Essential Computing

Primary 5

Teacher's Guide

Free CD

ESSENTIAL
Computing
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Teacher's Guide

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How to use this Teacher's Guide

This Teacher's Guide provides basic and practical ways to teach key tasks required by the Computing Curriculum for Primary Schools. It closely follows the curriculum requirements and outcomes, tying to the Strands, Sub-Strands and Performance Indictors. A FREE CD is provided with additional printable worksheets and PowerPoint presentations that can be used on a projector in your classroom or printed out. Also included is additional content specifically for the teacher – an e-book providing guidance on how to Integrate ICT in the classroom and a handy reference of key concepts in Computing and the 4th Industrial Revolution.

In this Teacher's Guide for Basic 5, you can expect to find teaching skills that focus on high levels of engagement for learners through active learning styles, such as teach-backs learner group presentations, learner's self-assessment and peer-assessment activities, including many opportunities for small group or pair discussions and evaluations with constructive feedback to each other. Many of these pedagogical approaches require the teacher to act as a facilitator who skilfully guides the learning process by employing targeted questions at appropriate times to encourage learners to think deeply on the more difficult or complex concepts and content. The scaffolding provided in the worksheets and activities are underpinned by Bloom's taxonomy. Additional 21st-century pedagogical approaches, such as the 'Flipped Classroom', 'CLIL' and 'Lesson Study', have not been explored as methodologies in this book, but are ideas that teachers might wish to explore to enhance learner engagement and understanding of the concepts and content provided in the Learner's Book.

In the Learner's Book, the 'Contents page' section indicates the number of Strands and the main topics in each Strand. The 'Introduction' at the beginning of each Strand provides information covered in that Strand. The 'Revision' section at the end of each Strand comprises a 'Check your Progress' section that covers questions relating to the whole Strand. These could be used in a variety of ways that might assist in lesson preparation.

Tasks

Tasks provide a guide to teachers on how a concept or activity required by the curriculum could be taught. These will prove invaluable for teachers new to the subject. Tasks are numbered for each Strand, starting from number 1. Teachers will need to adjust the amount of time they could spend on each Strand based on the number of lessons per academic year. Some content, concepts or practical tasks may require slightly more time than might be available in a lesson and it is left to the discretion and professionalism of the teacher to allocate how much time they believe learners of different abilities may require to master the more difficult content and concepts.

The Content standard states the specific skills that learners should master and are linked to the corresponding Sub-strand. Each Sub-strand and its related Content standard will be accompanied by a set of Indicators, which are different for each task.

Each Indicator is linked to Performance indicators for all the ability groups that teachers may have to cater for in each teaching group. Differentiation is considered at the level of the expected outcomes expressed in the Performance indicators for each lesson as follows:
- '**ALL**' refers to the majority of learners, and the expected skills will be commensurate with the lower levels in Bloom's taxonomy, such as recall and comprehension.
- '**SOME**' refers to the more able learners or, in some cases, the less able learners depending on what the performance indicator stipulates. Learners in this group should be able to do slightly more or less than the majority of learners and be able to analyse or interpret the more difficult concepts and content.
- '**FEW**' refers to the most able learners who could be expected to do the higher-order thinking skills according to Bloom's taxonomy, such as evaluating and synthesis.

The **Core competencies:** indicate the broad areas of the curriculum that are considered in each task. They lend themselves to broad interpretation in the way teachers facilitate the learning and the way learners engage in their learning process. Tasks tend to incorporate high levels of creativity, innovativeness, communication and collaboration from learners. It includes content that fosters a healthy cultural identity yet highlights the importance of subscribing to a global citizenship. The 21st-century pedagogies prescribed encourage learners to be confident leaders and focus on personal development within the context of digital literacy.

The Key Words are a very important component for learners who are not mother tongue speakers of English. The methodology uses a variety of creative ways to familiarise learners with the key words for each lesson, mostly in the '**Phase 1:** Start of task' section.

Resources for use during a task can be found in the section 'On CD'. Resources may include worksheets, presentations to be used, self-assessment criteria or peer-assessment criteria, evaluation criteria, etc.

The '**Phase 1:** Start of task' section should not last longer than 5–8 minutes. There are many creative ways to start a task, and this section is merely a guide for teachers to introduce their learners to each new topic.

The '**Phase 2:** Main' section is merely a guide for teachers to use in their lessons. Teachers might have to adjust some aspects because much will depend on the ability of the learners in each class and their pace of learning. This section of a task should last approximately 20 minutes in a 30 minute lesson.

The '**Phase 3:** End of task' section can be used to reflect on the learning in each task or for consolidation of key concepts learnt. Teachers may wish to try some of their own creative 'End of task' ideas and use the suggested ideas as a guide. This section should typically last approximately 5–8 minutes.

Low-resource schools

The 'Low-resource school' section caters for schools or tasks where electronic devices are not available. Teachers in such situations should prepare in an entirely different way from the ways suggested in most of the tasks in this book. However, there are numerous parts of tasks that do not require learners to be working on a computer. Teachers might be able to use the following ideas:

- Prepare flashcards with key words by placing a picture on one card and its definition on another card. Hand one card to each learner randomly and ask learners to find their match.
- Ask learners to explain or describe in their own words their understanding of their key word.
- Create or provide classroom posters for your display boards. Use these for reference during explanations.
- Create 'find the matching words' activities by using the key words lists.
- Create 'fill in the missing words' worksheets.
- Draw information-rich sketches on a writing board, developing a discussion or explanation as the drawing is being developed and using the Learner's Book as a point of reference.
- Ask learners to do the activities in the Learner's Book or the Teacher's Guide that do not require the use of a computer.
- Arrange learners in groups to work through questions in the Learner's Book or Teacher's Guide.

Extension activities

The 'Extension activity' section serve as differentiation materials to challenge the more able learners in a class. Teachers might wish to use the extension activities as follows:

- with the more able learners only
- in pairs where a more able learner works together with a less able learner
- in mixed ability groups who might present their answers as a group to the rest of the class for all ability learners individually, at the discretion of the teacher.

Answers

The 'Answers' section provides possible answers to the activities and questions in the Learner's Book, and to the worksheets available on the CD. These are by no means exhaustive and any other reasonable answers should be considered by the teacher.

There are several links to websites and YouTube videos, and learners are encouraged to create their own digital resources as a means to prepare our 'digital natives' for their future world of work. It would be wise to adopt an open mind to the use of mobile phones and electronic devices to enhance the learning process.

I hope you enjoy using this Teacher's Guide as much as I did in producing it.

Introduction

In this strand, teachers can expect to explore a range of topics in four sub-strands:

- Generation of computers and the parts of a computer and other gadgets – types of output devices, differences between analogue and digital devices, the characters on a keyboard, further features of the MS Windows interface, building on those explored in Basic 4, and a summary of the other four generations of computers compared to only the first generation of computers mentioned in Basic 4.

- Introduction to the MS Windows interface – a more in-depth exposition of the features of the MS Windows interface. Lessons include tasks for learners to personalise the desktop background and explore different locations on their computers.

- Data, sources and usage – identifying primary and secondary sources of data, sending and receiving data, carrying out calculations on data, recognising data types, creating and analysing diagrams and tables from collected data.

- Technology in the community (Communication) – evaluate the effects of technology used at home, school and the local community.

Sub-strand 1: Generation of computers and parts of a computer and other gadgets

Task: 1 of 28

Sub-strand: 1. Generation of computers and parts of a computer and other gadgets

Content standard: B5.1.1.1 Identify parts of a computer and technology tools.	Indicators: B5.1.1.1.1 Recognise and use output devices. B5.1.1.1.2 Describe the types of output device and identify their uses.
Performance indicator: **ALL** learners will be able to recognise output devices. **SOME** learners will be able to use output devices. **FEW** learners will be able to recognise and use all output devices.	Core competencies: 1. Creativity and innovation 2. Communication and collaboration 3. Personal development and leadership

Key words: softcopy, hardcopy, computer monitor, projector, audio-electrical signals, printed images, printer, speakers

In this task:

The teacher should use the **Task 1 Presentation** on recognising output devices, and allow learners to name of the output devices.

Learners should complete the **Task 1 Worksheet.pdf** and peer-assess each other's work before giving constructive feedback to each other.

Resources required

On CD

- Task 1 Presentation.pptx
- Task 1 Worksheet.pdf

Phase 1: Start of task

Divide the class into TWO groups. Allow each group to have a turn to answer each question as it appears in the **Task 1 Presentation.pptx** on recognising output devices.

Phase 2: Main

Use the Learner's Book section on output devices and the **Task 1 Worksheet.pdf**. The scenarios on the worksheet should enable learners to understand the use of output devices as they might be used in a real-life situation.

Phase 3: End of task

Learners should swap their answers. Allow them to mark each other's work and to give each other constructive feedback.

Extension activity

Refer the more able learners to the section on input devices from their previous year in Basic 4. Recap their understanding by letting them attempt Activity 1.1 in the Learner's Book.

Answers to Activity 1.1

Learners' responses to some of the questions will vary. In these cases, an idea is given of what to look for in a correct response.

1.

Computer peripherals	Description and use
Mouse	An input device that you operate with your hand to point and select. You can use left-click, right-click or use it to drag files, folders, icons, text.
Keyboard	An input device used to enter letters, numbers and symbols into a computer.
Monitor	It is an output device that lets you interact with your computer. You can see what you enter and what the computer has processed.
Speakers	Hardware that produces audio or sound from a computer to be heard by the listener.
Printer	Hardware that prints onto paper. It can print text, graphics, numbers.

Joystick	A joystick is a hardware device that controls a cursor (like a mouse) often used when playing games.
Light pen	It is an input device that allows you to point to objects or to draw on the screen.
Pointing stick	It is a small knob usually found in the middle of a keyboard and worked by pushing it with your fingers in the direction that you want the cursor to move.
Touchpad	It's a touch-sensitive area on a computer or tablet and it acts as a means to place the cursor where you want It to be.
Webcam	A camera integrated into a computer and is used to take photographs for inputting into the computer.

2. The leaners write the names of any two other input devices in the last two rows of the table.
3. List of output devices:
   • printer - hardcopy printout copies and be regarded as output, such as the contents of a program on the computer
   • monitor or screen - allows the user to see the contents of the computer, such as text, video, etc.
   • speakers - allows the user to hear audio content from a computer.

Answers to Activity I.2

Screen type	Advantages	Disadvantages
CRT		Heavy and bulky. Outdated.
LCD	Does not use much power. Can run from batteries. Compact in size.	Can have dark areas from different angles. Costly.
LED	Low environmental impact. More durable than CRT or LCD.	More expensive.
PDP	Monitors can be thinner and brighter.	Use a lot of power. Fewer dark areas.
OLED	Are needed for portable gadgets.	
Touchscreen	Do not need separate keyboard or mouse. Can use fingers instead. Therefore, much more portable.	Because they are used on portable gadgets, can be easily damaged.

Answers to Task 1 Worksheet

1.
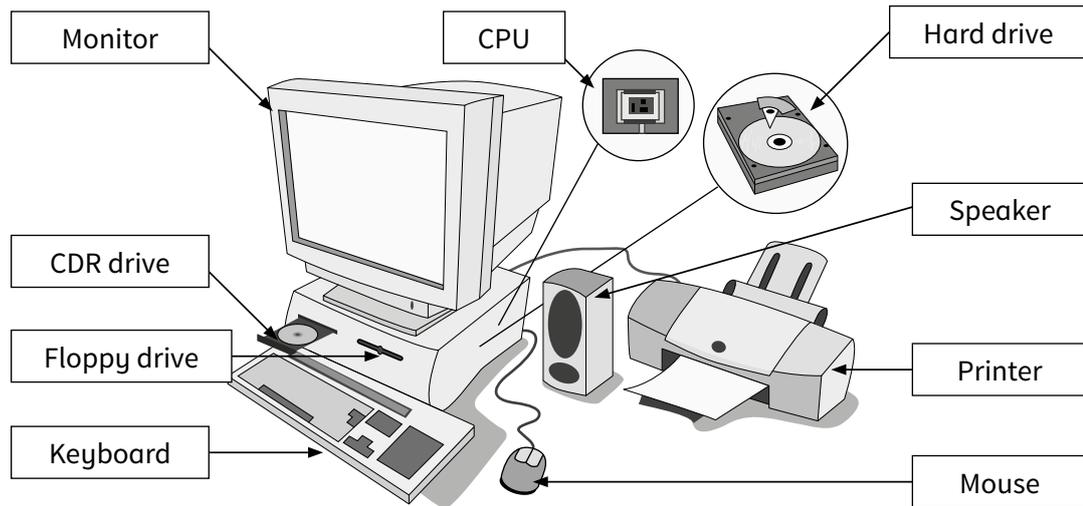
Task: 2 of 28

Sub-strand: 1. Generation of computers and parts of a computer and other gadgets

Content standard: B5.1.1.1 Identify parts of a computer and technology tools.	**Indicator:** B5.1.1.1.3 Distinguish the difference and similarities between analogue and digital devices, e.g. telephone, mobile phone, radio, tablets, satellite, etc.
Performance indicator: **ALL** learners will be able to differentiate between analogue and digital devices. **SOME** learners will be able to establish the similarities between analogue and digital devices. **FEW** learners will be able to distinguish between both the differences and similarities of analogue and digital devices.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Personal development and leadership

Key words: analogue devices, digital devices, distinguish, differentiate, similarities, satellite, tablet

In this task: **The teacher should** use the **Task 2 Presentation.pptx** on analogue versus digital devices and refer to the relevant section in the Learner's Book for further information. **Learners should** use the **Task 2 Reading Worksheet.pdf** to guide their activities during the task.

Resources required

On CD

- Task 2 Presentation.pptx
- Task 2 Reading Worksheet.pdf

Phase 1: Start of task

Use Activity 1.3 in the Learner's Book and allow learners to talk about the questions in pairs or small groups.

Phase 2: Main

Use the **Task 2 Presentation.pptx** to discuss analogue vs. digital devices.
Allow learners to use the **Task 2 Reading Worksheet.pdf** together with the last slide of the **Task 2 Presentation.pptx** (the double bubble diagram to find the differences and similarities between analogue and digital devices).

Phase 3: End of task

Ask learners to suggest a few examples of where digital devices can make a difference in their daily experiences.
Relate analogue devices to aspects affecting the learners' daily lifestyles and ask them to suggest a few ways in which analogue devices may seem old-fashioned or out of date.

Answers to Activity 1.3   Learner's Book page 7

1. Hard copy: printers
   Soft copy: monitor or screen, projector, audio electrical signals
2. Text, pictures, graphs, etc.; a 3D printer can output games, toys, spare parts, food
3. When you want a room full of people to be able to see what is on your own computer screen, such as in a classroom or in front of an audience
4. Speakers to output audio content from a computer and a SMART TV to play pre-recorded TV content in the form of videos.

Answers to Activity 1.4   Learner's Book page 9

1. The first two examples are digital; the last one is analogue.
2. There are many other examples of analogue and digital devices. Think of as many examples as you can and compare the differences between them.

Digital devices –record their data digitally in binary, ones and zeros	Analogue devices – records their data linearly from one point to another
Hard drive	VCR
Camcorder	Tape player
CD recorders	Record player

Task: 3 of 28

Sub-strand: 1. Generation of computers and parts of a computer and other gadgets

Content standard: B5.1.1.1 Identify parts of a computer and technology tools.	**Indicator:** B5.1.1.1.4 Identify the left, right mouse button, holding of mouse, performing single, double and triple clicking and dragging object.

Performance indicator:

ALL learners will be able to identify the left, right mouse button, holding of mouse, performing single, double and triple clicking and dragging object.

SOME learners will be able to use a mouse in all of the above-mentioned ways.

FEW learners will be able to articulate the methods for using a mouse in all of the ways mentioned above.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Personal development and leadership

Key words: mouse, wireless, touchpad

In this task:

The teacher should divide the class into ability groups and follow the instructions as mentioned in Phases 1, 2 and 3 of this task.

Learners should work within their ability to groups to carry out the specific tasks for their groups.

Resources required

Phase 1: Start of task

Ask three learners to share with the whole class how they use a mouse.

Phase 2: Main

Explain to learners all the ways that a mouse can be used.
Divide the class into ability groups and ask the most able learners to create a guide with pictures or drawings on how to use each of the ways a mouse could be used. They should produce a leaflet.
Ask the less able learners to record short videos demonstrating and explaining how to use the mouse in the various ways explained by you. They could work in pairs or small groups.

Phase 3: End of task

Learners should share their videos and give a score out of 3, where 1 = needs improvement, 2 = satisfactory and 3 = good.

Task: 4 of 28	
Sub-strand: 1. Generation of computers and parts of a computer and other gadgets	
Content standard: B5.1.1.1 Identify parts of a computer and technology tools.	**Indicator:** B5.1.1.1.5 Identify home row keys, top row, bottom row keys, numerical pad and type (short sentence).

Performance indicator:

ALL learners will be able to identify home row keys, top row keys, bottom row keys and numerical pad.

SOME learners will be able to type a short sentence.

FEW learners will be able to identify home row keys, top row keys, bottom row keys, numerical pad and type a short sentence.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Personal development and leadership

Key words: QWERTY, numerical keys, word processor, slash keys, tab keys, function keys, caps lock, Esc, PrtSc, Home and End keys, PgDn and PgUp keys, Enter key, home row keys, Backspace and Delete keys, Shift , Ctrl and Alt keys

In this task:

The teacher should explain the correct ways to use a keyboard for typing in data into a computer.

Learners should work in pairs, one to type while one is observing and guiding the other. They should swap halfway through the task. Learners should follow the guidelines suggested in the worksheet.

