
 - a. Apply a red-coloured fill to the merged cells A1:H1.
 - b. Cells A2:G2 have been merged. Change this merged cell so that cell H2 is also included in the merged cell.
 - c. Change the font colour of the text in the merged cells A2:H2 to white and left align the text.
 - d. Place a double line outside border around cells A1:H2.
2. Insert a formula in cell G4 to determine how long a policy has been inexistence at Bona Secondary School.
3. As cyberbullying is a newer type of behaviour, it is not included in some policies. Add an IF-statement in cell H4 to display an asterisk (*) if the policy includes cyberbullying (column F), otherwise the cell must remain blank or empty.
4. Insert a function in cell M4 to determine the average number of years (column G) that schools have been implementing the policies.

Save and close your spreadsheet.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Cell colour: <ul style="list-style-type: none"> • Merged cells A1:H1 filled with a reddish colour. 	
Merge: <ul style="list-style-type: none"> • Cells A2:H2 merged. (Note to marker: Accept if cells A1 : H2 are merged.)	
Line spacing: <ul style="list-style-type: none"> • First paragraph line spacing set to multiple. • Set at 1.2 pt. 	
Font colour (Row 2): <ul style="list-style-type: none"> • Font colour of the merged cells A2:H2 is white. • Heading is left aligned 	
Cell border (Cells A1:H2): <ul style="list-style-type: none"> • Double line. • Outside border only. • Around cells A1:H2. (Note to marker: Do not allocate the mark for the outside border if inside borders between cells are visible. LO: check settings or enlarge the screen view.)	
Cell G4 =2013 – D4 <ul style="list-style-type: none"> • Correct cells. • Subtraction sign. (Note to marker: Also accept: =2013 – D4 + 1) Also accept =E4–D4 (Accept with/without absolute referencing)	



Activity 4.1

Memorandum...continued

Criteria	Yes/No
Cell H4 = IF(F4="Yes", "*", "") or Cell H4 = IF(F4<>"Yes", "", "*") or Cell H4 = IF(F4>="Yes", "*", "") or Cell H4 = IF(F4>"Yes", "", "*") or Cell H4 = IF(F4="No", "", "*") <ul style="list-style-type: none"> • Condition F4 = "Yes" • True value "*" • False value "" (Note to marker: Accept if a space was added for a blank cell.)	
Cell M4 = AVERAGE(G4:G51) <ul style="list-style-type: none"> • Function AVERAGE. • Correct range (G4:G51). 	



Activity 4.2

Memorandum

Open the spreadsheet *Act4.2(Books).xlsx* and use functions to complete the following activity:

- Use a function to determine:
 - Which books have a hard copy that costs less than R200?
 - The eBooks that costs less than R150?
- Use a function to determine the price of:
 - the ebook "James City"
 - the ebook "Dance of Doom"
 - the ebook "Words and Lists".
- Use a function to determine the name of the book that was published on 2018/10/30.
Save and close your spreadsheet.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner use functions to determine which books have a hard copy that costs less than R200 and an ebook that costs less than R150?	
Did the learner use functions to determine the price of the ebooks for James City, Dance of Doom and Words and Lists?	
Did the learner use functions to determine the book that was published on 2018/10/30?	



Activity 4.3

Memorandum

Answer the following questions in your own words.

- Explain what the following functions will do in Microsoft Excel.
 - COUNTIF
Answer: The COUNTIF function will count the number of cells that meet a specific criterion, for example this function can count the number of times a certain item was bought in a shop during the day.
 - SUMIF
Answer: This function looks at the data in a specified cell range and see if it meets a basic condition. If the condition is satisfied, the sum of the values within a second specified cell range is returned
 - Nested IF
Answer: A nested IF function is an advanced function where one function is placed within the arguments of the other. In this case one IF function is placed with the arguments of another IF function.



2. What is the difference between the VLOOKUP and HLOOKUP functions?
Answer: The HLOOKUP function looks for a value in the first row and returns a corresponding value from another row, while the VLOOKUP function looks for a value in the first column and returns a corresponding value from another column
3. What is a complex function? Give two examples of complex functions.
Answer: Complex functions enable the user to analyse data in a quick and efficient manner. This allows the user to easily interpret the data so the information can be obtained, decisions made and questions answered. Examples include nested IF, VLOOKUP and HLOOKUP.
4. Open the *Act4.3(BookPrices)* spreadsheet and use the appropriate function to determine:
 - a. The total price of all the ebooks published by Penguin Books.
 - b. How many books were ordered on 10th October 2018?
 - c. The name of the hard copy book that costs R100.00
 - d. The publisher of the book "Square Times".
 - e. The total price of all the hard copy books published by Zondo Prints.

Save and close your spreadsheet.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner use a function to determine the total price of the ebooks published by Penguin Books?	
Did the learner use a function to see how many books were ordered on 10th October 2018?	
Did the learner insert a function to show the name of the hard copy book that costs R100.00?	
Did the learner insert a function to show the publisher of the book "Square Times"?	
Did the learner calculate the total price of all the hard copy books published by Zondo Prints?	



Activity 4.4

Memorandum

Open the spreadsheet *Act4.4(Gym).xlsx* and complete the following activity.

1. Add a function in cell B3 that will always display the current date.
2. Wrap the column headings in row 6.
3. Enter a function in cell G43 to determine the total subscriptions Step Up Gym receives per month based on the Subscriptions Per Month (column G).
4. Enter a formula in cell C7 to calculate the age for the first member in completed years using the Today's Date in cell B3 and the member's Date of Birth in cell B7. Save and close your spreadsheet.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Cell B3: =TODAY() Accept: =NOW()	
Row 6: Column headings wrapped	
Cell G43: =SUM(G7:G41) Function SUM Range (G7:G41)	
Cell C7: =ROUNDDOWN((B3-B7)/365.25,0) ROUNDDOWN function To zero decimal places: 0 Difference between years calculated with brackets: (B3 - B7) Convert to years: /365.25 or 365 OR =TRUNC ((B3-B7)/365.25) TRUNC function Difference between years calculated with brackets: (B3-B7) Convert to years: /365.25 or 365	

The votes cast for contestants have been stored in a spreadsheet.

The winner is determined by processing the votes.

Open the *Chapter 4_Revision Activity 1* spreadsheet.

1. Remove Sheet1 from the spreadsheet. Work in the *Winners_Wenners* worksheet. (1)
2. Add a formula in cell E4 to calculate the score out of 100 that Thembisa Barnard obtained in the Introduction category. Use the raw score in cell D4 and the maximum possible score in cell D2 to determine the score out of 100.
 - a. Round off the answer to the next whole number, with NO decimal places.
 - b. Ensure that the formula will work correctly if copied down to the rest of the cells in the same column. (6)
3. Contestants are scored on each of the four categories as follows:
 - a.
 - i. Column E Introduction/Bekendstelling
 - ii. Column F Dance costume/Danskostuum
 - iii. Column G Evening wear/Aanddrag
 - iv. Column H Interview/Onderhoud
 - b. Column I contains the final score of the contestants out of 100. The Interview category (column H) is the most important part of the scoring process and therefore counts twice as much as the other categories. In cell I5, calculate the final score of Nomhle Baxter by adding the categories and then dividing by 5. (3)
 - c. Column K displays the best category for each contestant. Use a nested IF function in cell K6 and the value in cell J6 to display the name of the category in which Thembani Benjamin received her highest score. (5)
4. In cell O7, use a function to determine the 2nd highest final score (column I). (3)
5. Insert a function in cell O9 to calculate the average of the maximum scores (column J). (2)
Save and close the spreadsheet.

The organisers of a cycle race would like to improve their systems for the following year's event.

Open the *Chapter 4_Revision Activity 2* spreadsheet.