Resources required

On CD

- Task 4 Worksheet.pdf

Other

- Use any relevant videos to help touch typing, from: www.YouTube.com

Phase 1: Start of task

Print a copy of the **Task 4 Worksheet.pdf** for each learner. Ask learners to circle each of the keywords by drawing a circew around each item on the picture of the keyboard.

Phase 2: Main

Explain to learners what the key words mean and demonstrate how to position your hands correctly on the keyboard.
Use the image and description under 'Using the keyboard' in the Learner's Book to position your hands correctly on the keyboard.
Allow learners to work in pairs, one to try out positioning their hands correctly on the keyboard and the other one observing, correcting and advising the other one. Let learners swap roles.
Allow learners to practise typing a few short sentences up to 50 words, using the correct positioning on the keyboard.

Phase 3: End of task

Ask learners to discuss the problems they experienced and any solutions they suggest to improve their keyboard typing skills and speed.

Extension activity

Ask learners to do Activity 1.5 in the Learner's Book. This activity is intended to help learners use the keyboard correctly and to start to touch-type. Ensure they are sitting up straight and have their hands and fingers in the positions described. 50 words is approximately 4 or 5 lines.

Task: 5 of 28

Sub-strand: 1. Generation of computers and parts of a computer and other gadgets

Content standard: B5.1.1.1 Identify parts of a computer and technology tools.	**Indicator:** B5.1.1.1.6 Introduction to the Windows interface.
Performance indicator: **ALL** learners will be able to list the features of MS Windows 10. **SOME** learners will be able list the compatibility issues of Windows 10. **FEW** learners will be able to list all the features and compatibility issues of Windows 10.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Personal development and leadership 4. Digital literacy 5. Cultural identity and global citizenship

Key words: Start menu, Cortana on Desktop, Xbox App, Project Spartan Browser, compatibility, Windows, interface, graphical user interface (GUI), browser, Windows interface

In this task:

The teacher should refer to the Learner's Book section on the Start menu, Cortana, GUI, a browser and the Windows interface. In addition, use the web link on Microsoft's Windows 10 link to guide learners further: https://www.microsoft.com/en-gb/windows/features

Learners should watch the video and refer to the Learner's Book in order to complete the **Task 5 Worksheet.pdf**.

Resources required

On CD

• Task 5 Worksheet.pdf

Other

• Microsoft's Windows 10 link: https://www.microsoft.com/en-gb/windows/features

Phase 1: Start of task

In pairs, let learners find the following items on their computers and paste a screenshot of them in a word processed document: Start menu, Cortana, GUI, a browser, the Windows interface.

Phase 2: Main

Refer to relevant Learner's Book section to find information on some of the features of the Windows interface. Use the **Task 5 Worksheet.pdf** to allow learners to explore and use the various features of the Windows interface.

Phase 3: End of task

Ask learners to list three things they learnt about the Windows interface and three difficulties they experienced relating to the Windows interface.

Task: 6 of 28

Sub-strand: 1. Generation of computers and parts of a computer and other gadgets

Content standard: B5.1.1.1 Identify parts of a computer and technology tools.	**Indicator:** B5.1.1.1.7 Summarise the generations of computers.
Performance indicator: **ALL** learners will be able to identify the differences between the types of computers. **SOME** learners will be able list the advantages and disadvantages between the different types of computers. **FEW** learners will be able to do both performance indicators mentioned above.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Personal development and leadership 4. Digital literacy 5. Cultural identity and global citizenship

Key words: desktop computer, laptop, tablet, smart phone, games console, TV recorder box

In this task:

The teacher should refer learners to the relevant section in the Learner's Book on the different generations of computers.

Learners should use the Learner's Book section on the different generations of computers and follow the instructions in the **Task 6 Worksheet.docx** to attempt all the tasks mentioned.

Resources required

On CD

• Task 6 Worksheet.pdf

Phase 1: Start of task

Ask learners to brainstorm the following idea: 'Computers are everywhere'. Allow them three minutes only. Compare their answers briefly.

Phase 2: Main

Refer to the relevant Learner's Book section for information on some of the earlier computer generations. Use the **Task 6 Worksheet.pdf** to allow learners to identify the different types of computers and to think about their advantages and disadvantages.

Phase 3: End of task

Discuss the following: How different are the earlier generations of computers from today's computers? How might computers of the future be different from today's computers?

Extension activity

Ask the more able learners to attempt Activity 1.6 in the Learner's Book.

Answers to Activity 1.6

1st generation: Advantages – computers had started to be used and gave employment to more people. Disadvantages – they were very large, the size of a room; they used a lot of electricity so were expensive; they got very hot.

2nd generation: Advantages – much smaller than 1st generation; they used transistors which were less expensive than vacuum tubes.

3rd generation: Advantages – they worked faster than 2nd generation.

4th generation: Advantages – up to a million transistors could be put on one chip so computers became a lot smaller; they were more reliable and powerful; they were less expensive.

5th generation: Advantages – faster and less expensive than generations that came before.

Answers to Task 6 Worksheet

Appliance/gadget	Image	Advantages/Disadvantages
Washing machine		The different washing cycles allow different water levels and temperatures at different stages of the washing cycle. These cycles are controlled by computers. Less water, less energy and saves hard physical work. Small loads can be uneconomical, especially as mixing coloured fabrics can cause discoloured washing.
Computers used in healthcare		Computers can diagnose illnesses by comparing blood sample results with examples in the computers' databases. Small cameras can show what is happening inside the human body and help doctors to treat patients. Training health professionals in the use of the computer devices can be costly and take time.
Computers used in finance, banking and stocks and shares		Computer programs can manipulate financial data and do complex calculations and predictions to help economists predict financial situations. At best, predictions are not factual and are only a guide.
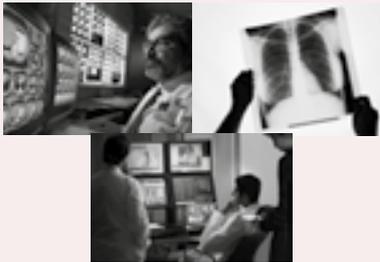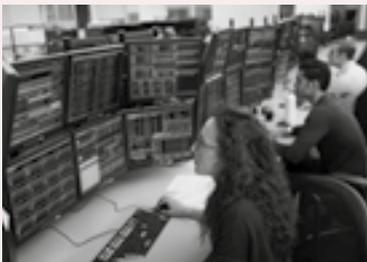
Computers used in aviation		Most commercial airlines are run on autopilot, which is computer programs that fly the planes or guide pilots as to what they should do at each stage of a flight. If the computer fails, there could be dire consequences for the airline passengers and crew, if the pilots don't take over quickly enough.
Computers used in vehicles		Modern vehicles have onboard computers that control the flow of petrol and oil and keep the engines running efficiently. There are also Global Positioning Systems (GPS) that shows drivers the ways to follow to their destinations. GPS sometimes lead drivers into unsafe territories or through back roads unsuitable for the size of the vehicle.
Vending machine		Vending machines have small micro-chips that store the exact place where each product is positioned in the vending machine. Users can then select from the options and the computers onboard release the product selected and paid for by the user. The vending maching even dispenses change for customers who deposit more cash than the price of the product. If the machine malfunctions and there are no staff on duty to repair it quickly, some customers may lose their money without getting their selected and paid-for products.
Law and order, police, detectives		Police computers store lots of data about individuals and, if data matches that of an alleged criminal on their database records, they can follow up and speed up the process of catching criminals before they commit more crimes. However, identikit's drawn up by police computers can sometimes lead to wrongful arrest.

Sub-strand 2: Introduction to MS Windows interface (desktop background and locations of the computer)

Task: 7 of 28

Sub-strand: 2. Introduction to MS Windows interface (desktop background and locations of the computer)

Content standard: B5.1.2.1 Demonstrate the use of the desktop background as well as working with folders.	**Indicator:** B5.1.2.1.1 Personalise the desktop background and edit its images (e.g. image, icons and taskbar of the background).
Performance indicator: **ALL** learners will be able to create their own background picture. **SOME** learners will be able to use existing images as their own background picture. **FEW** learners will be able to create their own background picture using a graphics application of their choice.	**Core competencies:** **1.** Creativity and innovation **2.** Digital literacy **3.** Cultural identity and global citizenship

Key words: personalise, customise, edit, graphics/drawing application package, desktop publishing software, icons, taskbar

In this task:

The teacher should use a drawing software package, such as Paint, to demonstrate how to draw an image that could be used as a desktop background image.

Learners should draw an image using a drawing package and then edit their current desktop background image by importing that image onto their desktop background image.

Resources required

On CD

• Task 7 Worksheet.pdf

Phase 1: Start of task

Let learners complete the **Task 7 Worksheet.pdf**, in which they match the key words to their correct meanings.

Phase 2: Main

Demonstrate how to edit the desktop background picture.
Explain that pictures could be personalised by using images that reflect something personal about the learner or a neutral image. Demonstrate how images created in a drawing software package can be imported onto the desktop background.
Allow learners to change the existing desktop background images on their own.

Phase 3: End of task

Ask learners to discuss the images they chose to use and to explain whether they had edited, customised or personalised their background pictures or images.

Extension activity

Think about the different methods you could use to make your desktop more user-friendly and that enable you to carry out your work more quickly. Look in File Explorer to see all of the different changes that could be made. Think about the changes you would like to make and why.

Answers to Task 7 Worksheet

1D, 2C, 3G, 4A, 5B, 6F, 7E

Task: 8 of 28

Sub-strand: 2. Introduction to MS Windows interface (desktop background and locations of the computer)

Content standard: B5.1.2.1 Demonstrate the use of the desktop background as well as working with folders.	**Indicator:** B5.1.2.1.2 Recognise how to customise the desktop background using Change background, Start menu and Pin to taskbar or Start menu.
Performance indicator: **ALL** learners will be able to customise the desktop background using Change background. **SOME** learners will be able to customise the desktop background using the Start menu. **FEW** learners will be able to customise the desktop background by using Pin to taskbar or Pin to Start menu.	**Core competencies:** 1. Creativity and innovation 2. Digital literacy 3. Cultural identity and global citizenship

Key words: pin, taskbar, image, icon, drawing

In this task:

The teacher should use the **Task 8 Presentation.pptx** on how to personalise the desktop background and refer to the relevant section in the Learner's Book for further information in this regard.

Learners should watch the **Task 8 Presentation.pptx** and then personalise their existing desktop background images by using Change background, Start menu and Pin to taskbar or Start menu.

Resources required
Learner's Book pages 20–21

On CD

• Task 8 Presentation.pptx

Phase 1: Start of task

Ask learners to discuss in pairs: 'Should learners personalise their desktop background pictures on the school's computers?'.

Phase 2: Main

Demonstrate how to customise the desktop background images using Change background, Start menu and Pin to taskbar or Start menu. Use the **Task 8 Presentation.pptx** for demonstration purposes.
Allow learners to personalise their existing desktop background images by using Change background, Start menu and Pin to taskbar or Start menu.

Phase 3: End of task

Ask learners to list the advantages and the disadvantages of:
• pinning icons to the desktop background or to the taskbar
• loading slides as the desktop background.

Task: 9 of 28

Sub-strand: 2. Introduction to MS Windows interface (desktop background and locations of the computer)

Content standard: B5.1.2.1 Demonstrate the use of the desktop background as well as working with folders.	**Indicator:** B5.1.2.1.3. Describe how to personalise the desktop background using advance tools and settings.

Performance indicator:

ALL learners will be able to customise the desktop background using change Background.

SOME learners will be able to customise the desktop background using the Start menu.

FEW learners will be able to customise the desktop background by Pin to taskbar or Pin to Start menu.

Core competencies:
1. Creativity and innovation
2. Digital literacy
3. Cultural identity and global citizenship

Key words: pin, taskbar, image, icon, drawing, desktop background, customise, Start menu

In this task:

The teacher should continue from the previous task using the same task resources and refer to the Learner's Book for any further information on how to personalise the desktop background, if necessary.

Learners should continue personalising their desktop background by following the guideline in the **Task 9 Worksheet.pdf**.

Resources required

On CD

- Task 9 Worksheet.pdf

Phase 1: Start of task

Play the Hot Seat game using the key words listed above. Rules:
Ask for a learner to sit on a chair at the front of the classroom, facing the learners.
Behind the learner, write a key word on the board so that he or she cannot see it.
Ask the rest of the class to explain the word to the learner without spelling it or mentioning the actual word.
Once the learner guesses the correct key word, select another learner to sit in the hot seat, and repeat until all the key words have been explained and guessed.

Phase 2: Main

Allow learners to complete the **Task 9 Worksheet.pdf** to continue the personalisation of their existing desktop background.

Phase 3: End of task

Ask learners to consider reasons why individuals and businesses might wish to personalise their desktop backgrounds.

Task: 10 of 28

Sub-strand: 2. Introduction to MS Windows interface (desktop background and locations of the computer)

Content standard: B5.1.2.1 Demonstrate the use of the desktop background as well as working with folders.	**Indicator:** B5.1.2.1.4 Creating a shortcut, adding or removing common icons on the desktop.

Performance indicator: **ALL** learners will be able to create shortcut icons on the desktop. **SOME** learners will be able to add or remove common icons on the desktop. **FEW** learners will be able to create, add and remove common icons on the desktop	**Core competencies:** 1. Creativity and innovation 2. Digital literacy 3. Cultural identity and global citizenship

Key words: shortcut, delete, move, cut, copy and paste

In this task:

The teacher should explain the tasks learners should undertake on the **Task 10 Worksheet.pdf** and assist the less able learners.

Learners should undertake the tasks in the **Task 10 Worksheet.pdf** and ask the teacher for assistance if necessary.

Resources required

On CD

- Task 10 Worksheet.pdf

Phase 1: Start of task

Discuss in groups of three: 'What are the differences between delete, cut and move?'

Phase 2: Main

Ask the learners to complete the **Task 10 Worksheet.pdf**, in which they explain and match key words. The worksheet also has tasks for learners to carry out on their computers to create a shortcut, to add, delete, cut and move files and folders from their desktop.

Phase 3: End of task

In pairs, learners could explain the differences between:
- cut and delete
- delete and move
- cut and move.

Extension activity

Think about the files you have saved and others that you may need to save. They will need to be organised into folders so that you can find them quickly and so that you keep files about a similar subject in a folder specially named for that subject.

Answers to Task 10 Worksheet

1.

Key word	Everyday language	Computer jargon
Shortcut	A route that is quicker and shorter	A link to another location on the computer, such as a program
Delete	To remove something or draw a line through it	To erase text or remove something from the computer's memory
Cut	To use a sharp object, such as scissors or a knife, to make an incision or opening in something	To remove a selection of text from a document and save it to the clipboard
Move	To go from one place to another, or to change position	To transfer text or images from one place in a file to another, without duplicating the text or images
Copy and paste	To make a duplicate of something and paste in somewhere with glue	To duplicate text or an image from a document and place the duplicated text somewhere else in the document, or in another document
Trash can/bin	A container for rubbish	A place on a computer's hard drive where deleted files are stored temporarily

2. **a)** True
   b) False
   c) True
   d) True
   e) True
   f) True
   g) True

3. Answers will vary. The learners follow the instructions on the worksheet.

Task: 11 of 28	
Sub-strand: 2. Introduction to MS Windows interface (desktop background and locations of the computer)	
Content standard: B5.1.2.1 Demonstrate the use of the Desktop Background as well as working with folders.	**Indicator:** B5.1.2.1.5 Moving, copying and pasting a file or icon into and from a folder on the desktop.
Performance indicator: **ALL** learners will be able to copy and paste a file or icon into and from a folder on the desktop. **SOME** learners will be able to move a file or icon into and from a folder on the desktop. **FEW** learners will be able to move, copy and paste a file or icon into and from a folder on the desktop.	**Core competencies:** 1. Creativity and innovation 2. Digital literacy 3. Cultural identity and global citizenship

Key words: file, folder, desktop, copy and paste, move, file, folder

In this task:

The teacher should use the **Task 11 Presentation.pptx** to demonstrate how to copy and paste and to move files and folders from and to various locations on a computer.

Learners should carry out the tasks mentioned in the **Task 11 Presentation.pptx**.

Resources required

On CD

- Task 11 Presentation.pptx

Other

- A big, light beach ball and sticky tape

Phase 1: Start of task

Play 'The Clever Ball Game': Each learner must write a question about the topic on a small piece of paper or a post-it note, which the teacher will stick onto a ball. The teacher will then throw the ball around the class for learners to take turns catching. When a learner catches the ball, he or she must remove a question and try to answer it or open it up to the rest of the class for discussion. Eventually all should able to answer every question on the ball.

Phase 2: Main

The **Task 11 Presentation.pptx** demonstrates how to copy and paste and move files and folders to and from their desktops.

Phase 3: End of task

Explain the differences between:
- a file and a folder
- moving a file or folder and copying and pasting a file or folder.

Task: 12 of 28

Sub-strand: 2. Introduction to MS Windows interface (desktop background and locations of the computer)

Content standard: B5.1.2.1 Demonstrate the use of the Desktop Background as well as working with folders.	**Indicator:** B5.1.2.1.5 Demonstrate understanding of the File Explorer window and locations on the computer through the File Explorer.
Performance indicator: **ALL** learners will be able to demonstrate understanding of the locations on the computer through the File Explorer. **SOME** learners will be able to demonstrate understanding of the File Explorer window on the computer through the File Explorer. **FEW** learners will be able to demonstrate understanding of the File Explorer window and locations on the computer through the File Explorer.	**Core competencies:** 1. Creativity and innovation 2. Digital literacy 3. Cultural identity and global citizenship

Key words: File Explorer, recent files, locations on computer, Manage in Timeline

In this task:

The teacher should use the **Task 12 Presentation.pptx** to demonstrate how learners could use the File Explorer to find files and folders in various locations on their computers.

Learners should watch the **Task 12 Presentation.pptx** and carry out the tasks mentioned in the presentation.

Resources required

On CD

• Task 12 Presentation.pptx

Other

• A light big beach ball and sticky tape

Phase 1: Start of task

Play 'The Clever Ball Game': Each learner must write a question about the topic on a small piece of paper or a post-it note, which the teacher will stick onto a ball. The teacher will then throw the ball around the class for learners to take turns catching. When a learner catches the ball, he or she must remove a question and try to answer it or open it up to the rest of the class for discussion. Eventually all should able to answer every question on the ball.

Phase 2: Main

Use the **Task 12 Presentation.pptx** on File Explorer to guide the pace of the task.
Ask learners to carry out the tasks mentioned in the **Task 12 Presentation.pptx**.

Phase 3: End of task

Ask learners to list three different ways to find files and folders in various locations on their computers.

Extension activity

Ask the more able learners to use the **Task 12 Presentation.pptx** and to:

• improve on it by adding different images from their own computers
• add three more slides to the existing presentation.

Sub-strand 3: Data, sources and usage

Task: 13 of 28	
Sub-strand: 3. Data, sources and usage	
Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.	**Indicator:** B5.1.3.1.1 Use strategies for identifying data from results of an experiment.

Performance indicator:

ALL learners will be able to identify data from the results of an experiment.

SOME learners will be able to use a strategy for identifying data from the results of an experiment.

FEW learners will be able to use various strategies for identifying data from the results of an experiment.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: data, information, sources, qualitative, quantitative, data format

In this task:

The teacher should discuss and explain data, sources and usage using the **Task 13 Presentation.pptx**.

Learners should complete the **Task 13 Worksheet.pdf** and peer-assess each others' work.

Resources required

On CD

- Task 13 Presentation.pptx
- Task 13 Worksheet.pdf
- Task 13 Reading Worksheet.pdf

Phase 1: Start of task

Use the **Task 13 Presentation.pptx** and allow learners to talk about it pairs or small groups.

Phase 2: Main

Explain using the **Task 13 Presentation.pptx** on data, sources and usage.
Allow learners to complete the **Task 13 Worksheet.pdf**.

Phase 3: End of task

Ask learners to peer-assess each other's answers and provide verbal feedback.

Low-resource school

Teacher to provide copies of the Task 13 Worksheet.pdf to learners. If a school has a traditional classroom layout, learners should look at the pictures on the pages of their textbooks and discuss in class.

Extension activity

Read and discuss the **Task 13 Reading Worksheet.pdf** with the learners.

Task: 14 of 28

Sub-strand: 3. Data, sources and usage

Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.

Indicator: B5.1.3.1.1 Use strategies for identifying data from results of an experiment.

Performance indicator:

ALL learners will be able to identify different data formats.

SOME learners will be able to convert data from one format to another format.

FEW learners will be able to convert data from one format to another format without losing its value.

Core competencies:
1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: data format, data type, data value, convert data format

In this task:

The teacher should discuss and explain using the **Task 14 Presentation.pptx** on identifying data and conversion between different file formats.

Learners should complete the **Task 14 Worksheet.pdf**.

Resources required

On CD

- Task 14 Presentation.pptx
- Task 14 Worksheet.pdf

Phase 1: Start of task

Teacher to provide copies of the **Task 14 Worksheet.pdf** to learners. If a school has a traditional classroom layout, learners should look at the pictures on the pages of their textbooks and discuss in class.

Phase 2: Main

Work through questions 2 to 4 of the task using the **Task 14 Presentation.pptx** or **Task 14 Worksheet.pdf**.

Phase 3: End of task

Discuss question 5 of the **Task 14 Presentation.pptx**.

Low-resource school

Provide copies of the Task 14 Worksheet.pdf to learners. If a school has a traditional classroom layout, learners should look at the pictures on the relevant pages of their textbooks and discuss in class.

Extension activity

Ask the more able learners to complete Activities 1.8 and 1.9.

Answers to Activity 1.8

3. This is data because it is a fact, but it is not in context with a person's name, so it is not information.
4. It is information, because it is in context.

Task: 15 of 28

Sub-strand: 3. Data, sources and usage

Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.

Indicator: B5.1.3.1.2 Identify primary sources of information, e.g. photographs, video recordings, letters, etc.

Performance indicator:

ALL learners will be able to identify primary sources of information.

SOME learners will be able to record data from a primary source.

FEW learners will be able to identify and record data from a primary source.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: primary sources of information

In this task:

The teacher should assist learners as they collect data using primary sources.

Learners should complete the **Task 15 Worksheet.pdf** and prepare to collect data from primary sources.

Resources required

On CD

- Task 15 Worksheet.pdf

Phase 1: Start of task

Let learners complete the crossword on the **Task 15 Worksheet.pdf.**

Phase 2: Main

Allow learners to use the **Task 15 Worksheet.pdf** to explore the range of primary sources of information. Ask learners to collect some primary sources of information based on the some of the following ideas:

- Record on their devices (either mobile phone or tablet) their grandparents talking about what life was like in the old days.
- Conduct a survey asking their classmates what size shoes they wear or something similar, such as what their favourite food or colour is.
- Record weather data for 3 days, such as maximum and minimum temperatures, wind speed and direction, sunshine and rainfall.
- Use a questionnaire to find out how their friends spend their after-school time.

Phase 3: End of task

Ask learners to discuss in pairs which primary source of information they are going to collect and what they expect to discover from it. Ask learners to group according to their similarities.

Low-resource school

Provide copies of the **Task 15 Worksheet.pdf** to learners. If a school has a traditional classroom layout, learners should look at the pictures on the relevant pages of their textbooks and discuss in class.

Answers to Task 15 Worksheet

1. Crossword answers Across:
    1. Primary
    4. Stats
    7. Artefacts
    9. Speech

    Crossword answers Down:
    2. Radio
    3. Autobiography
    5. Diary
    6. Data
    8. Email

2. a) Primary sources of information are sources collected by the researcher, so they are first-hand information.
    b) The statement, "I heard that my neighbour was going to the dentist yesterday" is not a primary source of information because it is information based on something heard from somebody else, in other words, second-hand information.
    c) Primary if the reporter witnessed the event as it happened. Many of the other articles in a newspaper are secondary sources.

3. Answers will vary. Refer to the Learner's Book for information.

Extension activity

1. Once learners have collected their information, they could try to make some interpretations from it and share with the whole class.
2. Show the learners this link. https://www.africa.com/real-life-accra-ghana/
   Discuss whether any part of the information shown is a primary source of information.

Task: 16 of 28	
Sub-strand: 3. Data, sources and usage	
Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.	**Indicator:** B5.1.3.1.3 Identify secondary sources of information, e.g. radio, fax, telephone calls, SMS, etc.
Performance indicator: **ALL** learners will be able to identify secondary sources of information. **SOME** learners will be able to record data from a secondary source. **FEW** learners will be able to identify and record data from a secondary source.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: primary sources of information, radio, fax, SMS, telephone	

> **In this task:**
>
> **The teacher should** discuss and explain secondary sources of information.
>
> **Learners should** identify primary and secondary sources of information, and create a poster showing examples of secondary sources.

Resources required

On CD

- Task 16 Presentation.pptx
- Task 16 Worksheet.pdf

Phase 1: Start of task

Ask learners to complete question 1 of the **Task 16 Worksheet.pdf**, in which they identify examples of information that are not primary sources of information.

Phase 2: Main

Allow learners to complete questions 2 and 3 of the **Task 16 Worksheet.pdf**. Here, learners must classify examples of primary and secondary sources. Then they create a poster showing examples of secondary sources.

Phase 3: End of task

Let learners complete question 4 of the **Task 16 Worksheet.pdf**, where they peer-assess each other's posters.

> **Low-resource school**
>
> Provide copies of the **Task 16 Worksheet.pdf** to learners. If a school has a traditional classroom layout, learners should look at the pictures on the relevant pages of their textbooks and discuss in class.

> **Extension activity**
>
> Ask the more able learners to attempt Activities 1.11 and 1.12. in the Learner's Book.

Answers to Task 16 Worksheet

1. The following are NOT primary sources: telephone call, a fax, a biography.

2.

Information needed	Primary source	Secondary source
Pictures of sporting events	Use a digital camera	Photos from website
What is the most popular car?	A survey of car owners	Research from car websites
What do learners like to do outside school?	A class questionnaire	School magazine

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Answers to Activity 1.12

Questionnaire – primary
Schedule – primary
Case study – secondary
Newspapers – If it is an article containing a factual account, for instance events recorded as they happened, then it is a primary source. Other types of newspaper articles may be about a happening that occurred some time ago or are written to share an opinion; both of these examples would be considered secondary sources.

</div>

Answers to Activity 1.13

1. b) 584,000
    c) 313,000
    d) Tourism dropped in 2005 and then increased by 78,000 in the following year. It dropped again in 2011 and increased by 82,000 in the following year. It also dropped again in 2014 and increased by 72,000 in the following year.
    e) Every two years, it seems that the number of tourists rises. / The numbers will go up for two years, then down the following year.
2. Answers may vary.
    a) Lake Volta is the largest lake.
       Lake Volta is in the east of the country.
       Tema (or any other town on the south coast) is by the sea.
       The sea is called the Gulf of Guinea.
       There is a game reserve called 'Mole'.
       Bolgatanga is in the north of the country.
       Ghana has many rivers.
       There is a reserve called Hohoe.
    b) By Lake Volta / on the south coast by the sea / in Accra.

Task: 17 of 28	
Sub-strand: 3. Data, sources and usage	
Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.	**Indicator:** B5.1.3.1.4 Demonstrate sending and sharing information.
Performance indicator: **ALL** learners will be able to share information. **SOME** learners will be able to record information for sharing. **FEW** learners will be able to demonstrate how to send and share information.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: recording devices, microphone, speakers	

In this task:

The teacher should play an audio clip on e-safety from YouTube.

Learners should work in groups to create video or audio clips.

Resources required

On CD

- Task 17 Worksheet.pdf

Other

- E-Safety Video from YouTube but to be used only as an audio clip:
  https://www.youtube.com/watch?v=HxySrSbSY7o
  Just turn up the sound but do not show the video to learners in this lesson.

Phase 1: Start of task

Play a recording from the e-safety video from YouTube.
Ask learners to discuss in small groups what they heard from the audio clip.
Ask learners if the source is a primary or secondary source. (Answer: secondary source of information)

Phase 2: Main

Allow learners to record either videos or audio clips in groups of four to communicate a message. Allow approximately 10 minutes.
Re-group two learners from each group to join another group so that they can share their recordings with each other.
Learners can use the peer-assessment **Task 17 Worksheet.pdf** as a guide.

Phase 3: End of task

Ask learners to list three other ways in which they could share information. Possible answers include the following:

- Use social media apps to send information they received from elsewhere to all the friends in their social media friendship groups.
- Send emails to each other and forward messages sent to them by others.
- Telephone their friends to pass on messages.

Low-resource school

Use the Learner's Book to see examples of how sending and sharing information occurs. Use any devices available to record and share any available information. Discuss the possibilities they would be able to carry out if they had the available resources.

Extension activity

1. Find a suitable video on saving our planet on the internet and share it using your social media apps. Ask each of your friends in your friendship group to share it with all their friends in their friendship groups as well. Try to guess how many people your video would have reached as a result of you sharing it with your group of friends in the first instance.

2. Discuss how sending and sharing information can have a huge impact on all those who receive information of any kind.

3. Think of how important it is that factually correct information is encouraged and how important it is be ethical and do good for humanity.

4. Think of how important it is to be truthful and how we all have a responsibility to send good messages in order to make the world a better place for all of its inhabitants.

Task: 18 of 28

Sub-strand: 3. Data, sources and usage

Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.	**Indicator:** B5.1.3.1.4 Demonstrate arranging data, sorting and calculations.
Performance indicator: **ALL** learners will be able to arrange data. **SOME** learners will be able to do calculations on data. **FEW** learners will be able to arrange, sort and do calculations on data.	**Core competencies:** 1. Creativity and innovation 2. Personal development and leadership 3. Digital literacy

Key words: sort, filter, add, subtract, multiply, divide, age function

In this task:

The teacher should discuss and explain how to arrange data and do basic calculations in a spreadsheet, using the **Task 18 Presentation.pptx**.

Learners should complete the **Task 18 Worksheet.pdf**, which requires them to arrange data, sort and do calculations in a spreadsheet.

Resources required

On CD

- Task 18 Spreadsheet.pptx
- Task 18 Presentation.xlsx
- Task 18 Worksheet.docx

Phase 1: Start of task

Do the following activities to help learners understand the concept of ascending and descending order:
- Ask learners to arrange themselves in alphabetical order from A to Z according to their last names at the front of the classroom. Ask learners to return to their chairs.
- Ask for six volunteers and give each one of them a number from 1 to 6. Ask them to arrange themselves in order from 6 down to 1 at the front of the classroom.

Explain that arranging data in ascending order begins at the first or smallest value and goes upwards, while descending order starts at the top or highest value and goes downwards towards the lowest value.

Phase 2: Main

Use the **Task 18 Presentation.pptx** and the **Task 18 Spreadsheet.xlsx** to demonstrate to the learners how to:

- arrange the data in each column of the spreadsheet in ascending and descending order
- sort data in different columns
- add the values in each cell by using the sum function
- add, subtract, multiply, divide
- calculate Age from Date of Birth.

Give learners time to carry out the instructions in the **Task 18 Worksheet.pdf**.

Phase 3: End of task

Show learners the correct answers and ask them to correct their own work.
Check how many learners got all right, how many got some right and how may got nothing right.

Low-resource school

**Use the Learner's Book to see examples of how to arrange data in ascending and descending order.
Print out the Task 18 Worksheet.pdf for learners.**

Extension activity

Find out what the following functions can do: COUNT, MAX, MIN, AVERAGE, MEDIAN, MEAN, IF.

Answers to Task 18 Worksheet

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Name	Nickname	Age	Colour	TL1	TL2	TL3	TL4	TL5	ADD	SUBTRACT	MULTIPLY	DIVIDE
2	Ned	jumper the 3rd	3	green	0.2	0.2	0.3	0.6	1.9	=SUM(E2:I2)	=J2-H2	=E2*5	=J2/5
3	Clive	greenback	3	green	1.2	1.2	1.3	1.4	1.4	=SUM(E3:I3)	=J3-H3	=E3*5	=J3/5
4	Noddy	slow go	1	green/brown	2.1	1.7	1.85	1.7	2.2	=SUM(E4:I4)	=J4-H4	=E4*5	=J4/5
5	George	leepy	2	green/brown	1.8	1.9	2	2.5	1.9	=SUM(E5:I5)	=J5-H5	=E5*5	=J5/5
6	Jim	grumpy	2	green	0.5	0.6	0.7	0.6	0.8	=SUM(E6:I6)	=J6-H6	=E6*5	=J6/5
7	Nick	bigun	4	green/brown	1.9	1.6	1.6	1.6	1.7	=SUM(E7:I7)	=J7-H7	=E7*5	=J7/5
8	Elvis	the king	4	green	0.9	1	1.3	0.9	0.5	=SUM(E8:I8)	=J8-H8	=E8*5	=J8/5
9	Boris	bean machine	1	green/brown	1.5	1	1.6	1.7	1.6	=SUM(E9:I9)	=J9-H9	=E9*5	=J9/5

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Name	Nickname	Age	Colour	TL1	TL2	TL3	TL4	TL5	ADD	SUBTRACT	MULTIPLY	DIVIDE
2	Ned	jumper the 3rd	3	green	0.2	0.2	0.3	0.6	1.9	3.2	2.6	1	0.64
3	Clive	greenback	3	green	1.2	1.2	1.3	1.4	1.4	6.5	5.1	6	1.3
4	Noddy	slow go	1	green/brown	2.1	1.7	1.85	1.7	2.2	9.55	7.85	10.5	1.91
5	George	leepy	2	green/brown	1.8	1.9	2	2.5	1.9	10.1	7.6	9	2.02
6	Jim	grumpy	2	green	0.5	0.6	0.7	0.6	0.8	3.2	2.6	2.5	0.64
7	Nick	bigun	4	green/brown	1.9	1.6	1.6	1.6	1.7	8.4	6.8	9.5	1.68
8	Elvis	the king	4	green	0.9	1	1.3	0.9	0.5	4.6	3.7	4.5	0.92
9	Boris	bean machine	1	green/brown	1.5	1	1.6	1.7	1.6	7.4	5.7	7.5	1.48

	A	B	C
1	Friend's Name	Date of Birth	Age in years
2	Ayemi	10/07/2007	12.26027397
3	Adil	29/01/2009	10.70136986
4	Enver	31/07/2005	14.20273973
5	Gloria	23/08/2007	12.13972603
6	Janet	09/09/2009	10.09041096
7	Ben	14/02/2007	12.66027397

	A	B	C
1	Friend's Name	Date of Birth	Age in years
2	Ayemi	39273	=(TODAY()-B2)/365
3	Adil	39842	=(TODAY()-B3)/365
4	Enver	38564	=(TODAY()-B4)/365
5	GLoria	39317	=(TODAY()-B5)/365
6	janet	40065	=(TODAY()-B6)/365
7	Ben	39127	=(TODAY()-B7)/365

Answers to Extension activity

COUNT	This counts the number of entries you have in a group of cells.
MAX	This gives you the highest value out of a range of values in all the cells in that group.
MIN	This gives you the smallest value out of a range of values in all the cells in that group.
AVERAGE	This adds up all the values and then divides it by the number of values you added up to give you the average value in those cells.
MEDIAN	This arranges all the values in a range of cells into ascending or descending order and will give you the value of the cell in the middle position.
MEAN	This adds up all the values and then divides it by the number of values you added up to give you the mean value in those cells. This gives you the same answer as the average.
IF	This checks if a certain condition is met and returns one value if TRUE, and another value if FALSE.