Work in the *Race_Reis* worksheet

1. Improve the readability of the spreadsheet by applying the following formatting features to the worksheet:
 - a. Format the heading in row 1 so that it stretches from column A to K. (1)
 - b. Adjust the font size of row 1 to 20pt and the font colour to red. (2)
 - c. Use the freeze pane feature to ensure that the contents in only rows 1 and 2 remain on the screen if the user scrolls down. (1)
 - d. Display the values in column J as South African Rand. (1)
 - e. Format the information from column C to column K so that it appears in the centre of each column. (1)
2. Each participant will receive a medal based on the prize money in column J. The medal categories can be found in the *Medal_Medalje* worksheet. Use a spreadsheet function in cell K3 to determine the type of medal Marco Abrahams will receive. (4)
Save and close the spreadsheet.

Use the following checklist as an assessment guideline:

Chapter 4(1)

Question	Criteria	Yes/No
1.	Delete a worksheet: Sheet1 deleted.	1
2.	Cell E4: =ROUNDUP((D4/\$D\$2)*100,0) ROUNDUP function used. Division operator used and correct cells, i.e. D4/D2. Absolute cell reference applied to D2 (\$D\$2 or D\$2). Multiply by 100 (*100). No decimal places.	6
3.b	Cell I5: =(SUM(E5:H5)+H5)/5 OR =(SUM(E5:G5)+2*H5)/5 Add the final marks SUM(E5,F5,G5,H5) OR (E5+F5+G5+H5) OR SUM(E5:H5) H5 added a second time. Divide by 5.	3
3.c	Cell K6: =IF(E6=J6,"Introduction",IF(F6=J6,"Dance costume",IF(G6=J6,"Evening wear","Interview"))) IF Function Correct range and option for IF true first category E6=J6, "Introduction". Correct range and option for IF true second category F6=J6, "Dance costume". Correct range and option for IF true third category G6=J6, "Evening wear". <ul style="list-style-type: none">● Default False displays the last category.	5
4.	Cell O7: =LARGE(I4:I41,2) Function: LARGE Correct range: I4:I41 Position in the range: 2	3
5.	Cell O9: =AVERAGE(J4:J41) Function: AVERAGE Correct range: J4:J41	2

TOTAL [20]

Use the following checklist as an assessment guideline:

Chapter 4(2)

Question	Criteria	Yes/No
1.a	Row 1: Merge & centre	1
1.b	Row 1: Font: 20pt Colour: red	2
1.c	Freeze panes: Rows 1 & 2	1
1.d	Column J: Currency	1
1.e	Column C & K: Centred	1
2.	Cell K3: =VLOOKUP(Race_Reis!J3;Medal_Medalje!\$A\$3:\$B\$6;2) <ul style="list-style-type: none"> ● VLOOKUP function ● Lookup value: J3 ● Lookup array Medal_Medalje!A3:B6 ● Column index: 2 	4

TOTAL [10]

TEXT FUNCTIONS

CHAPTER OVERVIEW

Unit 5.1 Explain text functions.

The following learning outcomes are covered by this chapter: 

- Explain text functions.
- Use text functions to find, manipulate and extract specific information from data.

GRADE: 12

DATE:

TEACHING TIME: 6 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader

INTRODUCTION

In this chapter learners will explore Excel functions that allow the user more freedom when it comes to selecting and finding specific pieces of text. They will also learn how that text is represented.



Activity 5.1

Memorandum

Open the spreadsheet *Act5.1(WaterGames).xlsx* and use a function to display the following:

1. Each athlete's code in Column H based on:
 - a. the athlete's gender
 - b. separated by a hyphen (-)
 - c. the first 3 letters of the athlete's name
 - d. the last 2 letters of the athlete's surname
 - e. Separated by a hyphen
 - f. the Team the athlete belongs to, as an example, the code for athlete Kerry Kirby (row 20) will be: F-Kerby-Indigo

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner display the information correctly?	



Activity 5.2

Memorandum

Open the spreadsheet *Act5.2(Client).xlsx* and use functions to do the following:

1. Determine the service provider of each client by obtaining the first three digits of their cell phone number.
2. Creating a unique customer code by taking the middle two digits of each Name and the first two letters of the Surname.

Save and close your spreadsheet.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner use a function to obtain the first three digits of the client's cell phone number?	
Did the learner create a unique customer code by taking the middle two digits of each name and the first two letters of the Surname?	



Activity 5.3

Memorandum

Open the spreadsheet *Act5.3(Names).xlsx* and do the following:

1. Change the heading in cell D1 to Updated Customer code.
2. Use a function to generate an update customer code for each client.
 - a. The code must consist of:
 - the middle two digits of each Name and the first two letters of the Surname
 - as well as, the last 3 digits of the client's cell number.

Save and close your spreadsheet.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner change the heading in cell D1 to Updated Customer code?	
Did the learner use a function to generate an updated customer code for each client?	



Activity 5.4

Memorandum

Open the spreadsheet *Act5.4(Contestant).xlsx* and use functions to complete the following activity:

The spreadsheet contains the Names of eleven contestants that have entered a raffle to win a new toaster. Each contestant has been assigned a random special code that will be used to determine who has won.

1. In order to pick a winner, you need to use a function to determine the length of each person's Special Code.
2. There was an error that occurred when entering the contestant's names into the database. A # was included in some of the contestant's names. Use a function to determine which names have the # included, and where the # is located so that it can be removed.

Save and close your spreadsheet.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner use a function to determine the length of each person's special code?	
Did the learner use a function to identify which names have # included?	
Did the learner use a function to determine the location of # in the relevant names and remove the #?	



Activity 5.5

Memorandum

Open the spreadsheet *Act5.5(Learner-info).xlsx* and use functions to complete the following activity:

1. Separate each learner's name into name and surname.
2. Generate a special code for each learner. The code must be a combination of the length of the learner's name, and the last 3 letters of the learner's surname.

Save and close your spreadsheet.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner use a function to separate the learners name into name and surname?	
Did the learner use a function to create a special code as indicated?	

The *Chapter 5_Revision Activity spreadsheet* contains data about a car sales company. Open the *Chapter 5_Revision Activity* spreadsheet and work in the Sheet1 worksheet.

1. Rename Sheet1 to “Car Info”. (1)
2. Change the tab colour to any colour of your choice. (1)
3. Make the following changes to the first row:
 - a. Merge and centre cells A1:O1 and insert the text “MZANSI CAR SALES”. (2)
 - b. Add light blue shading to the merged cells. (1)
4. The code for each car is created as follows:
 - a. The first two letters of the name of the car manufacturer (column B).
 - b. Followed by the last three digits of the year in which the car was manufactured (column F).
 - c. Followed by the owner’s name (column J).
 - i. Example: Chevrolet, 2007, J Bihl will have Ch007J Bihl as code. (8)
5. Insert a function in cell G4 to calculate the age of the car by using the current year and the date the car was released from the factory in column F. Ensure that the function will still produce the correct answer for any year, for example 2017 or 2018. The age must be displayed as a whole number. (3)
6. Insert a function in cell K4 to determine the position of the space located between the owner’s initials and surname in column J. (2)
7. Insert a function in cell L5 using the position of the space in column K to display only the surname from column J. For example, “HC Burger” will display “Burger” and “D Kotze” will display “Kotze”. (2)

Use the following checklist as an assessment guideline:

	Criteria	Total marks
1.	Rename Sheet 1: Car Info	1
2.	Tab colour: any colour	1
3.a 3.b	Row 1: <ul style="list-style-type: none"> ● Merge and centre cells A1:O1 ● Text “MZANSI CAR SALES” inserted in cell A1 ● Light blue shading added 	3
4.	Column A - Cell A3: =CONCATENATE(LEFT(B3,2), RIGHT(F3,3), J3) CONCATENATE function & LEFT (B3,2) RIGHT (F3,3) J3 OR =LEFT(B3,2) & RIGHT(F3,3) & K3	8
5.	Cell G4: =YEAR(TODAY())-F4 YEAR TODAY() OR NOW() -F4 Formatted to General	3

	Criteria	Total marks
6.	Cell K4: =FIND(" ",J4) FIND function Used to determine position of space " "	2
7.	=MID(J5:K5+1;LEN(J5)) Function to extract (MID) Extracted from correct cell (K5) From space +1 character to the last character Function to determine length (LEN)	2

TOTAL: [20]

ADVANCED FUNCTION
COMBINATIONS

CHAPTER OVERVIEW

Unit 6.1 Using functions to solve problems for a specific scenario

Unit 6.2 Charts



The following learning outcomes are covered by this chapter:

- Explain how you can use functions, formulas and operators to solve a problem.
- Combine functions to obtain better results.
- Create a stacked bar and column chart in order to compare data.
- Format a chart by changing the scale on the axes, re-labelling the axes, and changing the minimum and maximum values displayed on the chart.
- Explain the importance of choosing the appropriate chart for a given scenario.