Task: 19 of 28	
Sub-strand: 3. Data, sources and usage	
Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.	**Indicator:** B5.1.3.1.5 Demonstrate basic calculations on sample data, e.g. summing and averaging data.
Performance indicator: **ALL** learners will be able to sum data. **SOME** learners will be able to average data. **FEW** learners will be able to sum and average data.	**Core competencies:** 1. Creativity and innovation 2. Personal development and leadership 3. Digital literacy
Key words: sum, average	
In this task: **The teacher should** discuss and explain how to do basic calculations in a spreadsheet using formulas. **Learners should** do calculations using formulas, in the **Task 19 Spreadsheet.xlxs**.	

Resources required

On CD

- Task 19 Spreadsheet.xlxs

Phase 1: Start of task

Ask learners to recall the formulas to add, subtract, multiply and divide data.
Revise the formulas as required:
ADD =cell 1+cell 2 e.g. =H1+K4
SUBTRACT =cell 1 – cell 2 e.g. =H7-F4
MULTIPLY =cell 1 * cell 2 e.g. =D6*G2
DIVIDE =cell 1 / cell 2 e.g. =R8/K3

Phase 2: Main

Demonstrate to the learners how to complete the first sum in the **Task 19 Spreadsheet.xlxs**.
Give learners time to carry out the rest of the calculations in the spreadsheet. The spreadsheet has built-in functions to show whether or not each calculation is correct. Learners should therefore be able to correct their own work. Assist those who are still struggling to get the calculations right.

Phase 3: End of task

Check how many learners got all right, how many got some right and how may got nothing right.

Low-resource school

Use the Learner's Book to see examples of how to arrange data in ascending and descending order.

Extension activity

Let the learners complete the calculations in the **Task 19 Spreadsheet_Extension activity.xlxs**.

Answers to Extension activity

Answers to the calculations:

	A	B	C	D	E
1	FIRST NUMBER	OPERATION	SECOND NUMBER	YOUR ANSWER	CORRECT?
2	39	ADD	576	615	Correct
3	854	ADD	35	889	Correct
4	27	SUBTRACT	8	19	Correct
5	8	SUBTRACT	5	3	Correct
6	3	MULTIPLY	55	165	Correct
7	3333	MULTIPLY	3	9999	Correct
8	51	DIVIDE	17	3	Correct
9	255	DIVIDE	5	51	Correct
10					
11			**Your Score**		8

Formulas used for the calculations:

	A	B	C	D	E
1	FIRST NUMBER	OPERATION	SECOND NUMBER	YOUR ANSWER	CORRECT?
2	39	ADD	576	=A2+C2	=IF(D2=A2+C2,"Correct","Incorrect")
3	854	ADD	35	=A3+C3	=IF(D3=A3+C3,"Correct","Incorrect")
4	27	SUBTRACT	8	=A4−C4	=IF(D4=A4−C4,"Correct","Incorrect")
5	8	SUBTRACT	5	=A5−C5	=IF(D5=A5−C5,"Correct","Incorrect")
6	3	MULTIPLY	55	=A6*C6	=IF(D6=A6*C6,"Correct","Incorrect")
7	3333	MULTIPLY	3	=A7*C7	=IF(D7=A7*C7,"Correct","Incorrect")
8	51	DIVIDE	17	=A8/C8	=IF(D8=A8/C8,"Correct","Incorrect")
9	255	DIVIDE	5	=A9/C9	=IF(D9=A9/C9,"Correct","Incorrect")
10					
11			**Your Score**		**=COUNTIF(E2:E9,"Correct")**

Answers to the Extension activity

	A	B	C	D	E
1			Simple Arithmetic Operators		
2	DO THIS	FIRST NUMBER	SECOND NUMBER	YOUR FORMULA for the answer	CORRECT?
3	Add 53 and 46	53	46	99	Correct
4	Add 125 and 67	125	67	192	Correct
5	Subtract 45 from 100	45	100	55	Correct
6	Subtract 301 from 403	301	403	102	Correct
7	Multiply 37 by 7	37	7	259	Correct
8	Multiply 59 by 29	59	29	1711	Correct
9	Divide 125 by 5	125	5	25	Correct
10	Divide 999 by 9	999	9	111	Correct
11					
12			**Your Score**		8

Task: 20 of 28
Sub-strand: 3. Data, sources and usage

Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.	**Indicator:** B5.1.3.1.6 Recognise data types (integer, double, float).

Performance indicator:

ALL learners will be able to recognise some data types.

SOME learners will be able to recognise the data types integer, double and float.

FEW learners will be able to recognise most data types including integer, double and float.

Core competencies:

1. Creativity and innovation
2. Personal development and leadership
3. Digital literacy

Key words: integer, double, float, date, currency, numerical

In this task:

The teacher should discuss the different data types and why they are necessary.

Learners should complete the **Task 20 Worksheet.pdf** on recognising data types.

Resources required

On CD

- Task 20 Worksheet.pdf

Phase 1: Start of task

Start by explaining that when programming in C++, you have to use variables and you must specify the data type before assigning a value to the variable. Use this link to demonstrate why recognising the data type is necessary before you can do any programming.
https://www.w3schools.com/cpp/cpp_variables.asp

Phase 2: Main

Use the **Task 20 Worksheet.pdf** to guide the main part of the lesson as learners explore different data types.

Phase 3: End of task

Ask learners to share one thing they found too difficult to understand and one thing they did not know before.

Extension activity

Which data is better to use: float or double? Give your reasons for your answer.

Answers to Task 20 Worksheet

1.

Data type	Meaning
Int	Stores integers (whole numbers), without decimals, such as 123 or -123
Double	Stores floating point numbers, with decimals, such as 19.99 or –19.99
Char	Stores single characters, such as 'a' or 'B'. Char values are surrounded by single quotes

| String | Stores text, such as "Hello World"; string values are surrounded by double quotes |
| Bool | Stores values with two states: true or false |

2. The learners follow the onscreen instructions
3. **a)** double
   b) string
   c) int
   d) boolean
   e) float

Answer to Extension activity

The precision of a floating point value tells you how many digits the value can hold after the decimal point, which is about 6 or 7 decimal digits.

The precision of a double variable can hold about 15 digits. It is better to use a double data type for most calculations because if you multiply some numbers their answers may be longer than you expected.

Task: 21 of 28

Sub-strand: 3. Data, sources and usage

Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.

Indicator: B5.1.3.1.7 Demonstrate sending and sharing information.

Performance indicator:

ALL learners will be able to demonstrate sending information.

SOME learners will be able to demonstrate sharing information.

FEW learners will be able to demonstrate sending and sharing information to each via SMS and email.

Core competencies:
1. Creativity and innovation
2. Communication and collaboration
3. Personal development and leadership
4. Digital literacy

Key words: SMS, email, spam, junk, forward, cc, bcc, attachment, draft, scheduled mail

In this task:

The teacher should discuss the different ways to send and share information, for example using SMS or email.

Learners should explore features of email, and send and reply to email messages.

Resources required

On CD

- Task 21 Worksheet.pdf
- Task 21 Reading Worksheet.pdf

Phase 1: Start of task

Draw a spider diagram showing different ways to send information to your friends and family.

Phase 2: Main

Let learners complete questions 1 and 2 of the **Task 21 Worksheet.pdf** about sending SMSs.
Use the **Task 21 Reading Worksheet.pdf** to discuss the various features of email and to choose a sensible email address.
Ask learners to send an email as per question 3 of the **Task 21 Worksheet.pdf**.

Phase 3: End of task

Ask learners to reply to any SMS or emails they may have received from their friends. Their replies should state what difficulties they experienced in sending them.

> ### Extension activity
>
> List the ways to send information and explain what the advantages and disadvantages are for each.

Answers to the Extension activity

Here are some of the advantages and disadvantages of SMSs and emails.

Way/s to send information	Advantage/s	Disadvantage/s
SMS (short messaging service)	You can send a quick message from your mobile phone. It does not require an internet connection. You can be anywhere where your phone is. Use of emoticons saves on characters to show your emotions.	You can't send more than 180 characters per message. Depending on how fast you can input the message, it could take too long if it's an emergency.
Email (electronic mail)	It can be sent wherever internet access is available. Communication is almost instant, regardless of the locations of the senders and receivers. Messages can be sent to many people at the same time. Many people can work from home.	Personal privacy can be affected with email addresses being sold for marketing purposes.

Task: 22 of 28	
Sub-strand: 3. Data, sources and usage	
Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.	**Indicator:** B5.1.3.1.8 Select the samples and collect data (e.g. listening to radio, newspaper, talking to people).

Performance indicator:

ALL learners will be able to select the samples and collect data by talking to people.

SOME learners will be able to select the samples and collect data by listening to the radio.

FEW learners will be able to select the samples and collect data by reading the newspaper.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Personal development and leadership
4. Digital literacy

Key words: sample, interview, questionnaire, survey

In this task:

The teacher should explain how to select samples and how to collect data. Divide the class into groups to carry out their interviews.

Learners should select their sample and compile their questionnaire before going out to interview teachers using simple questionnaires. They must record the data in their books.

Resources required

On CD

• Task 22 Presentation.pptx

Phase 1: Start of task

Discuss slides 2 to 4 of the **Task 22 Presentation.pptx**.

Phase 2: Main

Continue using the **Task 22 Presentation.pptx** to guide you through the whole lesson, as learners define a problem and compile a questionnaire to collect data about it.

Phase 3: End of task

Ask learners to use their questionnaires, surveys and interviews to collect data before you do the next task. **Learners should** bring the data they collected with them.

Task: 23 of 28

Sub-strand: 3. Data, sources and usage

Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.	**Indicator:** B5.1.3.1.9 Make simple tables and diagrams from the collected data.
Performance indicator: **ALL** learners will be able to make simple tables from the collected data. **SOME** learners will be able to make diagrams from the collected data. **FEW** learners will be able to make simple tables and diagrams from the collected data.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Personal development and leadership 4. Digital literacy

Key words: table, diagram, chart

In this task:

The teacher should demonstrate how to create a table from the data collected in the previous task, using a suitable software program, such as MS Excel or a similar program. Next, you should demonstrate how to create diagrams and charts from the data in the table.

Learners should use the data they collected in the previous lesson to create their own tables and diagrams or charts.

Resources required

On CD

- Task 23 Spreadsheet.xlxs

Phase 1: Start of task

Ask learners to arrange their collected data into a table in their books first. Check which column headers they have used and whether the data can be used to make a chart or diagram in that format.

Phase 2: Main

Demonstrate how to create a table and diagram and charts in a suitable spreadsheet program. Here is a simple example:
Number in favour of having computers in all subjects = 6
Number not in favour of having computers in all subjects = 10
Numbers per Age group interviewed: 6–14 year olds = 4; 15–30 year olds = 7; 30+ year olds = 5

Summary from interviews, questionnaires and surveys	Numbers for the tables
Number in favour of having computers in all subjects	6
Number not in favour of having computers in all subjects	10
Numbers per Age group interviewed: 6–14 year olds	4
Numbers per Age group interviewed: 15–30 year olds	7
Numbers per Age group interviewed: 30+ year olds	5

Use **Task 23 Spreadsheet.xlxs** as an example of the table above created in a spreadsheet program. The same worksheet in the file also shows an example of a chart created using the table data.

Phase 3: End of task

Ask learners to compare their tables and charts and diagrams with each other and give feedback to each other about their findings.
Check with the class how many people were in favour of using computers in all subjects.

Task: 24 of 28

Sub-strand: 3. Data, sources and usage

Content standard: B5.1.3.1 Illustrate the use of data and identify their sources.	**Indicator:** B5.1.3.1.10 Analyse tables, maps, diagrams, photographs and charts, and generalise the results and make suggestions.
Performance indicator: **ALL** learners will be able to make simple tables from the collected data. **SOME** learners will be able to make diagrams from the collected data. **FEW** learners will be able to make simple tables and diagrams from the collected data.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Personal development and leadership 4. Digital literacy

Key words: generalise, make suggestions, percentage, average, mean, sum

In this task:

The teacher should explain how to analyse data in a table, generalise the results and make suggestions.

Learners should use the data in their tables they created in the previous task and analyse it, generalise the results and make suggestions.

Resources required

On CD

- Task 23 Spreadsheet.xlxs
- Task 24 Photograph.jpg

Phase 1: Start of task

Show learners some weather maps and photographs and ask them to generalise and make some suggestions from them. Encourage them to discuss within their group. Examples of websites where such maps and photographs can be found are:
https://www.accuweather.com/en/gh/accra/178551/satellite/178551
Look at the map and ask learners what they think the general weather would be.
Show learners the **Task 24 Photograph.jpg** of three bald people on the CD. Ask them to analyse it and generalise and make some suggestions about it. Encourage them to discuss within their group.

Phase 2: Main

Use the same spreadsheet from the previous task (**Task 23 Spreadsheet.xlxs**) and look at how the data has been rearranged and the formulas used to help learners make some generalisations about the data.
Ask learners to create some charts and diagrams and to show their generalisation of it.

Phase 3: End of task

Ask learners to make some suggestions about their generalisations of their collected and analysed data.

Answers to the discussions

Weather map: Possible generalisation is that it shows that it will be sunny or there will be thunderstorms. Suggestions could be that people should take their umbrellas with them to stay out of the sunshine or keep dry during the storm.

Picture of the three bald people: Possible generalisations could include that there can be many different reasons why people are bald. Possible suggestions could be that if you do not like baldness, you should

not judge people before you understand their reasons for being bald. If you like baldness, you should not expect everyone to be bald as some people might not like it personally or cannot help the situation, they find themselves in.

Sub-strand 4: Technology in the community (communication)

Task: 25 of 28

Sub-strand: 4. Technology in the community (communication)

Content standard: B5.1.4.1 Demonstrate the use of technology in the community.	**Indicator:** B5.1.4.1.1 List the effects of technology on the community.
Performance indicator: **ALL** learners will be able to investigate the types of technology in the community. **SOME** learners will be able to investigate the types of technology in the community and the importance of compression of documents.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
FEW learners will be able to investigate the types of technology in the community including the positive and negative effects.	

Key words: compression of documents, privacy and security, resource depletion, pollution

In this task:

The teacher should explain the importance of compression of documents. Provide stimulus materials for investigating types of technology in the community and explain the following terms: resource depletion, pollution and privacy and security.

Learners should investigate the types of technology in the community and list the positive and negative effects of their use in healthcare, education, manufacturing, agriculture, transport, entertainment.

Resources required

Phase 1: Start of task

Use the following link to play a video on 'Document compression': https://www.youtube.com/watch?v=pcN6xHa0Y64
Ask learners to give examples of when it might be necessary to compress a document.
Types of compressed files:

Phase 2: Main

Give each learner a number from 1 to 6. Ask learners to investigate the technologies that are used in the topic associated with their number:

1.   Healthcare
2.   Education
3.   Manufacturing
4.   Agriculture
5.   Transport
6.   Entertainment

Create a Prezi account for the class and ask learners to put their finding into a Prezi presentation where they can upload their presentations to the class Prezi once they have finished. An example of a Prezi for the healthcare technologies can be found here:
https://prezi.com/0fabzlijuppd/health-care-technologies/

Phase 3: End of task

View one presentation from each topic, showing the whole class, and discuss some of the positive and negative aspects, such as resource depletion, pollution, and privacy and security.

Answers to the discussion

There are many other possible answers besides those mentioned below.

Sector	Positives	Negatives
Healthcare	People are living longer. Quality of life is improving.	Some life-saving technologies are still not available to most of the world's poorer populations.
Education	More resources are available for learners. Better preparation for future job market.	Costs of computers and internet is expensive. Not all teachers are adequately trained to use them effectively in their teaching.
Manufacturing	Alleviating poverty in many parts of the world. New types of skills are required.	Robots are making jobs redundant and increasing unemployment.
Agriculture	There is more food available to feed the world.	Climate change.
Transport	Transport modes are changing.	Environmental degradation.
Entertainment	Excellent entertainment available on most devices. Wide variety of entertainment available.	Reducing human face-to-face interaction Extremist views are easily spread.

Task: 26 of 28

Sub-strand: 4. Technology in the community (communication)

Content standard: B5.1.4.1 Demonstrate the use of technology in the community.

Indicator: B5.1.4.1.2 Explain the fundamentals of digital system components (hardware, software and networks).

Performance indicator:

ALL learners will be able to list the fundamentals of digital computer systems – software.

SOME learners will be able to list the fundamentals of digital computer systems – hardware and software.

FEW learners will be able to list the fundamentals of digital computer systems – hardware, software and networks.

Core competencies:
1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: hardware, software, networks, desktop, laptop, tablet, mouse, smartphone, printer, microphone, speaker, graphics tablet, plotter, word processor, spreadsheet, presentation, database, desktop publisher, web author, internet

In this task:

The teacher should name and briefly discuss the functions of the various types of hardware and software, and network terminology.

Learners should complete the **Task 26 Worksheet.pdf**, explaining the basics of hardware, software and networks.

Resources required

On CD

- Task 26 Worksheet.pdf

Phase 1: Start of task

Ask learners to mention all the types of hardware that they know, and then some examples of software that they know. Ask learners to distinguish between hardware, software and networks.

Phase 2: Main

Let learners work in groups to read the information on the **Task 26 Worksheet.pdf** and to answer the questions.

Phase 3: End of task

Discuss the learners' answers to the **Task 26 Worksheet.pdf** as a class.

Answers to Task 26 Worksheet

1. Hardware is the name given to the parts of the computer that you can touch. Hardware also includes equipment, known as peripherals, which can be added to a computer system. Common peripherals include printers, scanners and modems. Software is the name given to computer programs that tell (instruct) the hardware how to work.
2. The five categories of hardware:
   - Central processing unit (CPU)
   - Memory

  - Storage devices
  - Input devices
  - Output devices
3. System software and application software.
   System software, usually called an **operating system**, is the name given to the software that controls the hardware and how all other software works
   Application software is the name given to software that instructs a computer to carry out a specific task. It is application software that people choose to complete a task when they use a computer.
4. Utility software aims to protect and maintain the system software .
5. High-level languages use keywords similar to English. They are easier to write than machine and assembly languages. They enable programs to run on most types of computer.