GRADE: 12

DATE:

TEACHING TIME: 6 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader

INTRODUCTION

In this chapter learners will be exposed to different functions to solve problems for specific scenarios. The example of their practical assessment task (PAT) assignment are used to illustrate some points.



Open the *Act6.1(Participants).xlsx* spreadsheet.

1. Insert a formula in cell E6 to determine the current age of Allen Hathaway. Use the date of birth in column D.
NOTE: Only the completed years must be displayed, AND the formula should work for any year.
2. Insert a function in cell L4 to display the most frequent position (column F) achieved in the competition.
3. Insert a function in cell L6 to determine how many times Carl le Clos has obtained first position.
4. Insert a function in cell L8 to determine the second highest amount that an athlete should be paid.
5. Insert a function in cell L10 to display a unique code for every entry(row) in the spreadsheet. The code must consist of:
 - The first 3 letters of the participant's name
 - Separated by the “%” sign
 - First 2 letters of the sport, and
 - Separated by a hyphen (-)
 - The medal the participant achieved
 - Example: Row 16 will display - Car%Sw-Silver

Save and close your spreadsheet.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner insert a formula in cell E6 to determine the current age of Allen Hathaway using the date of birth in column D?	
Did the learner insert a function in cell L4 to display the most frequent position (column F) achieved in the competition?	
Did the learner insert a function in cell L6 to determine how many times Carl le Clos has obtained first position?	
Did the learner insert a function in cell L8 to determine the second highest amount that an athlete should be paid?	
Did the learner insert a function in cell L10 to display a unique code for every entry(row) in the spreadsheet?	
Did the learner create the correct unique code?	



Use the following checklist to assess the learner's task.

Criteria	Yes/No
Row 6: <ul style="list-style-type: none"> Row 6 height changed to exactly 45 pt Row 6 headings wrapped 	
Cell H7: =G7-F7 OR =DAYS(G7, F7) OR =DAY(G7)-DAY(F7) <ul style="list-style-type: none"> Correct cells used. To determine difference correctly. 	
Cell I8: VLOOKUP(D8,Rate_Tarief!\$B\$3:\$C\$23,2) OR =VLOOKUP(D8,Rate_Tarief!\$B\$4:\$C\$23,2) <ul style="list-style-type: none"> Lookup value: D8. Lookup range: Rate_Tarief!\$B\$3:\$C\$23 OR Rate_Tarief!\$B\$4:\$C\$23 (accept named range). Absolute cell references correctly used (allocate mark if named range was used). Correct column: 2. 	
Cell J9: =H9*I9 OR =PRODUCT(H9, I9) OR =(G9-F9)*I9 <ul style="list-style-type: none"> Correct cells used. Multiplication. Format changed to any currency format. 	
Cell L10: (Check for building blocks) =LEN(K10)/100*J10 or =J10*LEN(K10)/100 or =J10*LEN(K10)% or =LEN(K10)*1%*J10 or =J10*("0.0"&LEN(K10)) LEN (K10) /100 (Accept decimals instead of percentages) * J10 (Notes to marker: Accept any method that will yield the correct answer. =IF(LEN(K10)=5,J10*5%,IF(LEN(K10)=4,J10*4%, IF(LEN(K10)=3,J10*3%,IF(LEN(K10)=2,J10*2%, J10*1%))) =IF(K10="*****",J10*5%,IF(K10="****",J10*4%, IF(K10="***",J10*3%,IF(K10="**",J10*2%,J10*1%))). Mark allocation for nested if: test K10 for correct number of stars*, J10 used to calculate discount, identified correct %, nested if correctly applied for all options.)	



Criteria	Yes/No
Cell M7: (Check for building blocks) =IF(VALUE(MID(C7,7,1))>=5,"Male","Female") or =IF(VALUE(MID(C7,7,1))<5,"Female","Male") IF function Criteria: VALUE OR NUMBERVALUE function ((MID(C7,7,1)) >=5 OR >4 (OR >="5" if VALUE was not used) Value if true: "Male" OR "M" Value if false: "Female" OR "F" (Notes to marker: • Evaluate the candidates answer against the bulleted options e.g. CODE function.) Penalise only the second mark if VALUE was not used.)	
Cell G2: =SMALL(I7:I66,3) OR =SMALL(I:I,3) SMALL function Range: I7:I66 Third smallest: 3	
Cell G3: =MODE(I7:I66) OR =MODE(I:I) MODE function OR MODE.MULT OR MODE.SNGL function Range: I7:I66	
Cell G4: =SUMIF(E7:E66,"Country*",J7:J66) or =SUMIF(E7:E66,"*Country*",J7:J66) or =SUMIF(E7:E66,"Country House",J7:J66)+SUMIF (E7:E66,"Country Inn",J7:J66) SUMIF(S) function Criteria range: E7:E66 Criteria: Country OR C * (accept * in front, allocate both marks if "Country House" and "Country Inn" was used) Sum range: J7:J66 (Note to marker: =SUMIFS(J7:J66,E7:E66,"Country*")	



Activity 6.3

Memorandum

You are in a school with 1 000 learners. As part of your Grade 12 CAT practical, you have to find out how many learners are in each grade and how many of them have cell phones, as well as those who do not have cell phones. The results of the research are contained in the spreadsheet *Act6.3(Practical).xlsx*. Use this data to complete the following:

1. Create a stacked bar chart and name it as Chart 1.
2. Create a stacked column chart and name it as Chart 2.
3. Replace the bars of Chart 1 indicating learners who have cell phones with the graphic *cell_phone.png*. Tile the picture as texture.

Save and close your spreadsheet.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner create and name a stacked bar chart?	
Did the learner create and name a column chart?	
Did the learner replaced the bars of chart 1 with a graphic?	



Activity 6.4

Memorandum

Open the spreadsheet *Act6.4(Axes_cricket).xlsx* and complete the following:

1. Format the vertical axis as follows:
 - a. Reverse the order of the labels.
 - b. Move the labels to be displayed on the right of the graph.
 - c. Display the labels at a 45-degree angle.
2. Format the horizontal axis as follows:
 - a. Change the minimum amount displayed to 10 and the maximum to 150.

Save and close your spreadsheet.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner reverse the order of the labels?	
Did the learner move the labels to the right of the graph?	
Did the learner display the labels at a 45-degree angle?	
Did the learner format the horizontal access to display a minimum of 10 and maximum of 150?	



Activity 6.5

Memorandum

Open the spreadsheet *Act6.5(Rename_cricket).xlsx* and complete the following:

1. Rename the chart to Team A.
2. Edit the labels to show only the first letter of each player's name and their surname.
3. Add the data for the fourth game to the chart.
Save and close your document.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the learner rename the chart to Team A?	
Did the learner edit the labels to display only the first letter of the player's name?	
Did the learner add the data for the fourth game to the chart?	



Activity 6.6

Memorandum

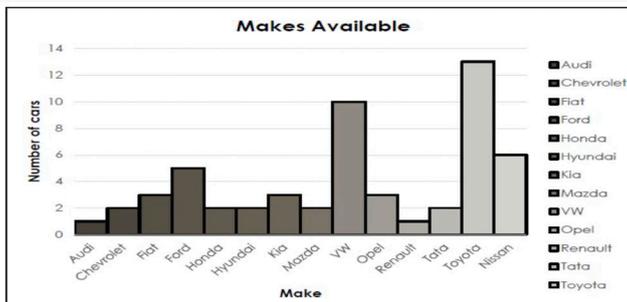
In which scenario would you use a line chart, a pie charts, a stacked chars and a bar chart?

1. The IT Head of Department wants to compare the marks of the different classes in each grade for 2017. Which chart would illustrate this best?
Answer: Bar chart
2. You are a long-distance athlete and you want to keep track of how many laps you are running around the track every day to see if your fitness increases over time. You run for an hour each day, Monday to Friday. Which of the three charts would you use to display this?
Answer: Line chart
3. In the past month, there were 70 learners absent from school. Of these, 23 were in Grade 8, 17 in Grade 9, 9 in Grade 10, 19 in Grade 11 and 2 in Grade 12. Which chart would be best to visualise this?
Answer: Pie chart
4. One of a company's employees is working on a project in a town far from the head office. The project consists of writing operating procedures for all the tasks in the various departments of the client's organisation. There are ten different sections in the organisation, and each section has its own number of procedures to be written. To make sure that the employee is doing her job, the manager asked her to draw up a chart showing how many procedures have been written and how many are still outstanding. Which type of chart would she use to indicate this?
Answer: Stacked chart
5. The school is raising funds to build a start of the art computer laboratory. The headmaster wants a chart in the courtyard to display how much each grade has raised each month of the school year. Which chart would show this the best?
Answer: Bar chart
6. To demonstrate how viable a new computer laboratory will be, the headmaster wants to determine the learners' computer skills. He decides that the number of learners with smart phones will be a good indication of their basic skills. He asks all the learners to indicate on a yes/no questionnaire whether they have a smart phone or not. With this information, he wants to see whether a computer laboratory is going to work and which grade will benefit most. Which chart will give him the best overall indication of how many learners have smart phones and what the distribution of these phones are per grade?
Answer: Pie chart
7. Your Grade 12 class has been asked to develop a website for the school. To determine how successful it is, you have to send the headmaster a chart at the end of each month, showing how many people browsed the site. Which type of chart would show this information the best?
Answer: Bar chart or line chart

A spreadsheet has been created that contains data about car sales.

Open the spreadsheet *Chapter 6_Revision Activity* and complete the following:

1. Insert a function in cell J15 to determine the total number of Toyota vehicles in the showroom. (3)
2. Insert a function in cell J18 to determine the second highest total of all the various types of vehicles in the showroom (column J). (3)
3. Insert a function in cell J19 to determine the total number of vehicles in the showroom. (2)
4. Insert a function in cell J20 to determine the total value of the VW vehicles in the showroom. (3)
5. Use an appropriate spreadsheet feature to format all cars with an engine size of more than 1400 with a green fill colour. (3)
6. A chart/graph was created using the data in the range I3:J16. Change the chart/graph to resemble the chart/graph below by carrying out the instructions that follow. (6)



- a. Insert the text “Number of cars” for the vertical axis.
- b. Change the chart/graph title to “Makes Available”.
- c. Use a spreadsheet feature to format and display each column in a different/varied colour.
- d. Display the borders of the columns as a solid black line.
- e. Move the chart/graph to the Motor worksheet.

Use the following checklist as an assessment guideline:

	Criteria	Total marks
1	Cell J15: =COUNTIF(A3:A57,"Toyota") COUNTIF function Range: A3:A57 OR A:A Criteria: "Toyota"	3
2	Cell J18: =LARGE(J3:J16,2) LARGE function (J3:J16, 2)	3
3	Cell J19: =SUM(J3:J16) Function Correct range linked to function	2

	Criteria	Total marks
4	Cell J20: =SUMIF(A3:A57,"VW",F3:F57) SUMIF function Criteria range: A3:A57 Criteria: "VW" Sum range: F3:F57	3
5	Conditional formatting: Cells J3:J16 Criteria applied: cells with unique values (greater than 1400) Cells formatted with greenish fill colour.	2
6	Chart/Graph: Vertical axis title "Number of cars" added Chart/Graph title changed to "Makes Available" "Vary colours by point" ticked Column borders changed to a solid line (black) Chart/Graph moved to the Motors worksheet	6

TOTAL: [20]

REPORTS AND QUERIES IN DATABASES

CHAPTER OVERVIEW

Unit 7.1 Report grouping

Unit 7.2 Querying a report

Unit 7.3 Data validation

The following learning outcomes are covered by this chapter:

- Create a report containing grouped data.
- Use headers and footers to add additional information to the report.
- Include some basic calculations when creating a report, for example, sum, average, counting, maximum and minimum.
- Add fields with calculations in queries and reports.
- Apply data validation techniques.

GRADE: 12

DATE:

TEACHING TIME: 10 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader

INTRODUCTION

Databases can be used to store a wide variety of data. In order to ensure that the database functions as required, one needs to make sure that it is properly designed for its purpose. In this chapters learner will take a look at how to design a database for a specific scenario.



Open the *Act 7.1(Accommodation_Akkommodasie)* database and work in this database.

1. Create a query called Costs, which is based on the *tblAccommodation* table. Use the *Query Wizard*.
 - a. Display the following fields in the query: RefCode, Accommodation, Rate and Days
 - b. Display only the guests that will stay for four days.
Save and close the query.
2. Create a form called Area, based on the *tblAccommodation* table. Use the *Form Wizard*.
 - a. Display the following fields in the form: Name, Surname, Accommodation and Rate.
 - b. Select any layout of your choice.
 - c. Change the background colour of the entire form to sky blue.
 - d. The heading of the form should read "Accommodation".
Save and close the form.
3. Create a report called Rates, based on the *tblAccommodation* table. Use the *Report Wizard*.
 - a. Display the following fields in the report: Name, Surname, Accommodation, Rate, Days and CellNum.
 - b. Group the data according to the 'Days' field and sort according to the "Surname" field.
 - c. Change the orientation of the report to Landscape.
Save and close the report.

Close the database.

Use the following checklist as an assessment guideline:

Criteria	Yes/No
Did the learner create a query called Costs, which is based on the <i>tblAccommodation</i> table?	
Did the learner display only the guests that will stay for four days?	
Did the learner create a form called Area, based on the <i>tblAccommodation</i> table?	
Did the learner display the following fields in the form: Name, Surname, Accommodation and Rate?	
Did the learner select a layout of their choice?	
Did the learner change the background colour of the entire form to sky blue?	
Did the learner create the heading of the form, which should read "Accommodation"?	
Did the learner save and close the form?	
Did the learner create a report called Rates, based on the <i>tblAccommodation</i> table?	
Did the learner display the following fields in the report: Name, Surname, Accommodation, Rate, Days and CellNum?	
Did the learner group the data according to the "Days" field and sort according to the "Surname" field?	
Did the learner change the orientation of the report to Landscape?	



Activity 7.2

Memorandum

Open the database *Act7.2(Players)* and create the following report based on the *Players* table:

1. Display all the fields.
2. Sort the data according to Player Name.
3. Group the data in the report according to Game played.
4. Calculate the average earned for each game in the footer of the report. Add an appropriate label for the calculation.

Save the report and close the database.

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the student display all the fields?	
Did the student sort the data according to player name?	
Did the student group the data in the report according to game played?	
Did the student calculate the average earned for each game in the footer of the report?	
Did the student add an appropriate label for the calculation?	



Activity 7.3

Memorandum

Open the database *Act7.2(Players)* you created in Activity 7.2 and create the following queries:

1. Create a query called Salary based on the Players table.
 - Include all the fields.
 - List all players that earned more than 7 million, but less than 20 million rand.
 Save and close the query.
2. Create a query called Games based on the Players table.
 - List all the players but exclude players that play *Dota 2* and *League of Legends*.
 - Only use the following fields: "Player Name" and "Game played".
 Save and close the query.
3. Create a query called ID based on the Players table.
 - Display only the "Player ID", "Player Name" and "Game played" fields.
 - List all players who's PlayerID starts with an M or and S.
 Save and close the query.

Close the database

Use the following checklist to assess the learner's task.