Task: 27 of 28

Sub-strand: 4. Technology in the community (communication)

Content standard: B5.1.4.1 Demonstrate the use of technology in the community.	**Indicator:** B5.1.4.1.3 Discuss how technology is used to save lives in the community.
Performance indicator: **ALL** learners will be able to explore how technology saves lives in communities. **SOME** learners will be able to discuss how technology saves lives in communities. **FEW** learners will be able to explore and discuss how technology saves lives in communities.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: emergency medical equipment, defibrillator, vital signs monitor, CT scanner, Medication Management Systems, Electronic Medical Records

In this task:

The teacher should guide learners through the **Task 27 Worksheet.pdf** while using the **Task 27 Presentation.pptx** to explore and discuss how technology can be used to save lives in a community.

Learners should complete, under the guidance of the teacher, the **Task 27 Worksheet.pdf** on how technology is used to save lives in the community.

Resources required

On CD

  - Task 27 Presentation.pptx
  - Task 27 Worksheet.pdf

Phase 1: Start of task

Ask learners to share any experience they may have had with emergency medical situations. Prompt them to explain whether they had seen any of the key words listed in the table above, such as 'defibrillators' or 'vital signs monitors' being used.

Phase 2: Main

Ask learners to work through questions 1–4 on the **Task 27 Worksheet.pdf** as you talk them through the

Task 27 Presentation.pdf on the technologies that can be used to save lives in a community.

Phase 3: End of task

Ask learners to answer question 5 on the **Task 27 Worksheet.pdf**.

Extension activity

1. How close is mankind to living forever? Will future technologies be able prolong life for much longer than today's average life expectancies?
   Add to the list of questions you have about the future of medicine in saving lives using technologies.

2. Watch the following short video about ten of the most promising medical technologies of the future.
   https://www.youtube.com/watch?time_continue=106&v=C7Lovgwmtuc
   Then answer these questions:
   a) What is augmented and virtual reality?
   b) Explain briefly how can they be used in a medical situation.
   c) What are the advantages and disadvantages of people having medical scanners at their homes?
   d) List all 10 technologies from the video.
   e) Choose one that you would like to see being used more than the others and explain why you feel this way.

Answers to Task 27 Worksheet

1. It can be used to produce the following:
   Emergency medical equipment
   Vital signs monitors
   Electronic Medical Records (EMR)
   Medication Management Systems:

2. temperature, blood pressure and heart rate

3. The information contained in your electronic medical records lets your physician know what you've been treated for in the past and what they might be able to do to help you now. EMRs also help make certain that none of the medications you may be on will react adversely with new ones being prescribed.

4. Pharmacists and pharmacy technicians use computer systems to help make certain the right medications and amounts are given to the right patients. The systems also control inventory so that when medications are in high demand, they have plenty in supply to meet the needs of patients.

5. Answers will vary.

Answers to the Extension activity

2. The answer to (a) below is taken from a search on Bing.com on 13/10/2019.
   a) Augmented reality is commonly defined as a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.
      Virtual reality is the computer-generated simulation of a three-dimensional image or environment that can be interacted within a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.
   b) Augmented reality can help medical professionals to study and understand the human body. It can be used to help patients understand surgical procedures and treatments. It can help surgeons to visualise the area of the body on which they have to operate.
      With virtual reality, a patient can experience the actual procedure they would undergo, and see what it would look like in real life.

c) The advantages are that medical scanners can help people to diagnose certain conditions. They do not have to go to a doctor to confirm if they suffer from a certain condition or not. The diagnosis can warn them in time to get medical treatment. The disadvantages are that people may diagnose themselves incorrectly, or that they may decide to treat themselves, without knowing enough about what is required or safe.

d) 1) Cognitive computers 2) Virtual and augmented reality 3) Scanners 4) Wearables and beyond 5) 3D printing 6) Genomics 7) Nanotechnology 8) Telemedicine 9) Surgical robots 10) Neuroprosthetics

e) Example: I prefer telemedicine because, no matter where you are in the world, you are still able to access medical assistance and advice from medical experts.

Task: 28 of 28	
Sub-strand: 4. Technology in the community (communication)	
Content standard: B5.1.4.1 Demonstrate the use of technology in the community.	**Indicator:** B5.1.4.1.4 Discuss the effects of technology on the community.
Performance indicator: **ALL** learners will be able to discuss the effects of sensors on the community. **SOME** learners will be able to discuss the effects of robots on the community. **FEW** learners will be able to discuss the effects of technology, such as robots and sensors on the community.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: robots, sensors	
In this task: **The teacher should** prompt learners to discuss the extent of their understanding of robots and sensors. Choose one area from this list: education, manufacturing, agriculture, transport or entertainment. **Learners should** complete the questions on one of the sectors mentioned in the **Task 28 Presentation.pptx** on the effects of technology on the community.	

Resources required

On CD

- Task 28 Worksheet.pdf
- Task 28 Presentation.pptx

Other

- Videos on the effects of technology in education, manufacturing, agriculture, transport or entertainment.

Phase 1: Start of task

Ask learners to complete the word search in the **Task 28 Worksheet.pdf**.

Phase 2: Main

Choose a sector from the ones shown in the **Task 28 Presentation.pptx**. Demonstrate how to complete the task by showing learners the videos from the sector and answering the questions on the relevant slide of the

Task 28 Presentation.pptx.

If possible, allow learners to have access to all the videos to enable them to choose their own sector to explore. Once they have chosen their sector, let them answer the questions using the prompts on the relevant slide of the **Task 28 Presentation.pptx**.

Phase 3: End of task

Let learners complete the last slide of the **Task 28 Presentation.pptx** by listing the positive and negative effects of technology on their chosen sector.

Answers to Task 28 Worksheet

F	G	S	E	T	M	B	C	**S**	Y	T
S	D	F	**A**	E	W	G	H	**E**	D	S
S	R	H	**G**	D	R	F	B	**N**	E	E
G	E	Y	**R**	**O**	**B**	**O**	**T**	**S**	R	F
U	J	N	**I**	B	M	G	C	**O**	V	D
F	K	K	**C**	S	E	H	Y	**R**	C	U
W	**E**	**D**	**U**	**C**	**A**	**T**	**E**	**S**	S	H
K	J	D	**L**	D	P	L	E	R	A	V
H	S	R	**T**	S	F	G	J	Y	E	R
M	**A**	**N**	**U**	**F**	**A**	**C**	**T**	**U**	**R**	**E**
L	W	Q	**R**	Z	X	V	R	S	J	K
U	Z	A	**E**	N	R	F	V	Q	M	G

Check your progress

Revision

1. You can touch hard copy, it is usually on paper. Information on screen is soft copy, which is a virtual record of something stored in a computer.

2. A mouse is an output device. False
    A printed document is a hard copy. True
    The second generation of computers used valves. False
    The home row keys on a keyboard start with Y U I O. False
    An icon is a shortcut. True
    File Explorer is only used to locate files. False

3. Any three from: reference book, dictionary, atlas, encyclopaedias, magazine articles, journals, newspapers if article written after the event. Accept any other reasonable response.

4. Accept any reasonable answer, including: speeches, government publications, video recordings, photographs, films, letters, audio recordings.

5. =SUM(ABOVE)

6. Any whole number, such as: 6; –8; 90,876; –100; 78

7. A LAN is a local area network, used when computers are close together, such as in a school. A WAN is two or more LANs connected together over a large area.

8. Word processor – Software
    Light pen – Hardware
    Screen – Hardware
    Ethernet cable – Networks
    Modem – Hardware
    Antivirus checker – Software
    Cortana – Software

9. (a) and (b) should be ticked.

10. The discussion should include consideration of some of the following: education, communication, agriculture, medical. The discussion should be based in the context of the community or the wider community.

Introduction

In this Strand, teachers can expect to introduce MS PowerPoint as a presentation software package. Other than the Home ribbon explored in Basic 4, learners also explore the additional tabs and ribbons in MS PowerPoint.

Sub-strand 1: Introduction to MS PowerPoint (tabs and ribbons of MS PowerPoint)

Task: 1 of 2	
Sub-strand: 1. Introduction to MS PowerPoint (tabs and ribbons of MS PowerPoint)	
Content standard: B5.2.1.1 Demonstrate how to use MS PowerPoint.	**Indicator:** B5.2.1.1.1 Show the use of insert, design, animation and transition in the ribbons section. (New Open, Save, Save As, Print and Close) and the Insert and design ribbon.
Performance indicator: **ALL** learners will be able to show the use of insert, design, animation and transition in the ribbons section. **SOME** learners will be able to show the use of New, Open, Save, Save As, Print and Close in the ribbons section. **FEW** learners will be able to show the use of insert, design, animation and transition in the ribbons section, New, Open, Save, Save As, Print and Close, and the Insert and design ribbon.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: insert, design, animation, transition, design ribbon	
In this task: **The teacher should** guide learners through the steps to create a new MS PowerPoint slide. **Learners should** create a drawing of the Ghana flag using MS PowerPoint.	

Resources required

On CD

- Task 1 Presentation.pptx

Phase 1: Start of task
Ask learners to discuss briefly how they would draw images on the computer.
Ask them to draw the Ghana flag on a sheet of paper.

Phase 2: Main

Demonstrate how to use MS PowerPoint features to create any shape similar to a country's flag but not the Ghana flag.

Use the **Task 1 Presentation.pptx** to guide learners through the steps to create a new MS PowerPoint slide using File menu, Insert and Design ribbons, and use shapes in the Insert ribbon to draw a flag shape.

Allow learners to create a drawing of the Ghana flag using MS PowerPoint.

Phase 3: End of task

Ask learners to share their flags in pairs and to discuss any difficulties they might have experienced in making the flag and how to overcome their difficulties.

Extension activity

Ask the more able learners to do Activity 2.1 in the Learner's Book.

Answers to Activity 2.1   Learner's Book page 55

1.   All the learners may have different ideas. Here is an example:
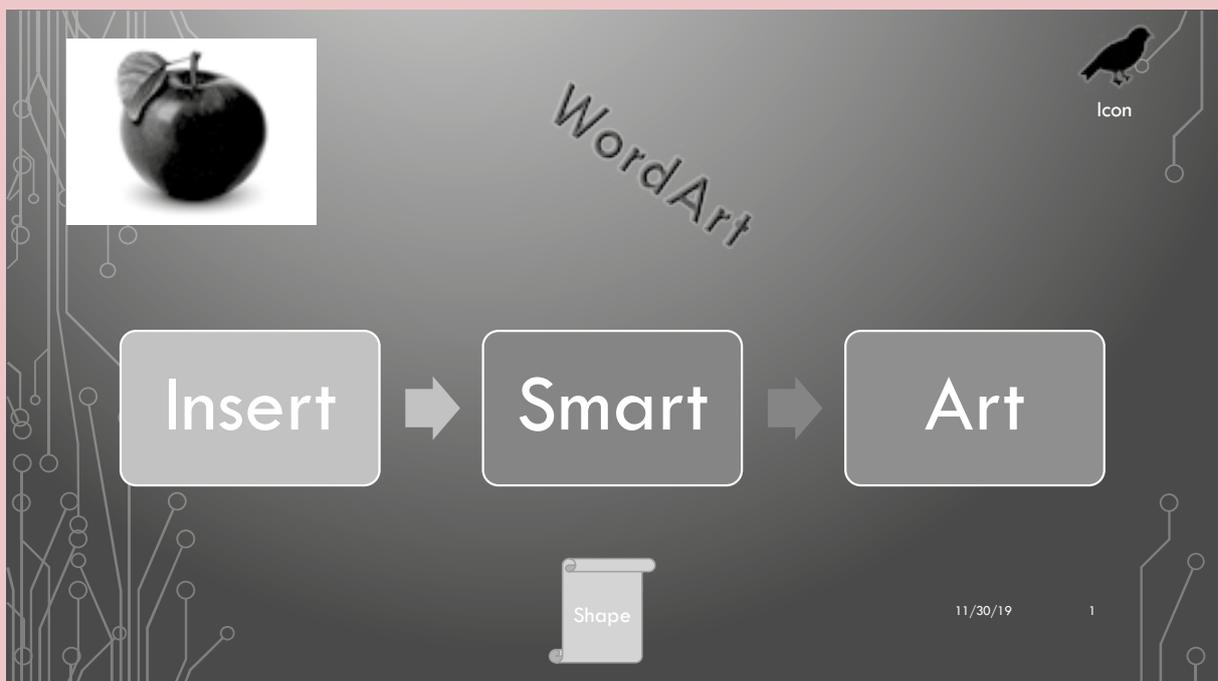
2.   The learners should have:
   • designed a slide on paper
   • used icons appropriate to getting to school in the morning
   • created a slide that matches the one designed on paper.

Learners should be encouraged to reflect upon, and then to discuss their work.

Task: 2 of 2

Sub-strand: 1. Introduction to MS PowerPoint (tabs and ribbons of MS PowerPoint)

Content standard: B5.2.1.1 Demonstrate how to use MS PowerPoint.	**Indicator:** B5.2.1.1.2 Show a 5-slide presentation using Insert, Design, Animations and Transition of the ribbons studied.

Performance indicator:	**Core competencies:**
ALL learners will be able to create a 5-slide presentation showing the use of insert, design, animation and transition in the ribbons section.	1. Creativity and innovation
	2. Communication and collaboration
SOME learners will be able to create a 5-slide presentation showing the use of insert, design, animation and transition in the ribbons section on the topic of 'Myself'.	3. Cultural identity and global citizenship
	4. Personal development and leadership
	5. Digital literacy
FEW learners will be able to create a colourful 5-slide presentation showing the use of insert, design, animation and transition in the ribbons section on the topic of 'Myself'.	

Key words: multi-slide presentation, slide show

In this task:

The teacher should use the **Task 2 Presentation.pptx** to illustrate the standard of presentation they are expected to produce in this task.

Learners should create a 5-slide presentation about 'Myself' that fulfils a set of criteria.

Resources required

Learner's Book pages 56–60

On CD

- Task 2 Presentation.pptx

Phase 1: Start of task

Use the **Task 2 Presentation.pptx** and ask learners to identify the features that were used to create each slide, such as Insert, Image, Animation, Colour, Transitions and slideshow.

Phase 2: Main

Follow the instructions on the relevant pages in the Learner's Book to talk learners through the stages of inserting images, selecting the slide layouts, etc.
Let learners create their presentation.

Phase 3: End of task

Select one of best presentations in the class and ask learners to evaluate it against the criteria listed on slide 2 of the **Task 2 Presentation.pptx**.
For further practice, let learners complete Activity 2.2 in the Learner's Book.

Extension activity

Ask the more able learners to attempt Activity 2.3 in the Learner's Book.
Learners must ensure that their presentation fulfils all the criteria listed in the activity.

Check your progress

Revision

There are no correct or incorrect answers to these questions. The learners can use the questions as a checklist to monitor their own progress.

Strand 3: Word processing

Introduction

Strand 3 follows up on the Introduction to using MS Word from Basic 4. It is assumed that learners will be familiar with the use of the Home tab and ribbons. Here, learners will explore how to use the additional tabs and ribbons of a word processor, such as the Insert, Design and Layout ribbons.

Sub-strand 1: Introduction to word processing (tabs and ribbons of word processing)

Task: 1 of 3	
Sub-strand: 1. Introduction to word processing (tabs and ribbons of word processing)	
Content standard: B5.3.1.1 Illustrate the use of word processing.	**Indicator:** B5.3.1.1.1 Demonstrate the use of Insert, Design, and Layout (New, Open, Save, Save As, Print and Close) and Insert, Design and Layout ribbons (i.e. clipboard, slides, fonts and paragraph).
Performance indicator: **ALL** learners will be able to use the File Menu and Insert Ribbon. **SOME** learners will be able to use the Design and Layout Ribbon. **FEW** learners will be able to use the File Menu, Insert, Design and Layout Ribbon.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: File menu, Layout ribbon, page orientation, landscape, portrait, text alignment, justified, font type, font size, page margin, line spacing, insert table, columns	
In this task: **The teacher should** use the Learner's Book pages to demonstrate how to use the File menu and Insert, Design and Layout ribbons. **Learners should** complete the **Task 1 Worksheet.docx** on word processing features.	

Resources required

On CD

- Task 1 Worksheet 1.pdf
- Task 1 Worksheet 2.pdf
- Task 1 Worksheet 2_text.pdf

Phase 1: Start of task

Let learners complete **Task 1 Worksheet 1.pdf**, in which they match the images with the key words.

Phase 2: Main

Demonstrate how to use the word processing features by referring to the Learner's Book. Guide learners through carrying out instructions 1–9 of **Task 1 Worksheet 2.pdf**. Learners will need to have the **Task 1 Worksheet 2_text.pdf** file available on their computers in order to do this task.

Phase 3: End of task

Ask learners to screenshot their evidence of having carried out instructions 1 to 9 on the **Task 1 Worksheet 2.pdf**, and to review and give feedback to each other in pairs.

Extension activity

Ask the more able learners to attempt Activity 3.1 in the Learner's Book. Learners' posters will vary but they should all type in the ingredients correctly. Ensure that the posters fulfil the criteria listed in the Learner's Book.