Criteria	Yes/No
Did the student create a query called Salary based on the Players table?	
Did the student Include all the fields?	
Did the student list all players that earned more than 7 million, but less than 20 million rand?	
Did the student save and close the query?	
Did the student create a query called Games based on the Players table?	
Did the student list all the players but exclude players that play <i>Dota 2</i> and <i>League of Legends</i> ?	
Did the student only use the following fields: "Player Name" and "Game played"?	
Did the student save and close the query?	
Did the student create a query called ID based on the Players table?	
Did the student display only the "Player ID", "Player Name" and "Game played" fields?	
Did the student list all players who's PlayerID starts with an M or an S?	
Did the student save and close the query?	



Activity 7.4

Memorandum

Answer the following questions by filling in the missing words.

1. Data validation is the process of checking whether your data is (a) *accurate*, in the correct (b) *format* or the correct (c) *type* before allowing your database to record it.
2. A data type check ensures that the data is of the correct data type, e.g. (d) *string*, (e) *integer*, double or datetime).
3. A (f) *input mask* is used to guide users and to make data entry easier.
4. A validation rule is used to specify (g) *requirements* for data entered into the database.
5. A range check ensures that the data falls within a specific range. This is useful for items such as (h) *amounts* or (i) *durations*.
6. A (j) *digit check* ensures that the data is a specific number of characters long before it is recorded.

The *Chapter 7_Revision Activity* database contains details of the samba dance participants.

1. The results of the points for the samba dance competition are stored in the *tbComp* table. Open the *tbComp* table in design view and do the following:
 - a. Change the field size of the Entry field to 15. (1)
 - b. Ensure that the data of the Entry field is inserted in the following format:
 - i. One or two capital letter characters.
 - ii. One or two digits.
 EXAMPLES: B4, A21, AX8, UN30. (5)
 - c. The validation rule set on the Class field does not work. Correct this validation rule by referring to the data in this field.
 - i. Provide suitable validation text.
 - ii. Do NOT test the new rule. (2)
 - d. Move the Year field so that it appears as the last field in the table. (1)

Save and close the *tbComp* table.
2. Create a form called *frm5_2* based on the *tbComp* table, using any layout as follows:
 - a. Add all the fields from the *tbComp* table.
 - b. Add the heading “Entries” in the form header.
 - c. The Class field should display the options (A, B, C, D, E, F) in a combo box.
 - d. Add the name and surname to display in the form footer. (7)

Save and close the *frm5_2* form.
3. Create a query called *qry5_3* based on the *tbComp* table.
 - a. Add the School, Surname, Name and Position fields.
 - b. Sort the query alphabetically, first by Surname and then by School.
 - c. Display only the records of the participants that obtained first position.
 - d. Display only the School, Surname and Name fields. (4)

Save and close the *qry5_3* query.
4. Open the *qry5_4* query.
 - a. Display only the records from 2 March and 3 March 2017.
 - b. Display records where the value in the TotalPoints field is more than 265.
 - c. Create and display a calculated field called NewPoints where all participants’ total points will increase by 10%. (1)

Save and close the *qry5_4* query
5. Create a report named *rpt5_6* based on the *tbComp* table to display as follows:

Scores for the day					
PerformanceDay	Class	Surname	Name	Title	School
2017/02/25	A	Carmo	Agildo	Let's Start This Party	Grande Rio
		Borges	Evandro	Lazy Life	Imperatriz
		Braga	Francine	A Song Of Frenzy	União da Ilha
		Highest Points:	269.2		
C	Menezes	Maiara	I heard I Like You	Em Cima da	
	Highest Points:	268.8			
D	Boaventura	Marcos	Moment For Desire	Mocidade	
	Highest Points:	266.2			
E	Nunes	Caroline	Free Secrets	Villa Rica	
	Highest Points:	266.8			

HINT: The information for each performance day must be displayed.

- a. The report is grouped on more than one level.
 - b. Pay attention to the totals and groupings.
 - c. The *PerformanceDay* field displays per day.
 - d. The screenshot above displays only a part of the report.
 - e. Ignore if *PerformanceDay* appears twice. (7)
- Save and close the *rpt5_6* report.
Save and close the database.

Use the following checklist as an assessment guideline:

Question	Criteria	Yes/No
1.a	Field: Entry <ul style="list-style-type: none"> Field size changed to 15. 	1
b.	Field: PerformanceDay Input Mask: >L?09 <ul style="list-style-type: none"> > L ? 0 9 	5
c.	Field: Class Validation rule: "A" or "B" or "C" or "D" or "E" or "F" <ul style="list-style-type: none"> AND operator changed to OR operator. Suitable validation text entered that refers to characters A–F to be entered. 	2
d.	Field: Year <ul style="list-style-type: none"> Moved to appear last in field list. 	1
2	Form: frm5_2	
	<ul style="list-style-type: none"> Form created with all fields from tbComp table. Heading 'Entries' inserted in form header. Class field changed to combo box. Row source: "A";"B";"C";"D";"E";"F". Row source type: "Value list". Label with your name and surname added in form footer. 	7
3	Query: qry5_3	
	<ul style="list-style-type: none"> Sorted first by Surname then by School. Criteria on Position: 1. School, Surname, Name fields displayed. 	4
4	Query: qry5_4	
	<ul style="list-style-type: none"> Criteria in PerformanceDay: Between #2017/03/02# AND #2017/03/03# Calculated field: [TotalPoints]*110/100 NewPoints field name: [TotalPoints]* Calculation of 10% Added to [TotalPoints] TotalPoints criteria: >265 	1
5	Report: rpt5_6	
	<ul style="list-style-type: none"> Fields inserted PerformanceDay, Class, Surname, Name, Title, School (Ignore sequence) Report firstly grouped by PerformanceDay Performance grouping intervals set to Normal/Day Report secondly grouped by Class Function in Class group footer/group header =Max ([TotalPoints]) 	7

TOTAL [28]

CHAPTER
8DATABASE: REINFORCE
CONCEPTS AND SKILLS

CHAPTER OVERVIEW

Unit 8.1 Design a database

Unit 8.3 Reinforce database concepts and skills



The following learning outcomes are covered by this chapter:

- Apply problem-solving skills in the design and development of a database.
- Design a database for a specific scenario.

GRADE: 12

DATE:

TEACHING TIME: 10 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader



Open the database *Act9.1(CFKData)* and complete the following:

1. Change the design of the Plant table as follows:
 - a. Change the field size of the FamilyCommon field to 50.
 - b. Change the field properties of the EndemicSpecies field so that:
 - i. It is a required field.
 - ii. The data in this field is displayed in fixed format.
 - c. Change the properties of the Listing field so that the user can choose from the options “Endangered” or “Threatened” when entering data.
 - d. Create an input mask for the PlantCode field to accept data in the following format:
 - i. One compulsory letter.
 - ii. Followed by at least two but possibly three characters that could consist of either digits or letters.
 - iii. Display in capital letters.NOTE: Ignore any warning messages that may appear.
 - e. Set the primary key on a more appropriate field.
2. Create a form called *frm9_2* based on the Plant table, containing the following fields: FamilyCommon, FamilyBot, TotalSpecies and EndemicSpecies.
 - a. The form should resemble the example below.

Plant	
FamilyCommon	amet tellus
FamilyBot	cum sed
TotalSpecies	4167
EndemicSpecies	2995.00

- b. Take the following into consideration:
 - i. Only add the fields required as shown on the form above.
 - ii. The font size of the heading is 36 pt.
 - iii. Note the alignment of the heading.
 - iv. The background of the form header is yellow.
 - v. The image *9Erica.jpg* in the examination folder is displayed in the form header, as shown above.
 - vi. Add a button from the available controls to the form. The action of the button is to move to the next record.
- c. Create a query called *qry9_3*.
 - i. The query must use the Plant table to only display the FamilyCommon and FamilyBot fields of all records where the number of EndemicSpecies is more than 1200.
- d. Open the *qry9_4* query.
 - i. Sort and display the FamilyBot field in descending order.
 - ii. Insert and display a calculated field called Perc, which will calculate the percentage that EndemicSpecies is of the TotalSpecies for each record.
- e. Create a report called *rpt9_5* based on the Plant table.
 - i. Show only the FamilyCommon, FamilyBot, EndemicSpecies and Genus fields.
 - ii. Group the records according to the EndemicSpecies field.
 - iii. Display the report in landscape format.
 - iv. Insert a function to calculate the average number of ALL the endemic species in the report.
 - v. Round off the answer to ONE decimal place.
 - vi. Add a descriptive label to the calculation.
 - vii. Ensure that all the data displays fully.

Save and close the database.

You have been asked to assist in the analysis of the places where people eat and the types of food that people eat.

Open the *Chapter 8_Revision Activity* database and do the following:

1. Open the *Recipe_Resepte* table and:
 - a. Assign suitable data types to all fields in the table:
 - i. The Recipe Name field should have a maximum size of 40.
 - ii. The Ingredient and Method fields will have more than 255 characters. (5)
 - b. Change the name of the Calories per serving field to Number of calories per serving. (1)
 - c. Add a new field called Photo. Use a suitable data type. (2)
 - d. Set a suitable validation rule on the Number of calories per serving field to ensure that only values between 0 and 50 are entered. Set suitable validation text to guide the user. (4)
 - e. Use a drop-down list in the Food Category field to ensure that only “Breakfast”, “Lunch”, “Snack” and “Supper” can be captured in the same order. (3)

Save and close the table *Recipe_Resepte*.
2. Create a form called *frmInfo* based on table Nutritional Value.
 - a. Only add the Type of Food, Healthy and Protein(g) fields to the form. (1)
 - b. Change the heading of the form to ‘Protein Content’ and ensure that the text is centred in the form header. (1)
 - c. Add the date as a field in the form footer. (2)

Save and close the form *frmInfo*.
3. Create a query called *qryNutVal* based on the Nutritional Value table as follows:
 - Only the Franchise, Calories and Carbohydrates(g) fields must be displayed.
 - The calorie content must be between 350 and 1000 inclusive.
 - Carbohydrates(g) must be greater than 20.
 - Only Franchises starting with “Bu” must be listed
 - Sort the Type of Food field in descending order. (6)

Save and close the query *qryNutVal*.
4. Open the query *qryKilojoule*. The Calories field supplies the total calories per food type.
 - Insert a calculated field called Kilojoules which will calculate the number of kilojoules for each meal if 1 calorie = 4.17 kilojoules.
 - Display only the records of Burger Queen Franchise and do not display any type of food with zero calories.

Save and close the query *qryKilojoule*. (5)
5. Create a report called *CaloriesCounter* based on the Nutritional Value table as follows:
 - Display only the Franchise, Type of Food and Calories fields.
 - Group the records in the report according to the Franchise field, keeping all the franchise groups together on one page.
 - Sort the records according to the Type of Food field.
 - Insert a function in the report, with an appropriate label, to determine the average number of calories for the food types produced by each franchise.

Round these totals to the nearest whole number. (8)

Save and close the report.

Use the following checklist as an assessment guideline:

Question	Criteria	Yes/No
1.	Field: Recipe Name <ul style="list-style-type: none"> Data type changed to Text. Field size 40. Field: Food Category <ul style="list-style-type: none"> Data type changed to Text. Field: Calories per serving <ul style="list-style-type: none"> Data type changed to Number. Field: Ingredients and Method <ul style="list-style-type: none"> Data type changed to Memo. 	5
2.	Field: Calories per serving <ul style="list-style-type: none"> Changed to Number of calories per serving. 	1
3.	New Field: Photo <ul style="list-style-type: none"> Photo field inserted. Data type changed to OLE Object. 	2
4.	Field: Number of calories per serving <ul style="list-style-type: none"> Validation Rule >0 and<50 OR >=1 and <=49 OR Between 0 and 50 Validation text Enter a number between 0 and 50 	4
5.	Field: Food Category <ul style="list-style-type: none"> Food category field is lookup field. Has four values: Breakfast, Lunch, Snack, Supper. In correct order. 	3
2	Form created frmInfo	
2.1	<ul style="list-style-type: none"> Form fields Correct fields Type of Food, Healthy and Protein(g) included. 	1
2.2	Form header <ul style="list-style-type: none"> Heading centred. 	1
2.3	Form footer <ul style="list-style-type: none"> Date added as a field. In the footer of the form. 	2
3	Query: qryNutVal	
	Display only Franchise, Calories and Carbohydrates(g) fields Criteria: <ul style="list-style-type: none"> Calories field: between 350 and 1000 Carbohydrates(g) field: >20 Franchise field: like Bu* Sort: <ul style="list-style-type: none"> Type of Food: descending. 	6

Question	Criteria	Yes/No
4	Query: qryKilojoule	
	Calculated field (Kilojoules) added <ul style="list-style-type: none">• Correct calculation of Kilojoules: [Calories] *4.17• Correct criteria entered for Franchise: Burger Queen• Correct criteria entered for Calories: >0	5
5	<ul style="list-style-type: none">• Report: CaloriesCounter	
	Report is based on Nutritional Value table: <ul style="list-style-type: none">• Report shows only Franchise, Type of Food and Calories fields.• Report grouped according to the Franchise field per page.• Report group sorted (ascending or descending) according to the Type of Food field.• Formula in Group footer or Group header.• = Round(Avg([Calories]))	8

TOTAL [38]

TABLES IN HTML

CHAPTER OVERVIEW

Unit 9.1 HTML tables

Unit 9.2 Develop a web page for a specific scenario

The following learning outcomes are covered by this chapter: 

- Use various HTML tags to create an HTML table with various attributes.
- Develop a web page for a specific scenario.

GRADE: 12

DATE:

TEACHING TIME: 6 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader

INTRODUCTION

In this chapter, learners will look at how to add a table to a web page, using various building blocks. They will also learn how to edit the table to make it look visually appealing. Finally, they will look at an example on how to create a web page for a specific scenario.



Activity 9.1

Memorandum

Complete the following practical activity.

1. Create a new web page by opening Notepad ++. Type the following tags in your text editor:

```
<html>
<head>
<title>My best friends</title>
</head>
<body>
</body>
</html>
```

2. Design a table after the title with the following information:

- a. Names of 10 learners in your class.
- b. Their favourite TV show.
- c. Their favourite book.
- d. Their favourite game.

Example:

Names	TV show	Book	Game
John Miller	Mr Bean	The Prodigy	X man

3. Use appropriate tags so that you include the following elements:

- a. Headings for each column.
- b. A table border with a width of 3 pixels.
- c. A table width of 300 and height of 150.
- d. A different background colour for each column.

Save the Notepad file as Friends.html.

Answer:

```
Example of code:
<table border="3">
  <tr>
    <th bgcolor="yellow" width="300" height="150">Student Name </th>
    <th bgcolor="blue" width="300" height="150">Favourite TV show </th>
    <th bgcolor="green" width="300" height="150">Favourite Book </th>
    <th bgcolor="red" width="300" height="150">Favourite Game </th>
  </tr>
  <tr>
    <td bgcolor="yellow" width="300" height="150">Name </td>
    <td bgcolor="blue" width="300" height="150">TV show </td>
    <td bgcolor="green" width="300" height="150">Book </td>
    <td bgcolor="red" width="300" height="150">Game </td>
  </tr>
  <tr>
    <td bgcolor="yellow" width="300" height="150">Name </td>
    <td bgcolor="blue" width="300" height="150">TV show </td>
    <td bgcolor="green" width="300" height="150">Book </td>
    <td bgcolor="red" width="300" height="150">Game </td>
  </tr>
</table>
```

Student name	Favourite TV Show	Favourite Book	Favourite Game
Name	TV Show	Book	Game
Name	TV Show	Book	Game



Activity 9.2

Memorandum

Complete the following practical activity on a computer.

1. Use an HTML editor such as Notepad++ and the information from the previous section to create a web page on a topic of your choice. Save the web page as Act10.2(Own topic).
2. The web page must include the following elements:
 - A title
 - Headings (2 different heading styles)
 - An image (with Alt text)
 - Links (to at least two outside websites)
 - Tables (table headers, at least 3 columns and 3 rows)
 - Basic styling (with square styled bullets)

Save and close the web page.