Answers to Task 1 Worksheet 1

1.   C – Layout ribbon
2.   J – Font size
3.   A – File menu
4.   K – Columns
5.   B – Design ribbon
6.   H – Line spacing
7.   E – Portrait orientation
8.   F – Page margin
9.   D – Landscape orientation
10. G – Justified alignment
11. I – Font types

Task: 2 of 3	
Sub-strand: 1. Introduction to word processing (tabs and ribbons of word processing)	
Content standard: B5.3.1.1 Illustrate the use of word processing.	**Indicator:** B5.3.1.1.1 Demonstrate the use of Insert, Design, and Layout (New, Open, Save, Save As, Print and Close) and Insert, Design and Layout ribbons (i.e. clipboard, slides, fonts and paragraph).
Performance indicator: **ALL** learners will be able to use the File Menu and Insert Ribbon. **SOME** learners will be able to use the Design and Layout Ribbon. **FEW** learners will be able to use the File Menu, Insert, Design and Layout Ribbon.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: File menu, layout ribbon, page orientation, landscape, portrait, text alignment, justified, font type, font size, page margin, line spacing, insert table, columns

In this task:

The teacher should demonstrate using the Learner's Book pages to remind learners how to use the File menu and the Insert, Design and Layout ribbons in word processing.

Learners should complete the **Task 1 Worksheet 2.pdf** from where they left off in the previous task.

Resources required

On CD

- Task 1 Worksheet 2.pdf
- Task 1 Worksheet 2_text.pdf

Phase 1: Start of task

Use the key words in the table below to play the Hot Seat game. See page 14 for the rules of the game.

Keyword	Meaning
Spell check	Automatically check the words against those in the computer's dictionary and display as a red squiggly line under the misspelt word.
Header	Faded out section at the top of a page where you can write your name, date and page numbers in a document.
Footer	Faded out section at the bottom of a page where you can write your name, date and page numbers in a document
Indent	Push the beginning of your text inwards from the margin by a few millimetres or centimetres.
Word count	How many words you have used on a page?
Save	This will save your document or file in the last place you saved it or opened it from.
Save As	This will save your document or file in a different place from Save. This allows you to choose the exact folder you want to save your file in.
Columns	Newspapers usually display their text in columns to make it easier on the eye for reading purposes.

Phase 2: Main

Continue where you left off in the previous task. Let learners complete instructions 10–13 on the **Task 1 Worksheet 2.pdf**.

Phase 3: End of task

Ask learners to screenshot their evidence of having carried out all the instructions on the worksheet and to review and feedback to each other in pairs.

Extension activity

Ask the learners to attempt Activity 3.2 in the Learner's Book. Check that the original poster has been loaded and that all instructions in the activity have been followed.

There may be differentiation shown between learners who have managed to carry out all of the tasks in this activity, those who have done most of them and those who have done only a few. Learners who may have finished early could assist those who haven't achieved it all yet.

Task: 3 of 3

Sub-strand: 1. Introduction to word processing (tabs and ribbons of word processing)

Content standard: B5.3.1.1 Illustrate the use of word processing.	**Indicator:** B5.3.1.1.2 Illustrate the use of Insert, Design and Layout ribbons.
Performance indicator: **ALL** learners will be able to use the word processor features of the Insert ribbon. **SOME** learners will be able use the word processor features of the Design ribbon. **FEW** learners will be able to use the word processor features of the Insert, Design and Layout ribbons.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: File menu, layout ribbon, page orientation, landscape, portrait, text alignment, justified, font type, font size, page margin, line spacing, insert table, columns

In this task:

The teacher should demonstrate the use of the Insert, Design and Layout ribbons using the Learner's Book pages where necessary, so that learners can complete the **Task 3 Worksheet.pdf**.

Learners should complete the **Task 3 Worksheet.pdf** on word processing features.

Resources required
Learner's Book pages 63–76

On CD

- Task 3 Worksheet.pdf
- Task 3 Worksheet_text.pdf

Phase 1: Start of task

Ask learners to discuss their favourite tourist destinations in Ghana. Use this link to stimulate the discussion.
https://edition.cnn.com/travel/article/ghana-year-of-return-tourism-intl/index.html

Phase 2: Main

Allow learners to work through the steps of the **Task 3 Worksheet.pdf**.

Phase 3: End of task

Ask learners to screenshot their evidence of having carried out all the instructions on the worksheet and to review and feedback to each other in pairs.

Extension activity

1. Ask the more able learners to attempt Activities 3.3 and 3.4 in the Learner's Book.

    For Activity 3.3, the list of four books is quite a lot of text to go into one notice. It will need to be entered correctly. Check to see that all of the elements required have been completed correctly.

    For Activity 3.4, learners will have printed one page containing a screenshot of their poster and of their notice.

2. Let learners use some of the features of the Insert ribbon with the file they saved in Activity 3.4. Let them follow these steps:

    a) Recall the file from Activity 3.4 containing the two screenshots of your poster and the notice.

    b) Click to position your cursor *after* the first screenshot and insert a page break to mark the point where you want the page to end and the next page to start.

    c) You should now see your poster and your notice on their own on two different pages.

    d) Select orientation to show both pages in Landscape view

    e) From the Insert ribbon, select margins to change your margins to Moderate.

    f) Save your work.

    g) Experiment with the margins and choose the sizes that suit your screenshots the best and save again.

    At the end of this activity, learners should have saved their file from Activity 3.4 with the poster and the notice each on a page of their own, in landscape view, with the margins changed.

Check your progress

Revision

Learners are to self-assess their knowledge and skill in using various word processing features.

> ## Introduction
>
> In Strand 5, learners are introduce to MS Access as a database software package, and they explore the databases, spreadsheets and programming languages.

Sub-strand 1: Introduction to databases, algorithm and programming, languages (e.g. MS Excel, Scratch, VB Dot Net, etc.)

Task: 1 of 12

Sub-strand: 1. Introduction to databases, algorithm and programming, languages (e.g. MS Excel, Scratch, VB Dot Net, etc.)

Content standard: B5.5.1.3 Demonstrate how to use databases.	**Indicator:** B5.5.1.3.1 Describe databases.
Performance indicator: **ALL** learners will be able to identify the features of a database. **SOME** learners will be able to identify the types of databases that exist. **FEW** learners will be able to identify the features of a database and the types of databases that exist.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: database, table, field, record, design view, datasheet view, data type, text, currency, date and time, auto number, yes/no

In this task:

The teacher should use the Learner's Book to describe what a database is, what the features of a database are and the types of databases that exist.

Learners should complete questions on the **Tasks 1–3 Worksheet.pdf** on describing databases.

Resources required

On CD

- Tasks 1–3 Worksheet.pdf
- Task 1 Presentation.pptx
- Images of a filing cabinet and database table

Phase 1: Start of task

Show learners the pictures of the filing cabinet and database table on the CD. Ask them to compare and discuss the differences and similarities between the two pictures.

Customer ID
Customer Name
Address
Country
Phone
Order Date
Salesperson
Region

Customers table

Customer ID
Invoice ID
Order Date
Subtotal
Discount
Region
Salesperson

Invoices table

Invoice ID
Product ID
Unit Price
Qty
Extended Price
Product Name
Total
Total in Stock
Order Date

Line Items table

Product ID
Product Name
Unit Price
Stock
Category
Discount
Total in Stock

Products table
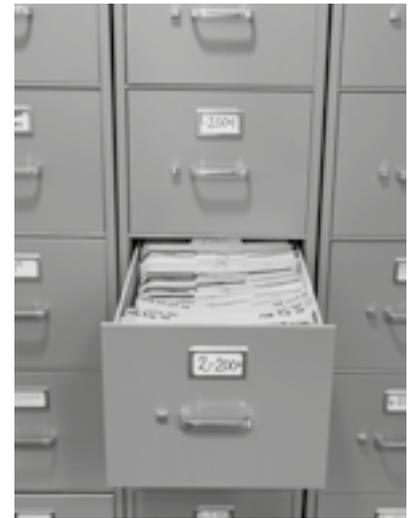
Phase 2: Main

Explain that databases exist everywhere in our daily lives. They are collections of things, people, etc. grouped together based on certain criteria. For example, the learners in the class are a database with groups according to gender (girls and boys), ages, long or short hair, who walked to school or not, etc.
Ask learners if they can think of another example of a database and to say why they think it is a database.
Group learners into groups of five or six. Ask each group to create a database by drawing up a table with all of their following details: name, birthday month, age and gender.
Explain what a field is and what a record is. Ask learners to label their database fields and records and to give their database tables a group name.
Allow learners to watch the short video from YouTube on:
https://www.youtube.com/watch?time_continue=25&v=BUE-XJEHp7g
Then let learners complete as many of the questions as they can on the **Tasks 1–3 Worksheet.pdf**.

Phase 3: End of task

Ask learners to list examples of possible databases.

Extension activity

Ask learners to complete Activity 5.1 in the Learner's Book.

Answers to Tasks 1–3 Worksheet

Part 1

1. Flat-file – d
2. Relational – b
3. Online – f
4. Back-end – e
5. Mobile – c
6. Centralised – a

Part 2

Database types	Examples from everyday life
Flat-file	A list of groceries
Relational	A set of tables linked together as at the doctor and pharmacy
Online	Bank accounts linked to bank card and to shops where you buy goods and services
Back-end	Databases that keep all the data found on a website or search engine like Google
Mobile	Contact numbers on mobile phones
Centralised	Hospital or tax records

Part 3

1. tables
2. fields
3. record
4. **a)** true
   b) false
5. asking questions of the data in a database
6. **a)** true
   b) true
   c) false
   d) true
   e) true
7. a wizard
8. Helps you to create a query by allowing you to select from a range of options instead of designing it from scratch, which takes a lot more time.
9. It saves you a lot of time, and, if you are not an expert at using the software, you can still create professional-looking documents.
10. Criteria enable you to be very specific about the result you are looking for. You do not have to search through a lot of unnecessary tables and records to find the records you need.
11. You can design a query very specifically and can design a professional-looking form. You can input your query in the form, and it will return an answer to your query.

Answers to Activity 5.1 Learner's Book page 82

1. Field (column) – One type of information that could be a number or a name

   Record (row) – Information about one person or thing; a row containing pieces of information that relate to the same person or thing

   Table – A collection of related records

   Database – A structured or organised set of data
2. Microsoft Access, FileMaker Pro, Open Office Base, or the name of any other database program

Task: 2 of 12

Sub-strand: 1. Introduction to databases, algorithm and programming, Languages (e.g. MS Excel, Scratch, VB Dot Net, etc.)

Content standard: B5.5.1.3 Demonstrate how to use databases.	**Indicator:** B5.5.1.3.2 Discuss the importance and uses of databases.

Performance indicator:	**Core competencies:**
ALL learners will be able to discuss the importance of a database.	1. Creativity and innovation
	2. Communication and collaboration
SOME learners will be able to discuss the uses of a database.	3. Cultural identity and global citizenship
	4. Personal development and leadership
FEW learners will be able to discuss the importance of a database and the uses of a database.	5. Digital literacy

Key words: database, table, field, record, design view, datasheet view, data type, text, currency, date and time, auto number, yes/no

In this task:

The teacher should use the Learner's Book and the **Task 2 Reading Worksheet.pdf** to explain the importance and uses of a database.

Learners should complete the last questions on the **Tasks 1–3 Worksheet.pdf**, which they started in the previous task.

Resources required

On CD

- Task 2 Reading Worksheet
- Tasks 1–3 Worksheet

Phase 1: Start of task

Play the Hot Seat game with the key words listed above. See page 14 for the rules of the game.

Phase 2: Main

Read and discuss the **Task 2 Reading Worksheet.pdf** with the learners.
Let learners answer more questions on the **Tasks 1–3 Worksheet.pdf** that they started in the previous task.
They can watch the following YouTube video again:
https://www.youtube.com/watch?time_continue=25&v=BUE-XJEHp7g

Phase 3: End of task

Ask learners to self-assess their work. Do this by going over the answers to questions they managed to complete on the **Tasks 1–3 Worksheet.pdf**.

Task: 3 of 12

Sub-strand: 1. Introduction to databases, algorithm and programming, Languages (e.g. MS Excel, Scratch, VB Dot Net, etc.)

Content standard: B5.5.1.3 Demonstrate how to use databases.	**Indicator:** B5.5.1.3.3 Describe the types of databases.
Performance indicator: **ALL** learners will be able to describe some types of database. **SOME** learners will be able to describe most types of database. **FEW** learners will be able to describe all types of database.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: flat-file database, relational database

In this task:
The teacher should use the Learner's Book to explain and describe the different types of databases.
Learners should complete the last questions on the **Tasks 1–3 Worksheet.pdf**.

Resources required

On CD

- Tasks 1–3 Worksheet.pdf

Phase 1: Start of task

List examples of databases found everywhere in life, such as a wardrobe, a refrigerator, etc.

Phase 2: Main

Use the Learner's Book to make summaries of the different types of databases.
Let learners complete the last few questions on the **Tasks 1–3 Worksheet.pdf** that relate to different types of databases.

Phase 3: End of task

Play the Word Boggle game. Rules:
Write down as many words about databases as possible in three minutes. Ask the first learner to call out his or her words and all learners with the same words should scratch those words off their lists. The next learner who still has words left on his list, must call out all his or her words, and again learners must scratch those words off their list. Repeat until everyone's list is empty and the last learner with most words that no one else had is the winner.

Task: 4 of 12
Sub-strand: 1. Introduction to databases, algorithm and programming, languages (e.g. MS Excel, Scratch, VB Dot Net, etc.)

Content standard: B5.5.1.3 Demonstrate how to use databases.	**Indicator:** B5.5.1.3.4 Identify the types of databases and data.

Performance indicator:

ALL learners will be able to describe some types of database and data types.

SOME learners will be able to describe most types of database and data types.

FEW learners will be able to describe all types of database and data types.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: flat-file database, relational database, currency, test, number, date and time, yes/no

In this task:

The teacher should use the Learner's Book to explain the different types of data, such as currency, text, number, date and time, yes/no, etc.

Learners should create group presentations about the different types of data.

Resources required

Phase 1: Start of task

Use the Learner's Book to explain the different types of data, such as currency, text, number, date and time, yes/no, etc.

Phase 2: Main

Divide learners into groups. Each group will have to prepare a short presentation on the types of data. Allow learners to prepare their presentations during this task and to be ready for presenting and evaluating other group's presentations during the next task.

Make sure learners use the following evaluation criteria for their presentations:
- The content must for correct for each data type.
- There should at least five data types.
- There should be pictures on each slide.
- The presentation must not take longer than three minutes.
- Each group member must explain one type of data type.

Phase 3: End of task

Check that each group is ready for the next task's presenting and evaluating.

Task: 5 of 12
Sub-strand: 1. Introduction to databases, algorithm and programming, languages (e.g. Ms Excel, Scratch, VB Dot Net, etc.)

Content standard: B5.5.1.3 Demonstrate how to use databases.	**Indicator:** B5.5.1.3.4 Identify the types of databases and data. B5.5.1.3.5 Explain fundamental database concepts.

Performance indicator:	**Core competencies:**
ALL learners will be able to identify some types of database and data types.	1. Creativity and innovation
	2. Communication and collaboration
SOME learners will be able to identify most types of database and data types.	3. Cultural identity and global citizenship
	4. Personal development and leadership
FEW learners will be able to identify all types of database and data types.	5. Digital literacy

Key words: flat-file database, relational database, currency, test, number, date and time, yes/no

In this task:

The teacher should facilitate the groups' presentations, which they prepared in the previous task.

Learners should present their group presentations about the different types of data.

Resources required

Phase 1: Start of task

Briefly remind learners that each group has only 3 minutes to do their presentation, and that there will be 2 minutes for evaluations.

Phase 2: Main

Let the groups take turns to do their presentations, which they prepared in the previous task.

Phase 3: End of task

Discuss the overall quality of the learner's efforts and correct any misunderstandings about databases and the different types of data types.

Extension activity

Let learners complete Activity 5.2 in the Learner's Book.

Answers to Activity 5.2

1. Short text was chosen for 'Make' because the make of a car is usually just two or three words.

   Boolean was chosen for 'In stock' because it is a Yes/No answer.

   The name of a colour is usually 1 or 2 words, so short text was chosen for 'Colour'.

   Currency was chosen for 'Price' because the price of something will be a monetary amount.

   'Customer gender' is probably a choice between male and female, so it is Boolean.

   The 'Date ordered' only needs to be a short date.

2.

Number	Horse name	Height	Age	Buying price	Selling price	Shod	Prizes won
Autonumber	Short text	Number	Number	Currency	Currency	Boolean or Yes/No	Short text

Task: 6 of 12

Sub-strand: 1. Introduction to databases, algorithm and programming, languages (e.g. MS Excel, Scratch, VB Dot Net, etc.)

Content standard: B5.5.1.3 Demonstrate how to use databases.

Indicator: B5.5.1.3.5 Explain fundamental database concepts.

Performance indicator:

ALL learners will be able to describe some types of fundamental database concepts.

SOME learners will be able to describe most types of fundamental database concepts.

FEW learners will be able to describe all types of database and fundamental database concepts.

Core competencies:
1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: data types, data selection, data manipulation, security, backup, restore

In this task:
The teacher should ensure that learners in their groups present during this task.
Learners should present their group presentations about the different types of data.

Resources required

Phase 1: Start of task
Play the Hot Seat game with the key words listed above. See page 14 for the rules of the game.

Phase 2: Main
Let learners complete Activity 5.3 in the Learner's Book.

Phase 3: End of task
Check the answers to Activity 5.3 with the class.

Answers to Activity 5.3   Learner's Book pages 84–85

1. a) Author
    b) 2 short text and number

2. Words running across from left to right: queries, database, cell, column, reports, sorting, field, table, forms
    Words running slanted: row

3. Answers may vary. Here is an example:
    First name: short text
    Last name: short text
    House number: integer (number would be acceptable, but higher achievers should have identified this as a whole number, which is an integer)
    Street: short text
    Town: short text
    Birthday: date
    Email address: short text

Task: 7 of 12

Sub-strand: 1. Introduction to databases, algorithm and programming, languages (e.g. MS Excel, Scratch, VB Dot Net, etc.)

Content standard: B5.5.1.3 Demonstrate how to use databases.	**Indicator:** B5.5.1.3.6 Discuss programming languages and their use –Scratch.
Performance indicator: **ALL** learners will be able to discuss some programming languages and their uses –Scratch. **SOME** learners will be able to discuss a few more programming languages and their uses – Scratch. **FEW** learners will be able to discuss many programming languages and their uses –Scratch.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: sprites, blocks, snap, categories

In this task:

The teacher should discuss programming languages and assist learners to work through a tutorial on using Scratch.

Learners should complete an online tutorial on the Scratch programming language.

Resources required   Learner's Book pages 86–87

Phase 1: Start of task

Refer learners to the Learner's Book section on programming languages and their uses. Discuss how a programming language like Scratch could be useful for anything.

Phase 2: Main

Ensure all learners are connected to the online Scratch portal to try out a tutorial on how to use this programming language: https://scratch.mit.edu/projects/editor/?tutorial=getStarted

Support learners through the tutorial as required.

Phase 3: End of task
Learners could swap and share their Scratch programming efforts.

Task: 8 of 12

Sub-strand: 1. Introduction to databases, algorithm and programming, languages (e.g. MS Excel, Scratch, VB Dot Net, etc.)

Content standard: B5.5.1.3 Demonstrate how to use databases.	**Indicator:** B5.5.1.3.6 Discuss programming languages and their use – vb.net.
Performance indicator: **ALL** learners will be able to discuss some programming languages and their uses – vb.net. **SOME** learners will be able to discuss a few more programming languages and their uses – vb.net. **FEW** learners will be able to discuss many programming languages and their uses – vb.net.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: objects, components, properties and methods

In this task:
The teacher should allow learners to access the online tutorial in the www.w3schools.net portal.
Learners should try out the vb.net programming language on the online www.w3schools.net portal.

Resources required

Learner's Book pages 86–87

Phase 1: Start of task
Ensure all learners are connected to the online w3schools portal to try out a tutorial on how to use this programming language: https://www.w3schools.com/asp/webpages_intro.asp

Phase 2: Main
Support learners through the tutorial as required.
Discuss how a programming language like vb.net could be useful for anything.

Phase 3: End of task
Learners could swap and share their vb.net programming efforts.

Sub-strand 2: Introduction to electronic spreadsheet (tabs, ribbons manipulation)

Task: 9 of 12

Sub-strand: 2. Introduction to electronic spreadsheet (tabs, ribbons manipulation)

Content standard: B5.5.1.2 Demonstrate how to use electronic spreadsheet.	**Indicator:** B5.5.1.2.1 Identify electronic spreadsheets and their uses.

Performance indicator: **ALL** learners will be able to identify the examples of electronic spreadsheets. **SOME** learners will be able to identify the uses of electronic spreadsheets. **FEW** learners will be able to identify the uses of electronic spreadsheetsand list examples.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: MS Excel, Numbers, Google sheets, Lotus 1-2-3

In this task:

The teacher should use the Learner's Book to describe what a spreadsheet is, what the features of a spreadsheet are and the types of electronic spreadsheets that exist. The uses of electronic spreadsheets should also be explained.

Learners should complete the first few questions on the **Task 9 Worksheet.pdf** on identifying electronic spreadsheets.

Resources required

On CD

- Task 9 Worksheet.pdf

Phase 1: Start of task

Use question 1 on the **Task 9 Worksheet.pdf**. Discuss learner's answers as a whole class.

Phase 2: Main

In pairs, let learners discuss and complete questions 2 and 3 on the **Task 9 Worksheet.pdf**.

Phase 3: End of task

Ask learners to suggest why electronic spreadsheets might be useful.

> **Extension activity**
>
> Let learners complete Activity 5.4 in the Learner's Book.

Answers to Task 9 Worksheet

Possible answers to the activity:

1. a) Use of a list with names and amounts paid; use of a table with names and amounts paid on different dates.
   b) Possible drawings could include columns showing names, dates paid and amounts paid.
2. a) Numbers is a spreadsheet that allows more than one person to edit and work on it in real time. It can create charts and graphs and allows team members working on a multitude of different makes of devices to work together on the same spreadsheet file.
   Open Office Calc is similar to MS Excel with almost all of the same abilities. It can also open and

save files in MS Excel's file format.

MS Excel is a spreadsheet with tables and a lot of functionality to manipulate data, including making charts and graphs.

Lotus 1-2-3 is an earlier version of a spreadsheet. This program is now discontinued.

VisiCalc (visible calculator) was the first spreadsheet developed by Apple. VisiCalc is now outdated.

b) VisiCalc and Lotus 1-2-3 were earlier spreadsheet programs and have been outdated for some time. They were both static in that only the person working on it on their computer could work on it at that time.

Open Office Calc and MS Excel are more complicated to collaborate with others simultaneously as you work on them compared to Numbers, which works across all types of devices and allows collaboration with others in real time.

3. If you have a free Google account, you are able to access Google Sheets, which is Google's version of an electronic spreadsheet that allows you to work with others and edit in real time.

Task: 10 of 12
Sub-strand: 2. Introduction to electronic spreadsheet (tabs, ribbons manipulation)

Content standard: B5.5.1.2 Demonstrate how to use electronic spreadsheet.	**Indicator:** B5.5.1.2.2 Discuss the importance of electronic spreadsheets and their uses.
Performance indicator: **ALL** learners will be able to discuss the importance of electronic spreadsheets. **SOME** learners will be able to discuss the uses of electronic spreadsheets. **FEW** learners will be able to discuss the importance of electronic spreadsheets and their uses.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: MS Excel, Numbers, Google sheets, Lotus 1-2-3
In this task: **The teacher should** facilitate access to resources that learners can use to research the importance and use of electronic spreadsheets. **Learners should** use the **Task 10 Worksheet.pdf** on the importance and uses of electronic spreadsheets to guide their research in preparation for a debate to be held during the next task.

Resources required

On CD

- Task 10 Worksheet.pdf

Phase 1: Start of task

Brainstorm the importance and possible uses of electronic spreadsheets.

Phase 2: Main

Help learners to prepare for a class debate in which they will argue for and against the use of electronic spreadsheets. The debate will be done in the next task:

- Divide the class in two groups: one group will argueFor and the other Against.

- In pairs, learners should research and prepare for the debate using the **Task 10 Worksheet.pdf**, relevant information in the Learner's Book, and online research.

Phase 3: End of task

Inform learners of the procedure during the debate for the next task:
- Anyone from each group can stand up and speak in the debate.
- Points already made may not be repeated.
- Only new points on the topic can be awarded a point.
- The arguments must be accurate and correct as stated in the sources.
- The team with the highest number of points wins the debate.

Task: 11 of 12

Sub-strand: 2. Introduction to electronic spreadsheet (tabs, ribbons manipulation)

Content standard: B5.5.1.2 Demonstrate how to use electronic spreadsheet.	**Indicator:** B5.5.1.2.2 Discuss the importance of electronic spreadsheets and their uses.

Performance indicator: **ALL** learners will be able to discuss the importance of electronic spreadsheets. **SOME** learners will be able to discuss the uses of electronic spreadsheets. **FEW** learners will be able to discuss the importance of electronic spreadsheets and their uses.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: edit, collaborate, real time, simultaneous, co-author, share

In this task:

The teacher should facilitate a class debate on the importance and use of electronic spreadsheets.

Learners should debate and discuss, either For or Against, the importance and uses of electronic spreadsheets. They should use their prepared notes from the previous task to speak out at the debate to gain the maximum number of points for their team.

Resources required

On CD

- Task 11 Worksheet.pdf

Phase 1: Start of task

Arrange the desks in the classroom so that each group can sit opposite each other as a group for the debate. You will be the judge as to whether a point should be awarded when a speaker makes a point for their group. Use the debate points sheet in the **Task 11 Worksheet.pdf**.

Phase 2: Main

Allow learners to begin their debate by calling for the first speaker on either side. Encourage learners from both teams to challenge each other by posing extra questions, such as: Does Team A agree with Team B's point of view? Why? etc.

Phase 3: End of task

Total up the scores and announce which team are the winners in today's debate.

Task: 12 of 12	**67**

Sub-strand: 2. Introduction to electronic spreadsheet (tabs, ribbons manipulation)

Content standard: B5.5.1.2 Demonstrate how to use electronic spreadsheet.	**Indicator:** B5.5.1.2.3 Demonstrate how to access the MS Excel interface.
Performance indicator: **ALL** learners will be able to demonstrate how to access MS Excel on their computer and display text. **SOME** learners will be able to demonstrate how to access and display text in MS Excel on their computer and mobile gadget. **FEW** learners will be able to demonstrate how to access and display text in MS Excel on their computer, mobile gadgets and tablets.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: MS Excel, Worksheet, Tabs, Ribbons

In this task:

The teacher should refer learners to the Learner's Book section on the MS Excel interface. Ensure the learners are able to access the MS Excel tour to be able to answer the questions on the **Task 12 Worksheet.pdf**.

Learners should answer the questions on the **Task 12 Worksheet.pdf**.

Resources required

On CD

- Task 12 Worksheet.pdf

Phase 1: Start of task

Ask learners to open their MS Excel spreadsheet programs and select New. Guide them to finding the Welcome Tour of MS Excel.

Phase 2: Main

Refer learners to the Learner's Book pages on MS Excel Interface.
Ask learners to do question 1 of the **Task 12 Worksheet.pdf** on their own.
Let learners complete the **Task 12 Worksheet.pdf** in pairs or individually.

Phase 3: End of task

Ask learners to swap their work and go over their answers together as a whole class.

Extension activity

Let learners complete Activity 5.5 in the Learner's Book.

Answers to Activity 5.5

1. Answers will vary according to ability. All should be encouraged.
2. Answers will vary depending on the program being used.
   a) They will probably see columns labelled from A to H or further.
   b) Columns could range from A to XFD.
3. a) Answers will vary; probably from 1 down to around 16.
   b) Row numbers range from 1 to 1048576; in total, 1048576 rows.
4. In total, 16384 columns and 1048574 rows. Answers may vary.

Check your progress

Revision

1. Row: a record of data about one person or thing
   Column: contains one item of data of the same type, e.g. someone's first name
   Record: a record is the same as a row and is related only to one person or thing
   Field: this is a term for the items of data in a column
   Table: collection of records
   Query: when you need to find some information from a database, you query it, to find, for instance, the email addresses of all your friends living in the same community.
   Report: the results of a query; when you have the results of a query, you can print it out in a report.
2. Active cell: the cell you are currently clicked in
   Columns: run from top to bottom of a worksheet; they each have the name of a letter or letters
   Rows: go across a worksheet from left to right; each of them is numbered
   Name box: the little box near the top right of the spreadsheet screen that tells you the name of the active cell

Introduction

In Strand 6, teachers can expect to find many different topics ranging from networks to web browsers and the World Wide Web, among other topics.

Tasks in Strand 6 are covered in ten sub-strands as follows:
1. Networks and how the internet works
2. Web browsers and web pages, including home pages, favourites and hyperlinks
3. Surfing the World Wide Web, including creating favourites, search engines and smart search engines
4. Favourite places and search engines, including how to handle search results
5. Using online forms, including working online, offline and downloading files and folders
6. Customising your browser, including how to set default search engines, home pages, apps, add-ons and plug-ins
7. Electronic mail, including creating and using different email accounts
8. Internet of Things (IoT), including its purpose, examples, components and the role of sensors in the IoT
9. Digital literacy, including digital safety and describing personal and private information
10. Digital literacy, including defining what a digital footprint is and the application of netiquette.

Sub-strand 1: Network overview

Task: 1 of 43

Sub-strand: 1. Network overview

Content standard: B5.6.1.1 Demonstrate how to network computers.	**Indicator:** B5.6.1.1.1 Explain what a network is.
Performance indicator: **ALL** learners will be able to explain partially what a network is. **SOME** learners will be able to explain mostly what a network is. **FEW** learners will be able to explain what a network is.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: LAN, network, wireless network, firewall, bits, bytes, kilobyte, megabyte, gigabyte, terabyte, cloud storage, bandwidth

In this task: **The teacher should** ensure learners can set up accounts on www.studyladder.com and work from the ICT – Networks and Data Storage task **Learners should** set up their accounts on www.studyladder.com and find the task on ICT – Networks and Data Storage.

Resources required

Phase 1: Start of task

Divide learners into groups to create paper word clouds of all the keywords listed above. Provide poster-size paper for each group and some thick coloured pens. Attach to the display boards when learners have completed.

Phase 2: Main

Assist learners to set up accounts on www.studyladder.com and work from the ICT – Networks and Data Storage task. Learners should login and answer the question at the end of each section. They should screenshot their result at the end and show the teacher their result.

Should online access not be available, refer learners to the relevant Learner's Book pages on networks for further information.

Phase 3: End of task

Recap the meanings of the key words.

Extension activity

Ask the more able learners to do Activity 6.1 in the Learner's Book.

Answers to Activity 6.1

Recap the meanings of the key words.

Task: 2 of 43

Sub-strand: 1. Network overview

Content standard: B5.6.1.1 Demonstrate how to network computers.	**Indicator:** B5.6.1.1.2 Describe how the internet works.
Performance indicator: **ALL** learners will be able to describe partially how the internet works **SOME** learners will be able to describe mostly how the internet works. **FEW** learners will be able to describe how the internet works.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: LAN, WAN, MAN, PAN

In this task:

The teacher should discuss with learners how the internet works.

Learners should complete the **Task 2 Worksheet.pdf**.

Resources required

On CD

•   Task 2 Worksheet.pdf

Phase 1: Start of task

Read the text on **Task 2 Worksheet.pdf** with the class and make sure that the understand the information and the terminology.

Phase 2: Main

Refer learners to the relevant pages in the Learner's Book and discuss how the internet works.
Have learners complete question 3 of the **Task 2 Worksheet.pdf**. It would be useful if they could have internet access to watch an online video about how the internet works.

Phase 3: End of task

Recap the meanings of the key words of this task.

Task: 3 of 43	
Sub-strand: 1. Network overview	
Content standard: B5.6.1.1 Demonstrate how to network computers.	**Indicator:** B5.6.1.1.3 Explain what the internet is.
Performance indicator: **ALL** learners will be able to explain partially what the internet is. **SOME** learners will be able to explain mostly what the internet is. **FEW** learners will be able to explain what the internet is.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: internet, data packages, bits	
In this task: **The teacher should** ensure that learners have internet access to watch a short video on what the internet is. **Learners should** watch an online video about what the Internet is and then complete the **Task 3 Worksheet.pdf**.	

Resources required

On CD

•   Task 3 Worksheet.pdf

Phase 1: Start of task

Play the Hot Seat game with the key words listed above. See page 14 for the rules of the game.

Phase 2: Main

Let learners complete the **Task 3 Worksheet.pdf**.

Phase 3: End of task

Ask learners to share their answers to questions 2 and 3 of the **Task 3 Worksheet.pdf**, where they list things about the internet that they learnt about and things they would like to know more about.

Sub-strand 2: Web browsers and web pages

Task: 4 of 43

Sub-strand: 2. Web browsers and web pages

Content standard: B5.6.2.1 Demonstrate how to use web pages.	**Indicator:** B5.6.2.1.1 Explain what a web browser is and its use.

Performance indicator:

ALL learners will be able to explain partially what a web browser is and its use.

SOME learners will be able to explain mostly what a web browser is and its use.

FEW learners will be able to explain what web browser is and its use.

Core competencies:
1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: web browser, search, URL, web address

In this task:

The teacher should refer learners to the Learner's Book section on web browsers and explain what a web browser is and some of its uses.

Learners should use the Learner's Book section on web browsers to summarise the main points about web browsers.

Resources required   Learner's Book pages 100–103

Phase 1: Start of task

Prepare a 'Clever Ball' using a large soft ball. Stick the key words listed above on pieces of paper onto the ball. Throw the Clever Ball around to learners and allow them to remove one piece of paper and then to try to explain what the meaning of the key word is. Keep passing the ball to learners until all the key words have been discussed.

Phase 2: Main

Use the Learner's Book section on web browsers to explain what a web browser is and some of its uses. Let the learners summarise the main points on web browsers from the Learner's Book information. Ask learners to complete Activity 6.2 in the Learner's Book. This activity is to encourage learners to move around within one site, exploring links. If they get lost, they should either click on the word HOME near the top left of the page or use the back button to go back to where they were.

Phase 3: End of task

Ask learners to write up a newspaper heading that would captivate the essence of what they have learnt in today's task.

Extension activity

Get learners to complete the **Task 4 Worksheet.pdf**.

Answers to Task 4 Worksheet

1. **a)** World Wide Web
   b) the internet
   c) 1990 – WorldWideWeb, later renamed 'Nexus'
   1993 – Mosaic, later renamed 'Netscape'

Task: 5 of 43

Sub-strand: 2. Web browsers and web pages

Content standard: B5.6.2.1 Demonstrate how to use web pages.	**Indicator:** B5.6.2.1.2 Identify web browsers.
Performance indicator: **ALL** learners will be able to identify one or two web browsers. **SOME** learners will be able to identify three or four web browsers. **FEW** learners will be able to identify many web browsers.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: Firefox, Opera, MS Edge, Safari, Google Chrome, web browser, search engine

In this task:
The teacher should use the **Task 5 Worksheet.pdf** as a guide

Learners should do the tasks on the **tas 5 Worksheet.pdf**.

Resources required
Learner's Book page 100

On CD

- Task 5 Worksheet.pdf

Phase 1: Start of task
Help the learners to name the web browsers shown in question 1 of the **Task 5 Worksheet.pdf**.

Phase 2: Main
Allow learners to complete questions 2 and 3 of the **Task 5 Worksheet.pdf**.