Answer:

Example of code:

```
<html>
<head>
<title>Students Favourite Things</title>
</head>
<body>
<center>
<h1 style="background-color: blue; color: white">Here is what my friends like</h1>
</center>
<table border="3">
  <tr>
<th bgcolor="yellow" width="300" height="150">Student Name </th>
<th bgcolor="blue" width="300" height="150">Favourite TV show </th>
<th bgcolor="green" width="300" height="150">Favourite Book </th>
<th bgcolor="red" width="300" height="150">Favourite Game </th>
  </tr>
  <tr>
<td style="text-align:center" bgcolor="yellow" width="300" height="150">Name </td>
<td style="text-align:center" bgcolor="blue" width="300" height="150">TV show </td>
<td style="text-align:center" bgcolor="green" width="300" height="150">Book </td>
<td style="text-align:center" bgcolor="red" width="300" height="150">Game </td>
  </tr>
  <tr>
<td style="text-align:center" bgcolor="yellow" width="300" height="150">Name </td>
<td style="text-align:center" bgcolor="blue" width="300" height="150">TV show </td>
<td style="text-align:center" bgcolor="green" width="300" height="150">Book </td>
<td style="text-align:center" bgcolor="red" width="300" height="150">Game </td>
  </tr>
</table>
</body>
</html>
```

Here is what my friends like			
Student name	Favourite TV Show	Favourite Book	Favourite Game
Name	TV Show	Book	Game
Name	TV Show	Book	Game

You are required to assist in designing an information pamphlet to help save the elephants. Open the incomplete *Elephant_Olifant.html* web page in a web browser and also in a text/HTML editor and do the following activity.

Take note of the following:

- Question numbers are inserted as comments to show approximately where the answer(s) should be inserted.
- An HTML tag sheet has been attached for reference.
- The final web page should look like the example below.



1. Correct the HTML tags to display the text “Save the Elephant” in the browser tab. (1)
2. Add HTML tags to display the Eleph_Olif.jpg image found in the examination folder. (4)
 - a. Align the picture to the left, as shown in the example above.
3. Format the text “SAVE THE ELEPHANT” with the font “Elephant”. (1)
4. Increase the font size of the text “FROM THE KIDS ANIMAL PROTECTION” by 1. (1)
5. Add a horizontal line with the following properties below the body tag, as indicated in the file: (3)
 - a. Set the line colour to a yellow colour.
 - b. Set the line size to 4.
6. Add a row with the text “Asian Elephant” to the table. (3)
 - a. The table should appear as follows:

African Elephant
Asian Elephant
7. Format the text “Physical description” with a Heading 2 style. (1)
8. Display the text “Proboscidea” in italics. (1)
9. Apply numbering to the text under the heading “Threats to elephants” as follows: (2)
 - a. Poaching is still a problem.
 - b. Habitat loss is a concern.
10. Insert a link on the words “Save the Elephant” that links to the document Save_Red.docx found in the practise documents folder. (3)

Save and close the web page.

Use the following checklist as an assessment guideline:

	Criteria	Total marks
1.	Title: <title>Save the Elephant</title> <ul style="list-style-type: none"> Title markers used correctly. 	1
2.	Image: <ul style="list-style-type: none"> Markers used to insert 6Eleph_Olif-image. Image aligned left. 	4
3.	Font: SAVE THE ELEPHANT <ul style="list-style-type: none"> Font changed to "Elephant". 	1
4.	Font size: FROM THE KIDS ANIMAL PROTECTION <ul style="list-style-type: none"> Size increased by 1. 	1
5.	Horizontal line: <hr color="yellow" size="4"/> <ul style="list-style-type: none"> Horizontal line added Yellow colour, color="yellow" Size changed to 4, size="4" 	3
6.	Table: <tr> <td>Asian Elephant</td> </tr> <ul style="list-style-type: none"> Row added. Correct text "Asian Elephant". 	3
7.	Heading "Heading 2": <h2>Physical description</h2> <ul style="list-style-type: none"> Text: "Physical description" displayed with "Heading 2" style. 	1
8.	Italics: <i>Proboscidea</i> <ul style="list-style-type: none"> Text "Proboscidea" displayed in italics. 	1
9.	Numbering: <ol type="i"> Poaching is still a problem. Habitat loss is a concern. <ul style="list-style-type: none"> Text displayed as a numbered/sorted list. Main points displayed as Roman numerals. 	2
10.	Link: Save the Elephant <ul style="list-style-type: none"> Link added correctly. Correct words used to link "Save the Elephant". Linked to the correct folder Save_Red. 	3

TOTAL: [20]



CHAPTER OVERVIEW

Unit 10.1 Good website/page design

Unit 10.2 Reinforce concepts and skills



The following learning outcomes are covered by this chapter:

- Explain the principles of good website/page design.
- Develop a website/page with a good design.

GRADE: 12

DATE:

TEACHING TIME: 2 hours

Resources

Each learner should have access to:

- CAT 12 textbook
- Workbook
- Computer with Windows 10
- Mouse
- Keyboard
- Internet
- QR reader

INTRODUCTION

In this chapter learners will learn about good website design that keeps the reader's attention and motivates them to continue exploring the site.

Complete the following activities in order to revise your knowledge on website/page design.



Activity 10.1

Memorandum

You need to complete a web page about rhodium. Open the incomplete Rhodium.html web page in a web browser and also in a text/HTML editor (NOT a word processing program such as Word).

Take note:

- Question numbers are inserted as comments in the coding to show approximately where the answer(s) should be inserted.
- An HTML tag sheet has been attached for reference.
- Your final web page should look like the example below.

Rhodium Investment: The Rarest of Precious Metals

Rhodium, like palladium, is a member of the platinum metals group. It is frequently used to harden alloys of platinum and palladium. Rhodium is a key component in the world automobile industry. Rhodium investors have seen the metal's price increase rapidly during the last few years, but with a soaring price comes the worry that the bubble may eventually burst. Some of rhodium's principal uses are as a finish for jewelry and mirrors, in electrical connections and in aircraft turbine engines. It is also frequently used in catalytic converters in automobiles with internal combustion engines, which help to curb emissions. Lastly, rhodium can be considered the ultimate symbol of wealth - above and beyond gold or platinum - because of its price and rarity.

Rhodium doesn't come cheap by any means, and its price has been steadily rising since 2003, according to Kiron Precious Metals, a metal dealer. In a five-year span beginning in 2003, rhodium has averaged a price of R3 224.91 per ounce, climbing higher than R2 000 per ounce between January and April of this year. What has helped rhodium prices steadily rise is its use in catalytic converters, where - especially in diesel-powered vehicles - the metal has no substitute. Europe in particular has a high demand for rhodium, as 60 percent of all its automobiles are diesel-powered. Rhodium is expected to keep outpacing other precious metals in price as its need in the following catalytic converter continues:

- Diesel catalytic converters
- Non-diesel catalytic converters

The methods used to acquire rhodium are quite complex, as it is one of the rarest natural metals produced in significant quantities, according to ResourceInvestor.com. No rhodium-specific mine exists; rather, the metal is mined with other metal ores such as silver, gold and platinum, and requires industrial extraction.

South Africa holds the world's largest mines where rhodium can be found. Additionally, this country is the principal exporter of this precious metal, exporting 90 percent of the world's supply of rhodium. Annual world production of rhodium is estimated between seven and eight tons, according to Precious Metals Online. In comparison, the world production of gold was more than 2 250 tons in 2006, according to the United States Geological Survey.

More information at: www.ResourceInvestor.com

Rhodium Prices		
Metal	Year	Price
Rhodium	2014	R1 235

1. Format the text "Rhodium Investment: The Rarest of Precious Metals" so that it appears centred and is formatted in a "heading 1" style in a red font colour.
2. Add a horizontal line with a 90% width below the heading "Rhodium Investment: The Rarest of Precious Metals".
3. The tag used to insert an image as a background is `<background="name of file">`.
 - a. Insert the image Rh as a background for the (entire) BODY of the web page.
4. Add the following items in a list with square bullets AND leave line breaks between the two list items, as shown below.
 - a. Diesel catalytic converters
 - b. Non-diesel catalytic converters.
5. The RMine image has been inserted below the bulleted list. Edit the image as follows:
 - a. Set the height to 100 pixels and the principal width to 200 pixels.
 - b. Set the border to 5 pixels.
6. Display the text "South Africa" in bold and italics.
7. An attempt was made to create a link on the text "www.ResourceInvestor.com" to link to the website www.ResourceInvestor.com.
 - a. Modify the HTML code so that the website can be opened when the user clicks on the text ("www.ResourceInvestor.com") in the web browser.
 - b. Take note, you will know that the link works correctly if the web browser opens and the address displays in the address bar.
8. The web page includes a table consisting of three rows and three columns. Modify the table as follows:
 - a. Set the cell spacing of the table to 10 pixels.
 - b. Place the text "Rhodium Prices" in the first row, as shown in the example. NO other cells should appear in the first row.

Rhodium Prices		
Metal	Year	Price
Rhodium	2014	R1 235

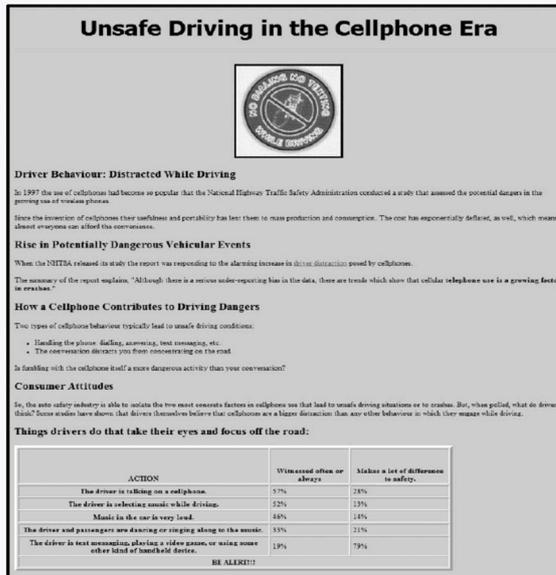
Use the following checklist to assess the learner's task.

Criteria	Yes/No
Heading, alignment and font colour <code><h1 align="center">Rhodium Investment: The Rarest of Precious Metals</h1></code> <ul style="list-style-type: none"> ● "Rhodium Investment: The Rarest of Precious Metals" appear as heading 1 ● Alignment: center ● Font colour: red (Note to marker: Accept if font changes implemented with a paragraph tag.)	
Horizontal line <code><hr width="90%"/></code> <ul style="list-style-type: none"> ● Horizontal line added ● Line width set to 90% 	
Background image <code><body background="6Rh.jpg"></code> <ul style="list-style-type: none"> ● background="6Rh.jpg" inserted correctly ● In body tag 	
Unordered list and line break <code><ul type="square">Diesel catalytic converters
Non-diesel catalytic converters</code> <ul style="list-style-type: none"> ● Bulleted list added ● Bullet type: square ● Line break added between bullets (not paragraph). 	
Image: height, width and border <code></code> <ul style="list-style-type: none"> ● Height = 100 ● Width = 200 ● Border = 5 	
Formatting: Bold and italics <code><i>South Africa</i> OR <i>South Africa</i></code> <ul style="list-style-type: none"> ● Bold applied to "South Africa". ● Italics applied to "South Africa". 	
Link <code> www.ResourceInvestor.com</code> <ul style="list-style-type: none"> ● Link text "www.ResourceInvestor.com" inserted OR "http://www.ResourceInvestor.com". ● Link "href" added correctly. (Note to marker: The link will work correctly if the web browser opens and the address displays in the address bar. No Internet access is needed.)	
Table: Cell spacing and colspan <code><table align="center" border="3" cellspacing = "10"><tr> <td colspan = "3">Rhodium Prices</td></tr><tr> <th>Metal</th><th>Year</th><th>Price</th></tr><tr> <td>Rhodium</td><td>2014</td><td>R1 235</td></tr></table></code> <ul style="list-style-type: none"> ● Cellspacing = 10. ● First row: colspan = (appears as a "merged" cell). ● Text appears in the first row ("Rhodium Prices"). 	

Open the incomplete *Beware.html* web page in a web browser and also in a text editor (NOT a word processing program such as Word) and complete the activity.

Before starting the activity, take note of the following:

- Question numbers are inserted as comments in the coding as guidelines to show approximately where the answer(s) should be inserted.
- The web page may display differently, depending on the browser used.
- An HTML tag sheet has been attached for reference.
- The final web page should look like the example below.



1. Format the heading "Unsafe Driving in the Cell phone Era" as follows:
 - a. Change the font type to Tahoma. (2)
 - b. Change the font size to 24 pt. (2)
 2. Insert a horizontal line under the heading "Unsafe Driving in the Cell phone Era". (1)
 3. Centre the picture horizontally and place a border of 5 pt around it. (2)
 4. Find the text "Driver Behaviour: Distracted While Driving". Change this to a level-two heading. (1)
 5. Find the text "driver distraction" under the heading "Rise in Potentially Dangerous Vehicular Events".
 - a. Create a link on this text to the anchor 'Distraction' that already exists in the document. (3)
 6. Find the text starting with "Handling the phone ..." and ending with "... on the road".
 - a. Place this information in a bulleted list, as shown in the example above. (2)
 7. Find the table under the heading "Things drivers do that take their eyes and focus off the road:."
 - a. Change the table as follows:
 - i. Change the table background colour to light blue.
 - ii. Set the space between the text and the cell borders to 3 pt.
 - iii. Set the width of the table to 80%.
 - b. Change the first row of the table as follows:
 - i. Set the height of the first row to 80 pt.
 - ii. Vertically align the content of the first row to appear at the bottom.
 - iii. Change the heading "Action" to italics.
 - c. Add the data 14% to the cell in the third column of the fourth row.
 - d. Merge the cells in the last row of the table. (9)
- Save and close the web page.

Use the following checklist as an assessment guideline:

	Criteria	Total marks
1.a	Heading 1 font type <code><h1>Unsafe Driving in the Cellphone Era</h1></code> <ul style="list-style-type: none"> Font changed to Tahoma. 	2
1.b	<ul style="list-style-type: none"> Font size correctly set to 24. 	
2.	Horizontal line <code><hr/></code> <ul style="list-style-type: none"> Horizontal line inserted. 	1
3.	Picture and border <code><p align="center"></p></code> OR <code><center></center></code> <ul style="list-style-type: none"> Picture aligned to centred. Border around picture 5 pt. 	2
4.	Heading <code><h2>Driver Behaviour: Distracted While Driving.</h2></code> <ul style="list-style-type: none"> Text "Driver Behaviour: Distracted While Driving." appears as heading 2. 	1
5.	Hyperlink to anchor <code>driver distraction</code> <ul style="list-style-type: none"> Link tags correctly inserted. On words "driver distraction". Correct anchor name. 	3
6.	Bulleted list <code> Handling the phone: dialling, answering, text messaging, etc. The conversation introduced to the environment. </code> <ul style="list-style-type: none"> Unordered list <code></code> created. List items added. 	2
7.a	Table <code><Table border="5" bgcolor="lightblue" cellpadding="3" width="80%"></code> <ul style="list-style-type: none"> Table background colour changed to "lightblue". Cellpadding set to 3. Table width set to 80%. 	9
7.b	<code><tr height="80" valign="bottom"> <th><i>ACTION</i></th></code> <ul style="list-style-type: none"> Row height set to 80. Vertical alignment set to bottom. Tags added to display "Action" in italic. 	
7.c	<code><td>14%</td></code> <ul style="list-style-type: none"> Data "14%" added to fourth row, third column. 	
7.d	<code><td align="center" colspan="3">BE ALERT!!!</td></code> <ul style="list-style-type: none"> Cells in the last row merged. 	

TOTAL: [20]