Phase 3: End of task
Play the game using terms related to web browsers. See Strand 5 Task 3 for the rules of the game.

Extension activity

Let learners complete Activity 6.3 in the Learner's Book.

Answers to Task 5 Worksheet

1. Microsoft Internet Explorer, Mozilla Firefox, Google Chrome, Apple Safari, Opera
2. Similarities: Both show mostly the same information.
    Differences:
    *   The layout on the page differs slightly.
    *   A larger section of the website is displayed on the MS Internet Explorer/Edge's interface, i.e. more is shown.
    *   The exact URLs are different.
3. When using a web browser, you should know the exact website address to find information on a particular topic, but when using a search engine, you can use key words as topics and it will search for all the websites related to your search topic.

Answers to Activity 6.3   Learner's Book page 107

1. Check that the search engine names are entered correctly to avoid problems.
2–3. The number of results will be very high, and the time taken a few seconds. Both right-hand columns for the four search engines should be filled in.
7. This could be the subject of a class discussion. This could be encouraged by asking what they preferred about their favourite; was it the clearest, quickest, brought good results, not too much screen clutter, etc.

Task: 6 of 43	
Sub-strand: 2. Web browsers and web pages	
Content standard: B5.6.2.1 Demonstrate how to use web pages.	**Indicator:** B5.6.2.1.3 Demonstrate the use of MS Internet Explorer.
Performance indicator: **ALL** learners will be able to demonstrate partially the use of MS Internet Explorer. **SOME** learners will be able to demonstrate mostly the use of MS Internet Explorer. **FEW** learners will be able to demonstrate the use of MS Internet Explorer.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: MS Internet Explorer, MS Edge, my feeds, home, add new page, back, search box, manage history, top sites, hide feeds, refresh	
In this task: **The teacher should** use the **6 Presentation.pptx** to guide learners to carry out the **Task 6 Worksheet.pdf** instructions in the web browser. **Learners should** use the **Task 6 Worksheet.pdf** to guide them through this task.	

Resources required

On CD

- Task 6 Presentation.pptx
- Task 6 Worksheet.pdf

Phase 1: Start of task

Open MS Edge and find the 'ADD NOTES' tool. Experiment with what the pens, highlighters, etc.

Phase 2: Main

Use the **Task 6 Presentation.pptx** to guide learners through the steps of the **Task 6 Worksheet.pdf**. Explain what they need to do using the 'ADD NOTES' tool.

Phase 3: End of task

Ask learners to swap their work with a partner and to give each other constructive verbal feedback.

Extension activity

Ask the more able learners to attempt Activity 6.4 in the Learner's Book.

Answers to the Task 6 Worksheet

3. a) Feeds: popular topics you may have looked for in recent searches
    b) Home: the first page MS Internet Explorer wants to share with its users
    c) Search box: you can use topics or key words to find information on any subject
    d) Manage history: you may wish to delete a trail of something you have viewed on the internet, so you can delete your history
    e) Profile: your personal details, such as your name, nickname and contact details
    f) Back: your previous web page has been stored, and, should you wish to retrieve it, use this button to return to it
    g) Add page: if you wish to use a new page so you are able to go back to the one you are working on, use this button to add an extra web page
    h) Refresh page: if you go offline and your web page was lost, you can refresh it when you get back online again
    i) Favourites: if you have web pages you always use in a web browser, you can store them in a favourites folder for quicker retrieval every time you need the website quickly
    j) Add notes: this allows you to write over a web page to highlight and share with others

Answers to Activity 6.4

Learners should follow these steps to create a default search engine:
- Click on the three dots in the top right corner of the browser window, then click on **Settings**.
- Go down to the bottom and click **View Advanced Settings**.
- Scroll down until you see **Search** in the address bar, click on it and select **Add New**.
- Then click on the chosen search engine and select **Add as default**.

Task: 7 of 43

Sub-strand: 2. Web browsers and web pages

Content standard: B5.6.2.1 Demonstrate how to use web pages.	**Indicator:** B5.6.2.1.4 Show how to create and remove a favourites link.

Performance indicator: **ALL** learners will be able to show how to create and remove a favourites link. **SOME** learners will be able to show how to create and remove a favourites link. **FEW** learners will be able to show how to create and remove a favourites link.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: favourites, create folder, add link, remove link

In this task:

The teacher should use the **Task 7 Presentation.pptx** to guide learners through the process of adding and removing a favourites link.

Learners should follow the guide from the **Task 7 Presentation.pptx** as they carry out the instructions.

Resources required

On CD

• Task 7 Presentation.pptx

Phase 1: Start of task

Ask learners what they already know about the Favourites link on the Menu bar in most web browsers. Discuss how they use them or what they imagine it could be used for.

Phase 2: Main

Discuss how to add and delete a Favourite using the relevant pages in the Learner's Book.
Use the **Task 7 Presentation.pptx** to guide learners through the steps of adding a new Favourites folder, adding links to the folder and removing links or folders from the Favourites link.

Phase 3: End of task

Recap the meanings of the key words listed in the table above.

Task: 8 of 43

Sub-strand: 2. Web browsers and web pages

Content standard: B5.6.2.1 Demonstrate how to use web pages.	**Indicator:** B5.6.1.5 Create favourites folder.

Performance indicator:

ALL learners will be able to create a favourites folder.

SOME learners will be able to create a favourites folder.

FEW learners will be able to create a favourites folder.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: create favourites folder

In this task:

The teacher should discuss the benefits of creating favourites folders.

Learners should create favourites folders

Resources required

Phase 1: Start of task

On paper, draw a folder within a folder within another folder structure to store favourite links for easy retrieval:
- You need to keep links for Science with three sub-branches: Physics, Chemistry, Biology.
- In each of these three sub-folders, create other folders to store Topics 1, 2 and 3. You can rename these sub-folders later. You should have 13 folders altogether.

Phase 2: Main

Ask learners to create the folder structure in their web browsers according to their sketch drawings. (See the main idea in the sketch below.)
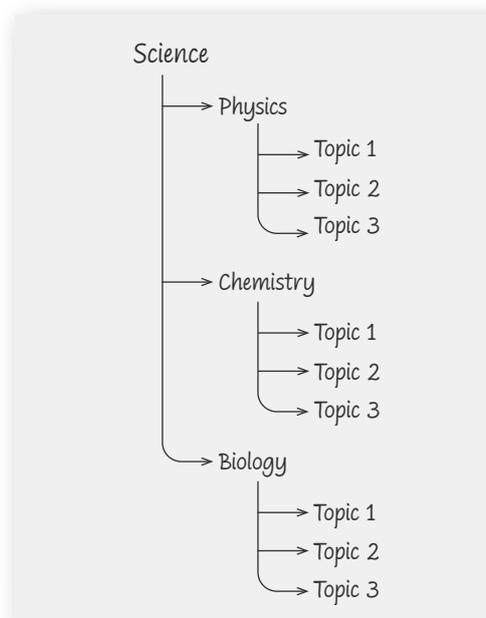
Phase 3: End of task

List the benefits of using a well-structured folder system.

Extension activity

Ask the more able learners to do Activity 6.2 in the Learner's Book.

Task: 9 of 43

Sub-strand: 2. Web browsers and web pages

Content standard: B5.6.2.1 Demonstrate how to use web pages.	**Indicator:** B5.6.2.1.6 Use the links toolbar.
Performance indicator: **ALL** learners will be able to use some of the links toolbar. **SOME** learners will be able to use most of the links toolbar. **FEW** learners will be able to use the links toolbar.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: toolbar

In this task:

The teacher should demonstrate where learners can find the toolbar to customise the links to go on the toolbar.

Learners should customise their toolbar according to the various scenarios in the **Task 9 Worksheet.pdf** and screenshot the evidence for each scenario.

Resources required

On CD

• Task 9 Worksheet.pdf

Phase 1: Start of task

Ask learners to collect their most popular website addresses for studying Physics, Chemistry and Biology.

Phase 2: Main

Demonstrate how to create a link (called a Reading List in MS Edge) on the toolbar.
Ask learners to link the collected website addresses into the corresponding folders for Science that they created in a previous task. Learners can use the **Task 9 Worksheet.pdf** as necessary.

Phase 3: End of task

Check whether any learners were able to use the first or the second method on the **Task 9 Worksheet.pdf**. Discuss with whole class.

Task: 10 of 43

Sub-strand: 2. Web browsers and web pages

Content standard: B5.6.2.1 Demonstrate how to use web pages.	**Indicator:** B5.6.2.1.7 Explain what a web page is.

Performance indicator: **ALL** learners will be able to explain partially what a web page is. **SOME** learners will be able to explain mostly what a web page is. **FEW** learners will be able to explain what a web page is.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: hyperlink, text, sentence, word, image, icon, button, audio, animation, video

In this task:

The teacher should explain what a web page is and all the elements on a web page that are actually just links to the actual files stored somewhere else.

Learners should identify all the features on a web page and understand that they are all hyperlinked to files stored somewhere else.

Resources required

Other

- Flashcards with the names of web elements, such as: hyperlinks, images, search box, video, icons, audio, buttons, navigation bars

Phase 1: Start of task

Open the teacher computer to any web page and use a data projector to show the screen on a whiteboard. Using a whiteboard marker, draw an outline around each web element, such as text, sentences that are hyperlinks, images, search box, video, icons, audio, buttons, navigation bars, etc. Switch off the data projector so that only the web page's outline remains drawn on the board.

Phase 2: Main

Give each learner one flashcard and ask them to come up in turn to match their flashcard with the web element as you explain what each one is.
Let the class watch the first few minutes of this video: https://www.youtube.com/watch?v=ylbQrYhfa18
Ask learners to create their own outline drawing for their own website and label it with these labels: hyperlinks, images, search box, video, icons, audio, buttons, navigation bars.

Phase 3: End of task

Let learners share their work with each other.

Task: 11 of 43
Sub-strand: 2. Web browsers and web pages

Content standard: B5.6.2.1 Demonstrate how to use web pages.	**Indicator:** B5.6.2.1.8 Explain what a home page is.

Performance indicator:

ALL learners will be able to explain partially what a home page is.

SOME learners will be able to explain mostly what a home page is.

FEW learners will be able to explain what a home page is.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: home page

In this task:

The teacher should refer learners to the Learner's Book to find out more information about what a home page is.

Learners should create short videos about web elements, using their mobile phone.

Resources required

Phase 1: Start of task

Explain that the learners are expected to create a short video using their mobile phone, explaining what web elements are on their chosen home pages.

Explain what learners should do to create their short videos or movies using the Photos tool in the Windows toolbar.

Phase 2: Main

Learners should work in small groups of two to three to create their videos. Support learners as required.
Ask learners to:

- write up a short script to introduce what their video or movie is about
- explain each of the following web elements: hyperlinks, images, search box, video, icons, audio, buttons, navigation bars.

Phase 3: End of task

Ask groups to swap and share their videos or short movies with each other. Let them discuss what is good about the video and one point that could have been better.

Task: 12 of 43

Sub-strand: 2. Web browsers and web pages

Content standard: B5.6.2.1 Demonstrate how to use web pages.

Indicator: B5.6.2.1.9 Movement within and between web pages using hyperlinks.

Performance indicator:

ALL learners will be able to navigate within web pages using hyperlinks.

SOME learners will be able to navigate between web pages using hyperlinks.

FEW learners will be able to navigate within and between web pages using hyperlinks.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: audio, video, hyperlink, text, icon, button, navigation bar, image

In this task:

The teacher should explain how to create a hyperlink to text on a page in a word-processed document.

Learners should collect links from the internet and files on their computer and create text links from the top and bottom of the page in a word-processed document.

Resources required

Phase 1: Start of task

Let learners create a word cloud of the key words listed above. Provide each group of five or six poster paper and coloured pens to create their word cloud. Display the finished posters on the classroom display boards.

Phase 2: Main

Ask learners to collect links to web elements: audio, video, text, sentence, icon, button, navigation bar, search box, help button, toolbar link. Let them save all these in a word-processed document.
At the top of the page, they should create a button that is named **Bottom**.
At the bottom of the page, they should create a button named **Top**.
Ask them to hyperlink the **Top** button so it takes you to the top of the page and hyperlink the **Bottom** button, so it takes you to the bottom of the page.
Let them test all hyperlinks and links.

Phase 3: End of task

Discuss where else you could create links or hyperlinks from and to.

Sub-strand 3: Surfing the World Wide Web

Task: 13 of 43	
Sub-strand: 3. Surfing the World Wide Web	
Content standard: B5.6.3.1 Demonstrate how to use favourite places.	**Indicator:** B5.6.3.1.1 Show how to create a favourite link.
Performance indicator: **ALL** learners will be able to show how to create a favourite link. **SOME** learners will be able to show how to create a few favourite links. **FEW** learners will be able to show how to create many favourite links.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: favourites link	

In this task:

The teacher should demonstrate how to create a favourite link.

Learners should complete the **Task 13 Worksheet.pdf**, using the scenario to create the favourite link as required.

Resources required

On CD

*   Task 13 Worksheet.pdf

Phase 1: Start of task

Watch the first 7–10 minutes of this cartoon: https://www.youtube.com/watch?v=wkfkMnVC9Bs
Explain that there is not enough time during the task to watch the whole cartoon, so if the link is stored in the Favourites folder, it could be watched at a later time and the link would be stored for easy retrieval.

Phase 2: Main

Explain how to create a favourite link, referring to the relevant Learner's Book section.
Let learners complete the **Task 13 Worksheet.pdf**. They must screenshot the steps they took to create the favourites link.

Phase 3: End of task

Ask learners to describe any difficulties experienced during this task.

Task: 14 of 43	
Sub-strand: 3. Surfing the World Wide Web	
Content standard: B5.6.3.1 Demonstrate how to use favourite places.	**Indicator:** B5.6.1.1.2 Demonstrate deleting favourite links.
Performance indicator: **ALL** learners will be able to demonstrate deleting favourite links. **SOME** learners will be able to demonstrate deleting favourite links. **FEW** learners will be able to demonstrate deleting favourite links.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: delete, move, cut, save, save as	
In this task: **The teacher should** refer learners to the Learner's Book section on deleting favourites links. **Learners should** demonstrate the steps they took to delete a favourites link.	

Resources required

On CD

- Task 14 Worksheet.pdf

Phase 1: Start of task

Watch the next 7–10 minutes of the cartoon from the previous task and then explain to the learners that it is not the best use of time at school to be watching cartoon movies for fun. The link will therefore have to be deleted.

Phase 2: Main

Let learners complete the **Task 14 Worksheet.pdf**, in which they delete favourite links.

Phase 3: End of task

Ask for three volunteers to come up to the front of the class. Ask each one to say, in the longest sentence, how to delete a favourite link. The learner who spoke the longest is the winner.

Task: 15 of 43	
Sub-strand: 3. Surfing the World Wide Web	
Content standard: B5.6.3.1 Demonstrate how to use favourite places.	**Indicator:** B5.6.3.1.3 Create a favourite folder.
Performance indicator: **ALL** learners will be able to create a favourite folder. **SOME** learners will be able to create a favourite folder. **FEW** learners will be able to create a favourite folder.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: link, hyperlink, folder, sub-folder, file, document	
In this task: **The teacher should** demonstrate how to create a Favourites folder and refer learners to the relevant section in the Learner's Book. **Learners should** create a Favourites folder by completing the **Task 15 Worksheet.pdf**.	

Resources required

On CD

- Task 15 Worksheet.pdf

Phase 1: Start of task

Use the **Task 15 Presentation.pptx** to demonstrate how to create a Favourites folder.

Phase 2: Main

Allow learners to complete the **Task 15 Worksheet.pdf**, in which they create a Favourites folder.

Phase 3: End of task

Ask learners to work in pairs and to peer-assess each other's work, giving constructive verbal feedback.

Task: 16 of 43

Sub-strand: 3. Surfing the World Wide Web

Content standard: B5.6.3.1 Demonstrate how to use favourite places.	**Indicator:** B5.6.3.1.4 Use the links toolbar.

Performance indicator:

ALL learners will be able to partially use the links toolbar.

SOME learners will be able to mostly use the links toolbar.

FEW learners will be able to use the links toolbar.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: toolbar, menu bar, icon, link, hyperlink

In this task:

The teacher should explain the steps to using the links toolbar.

Learners should create and use their links toolbar by completing the **Task 16 Worksheet.pdf**.

Resources required

On CD

• Task 16 Worksheet.pdf

Phase 1: Start of task

Watch this short video showing how to use the links toolbar:
https://www.youtube.com/watch?v=iHEFWxFQMVw

You may have to stop-start it, as the presenter speaks too fast.

Phase 2: Main

Allow learners to use the Learner's Book information and the video to complete the **Task 16 Worksheet.pdf**.

Phase 3: End of task

Recap the meaning of key words used through this sub-strand.

Sub-strand 4: Favourite places and search engines

Task: 17 of 43

Sub-strand: 4. Favourite places and search engines

Content standard: B5.6.4.1 Demonstrate how to use search engines.

Indicator: B5.6.4.1.1 Identify common search engines.

Performance indicator:

ALL learners will be able to identify some common search engines.

SOME learners will be able to identify most common search engines.

FEW learners will be able to identify common search engines.

Core competencies:
1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: search engine, key words

In this task:

The teacher should introduce the concept of a search engine by linking it with analogies.

Learners should explore the various search engines and the different types of search engines.

Resources required

Phase 1: Start of task

Ask learners to work in groups of three to analyse the following:
Have you heard people saying, "Let's Google it"? Are they using the noun, Google, as a verb? Why haven't we heard people saying, "Let's Bing it or Yahoo it"?
(Possible lines of discussion: Yes, they mean search on Google. Google, and not Bing or Yahoo, is used as a verb because Google is most popular and most commonly used.)

Phase 2: Main

Discuss examples of common search engines and the types of search engines.
Allow learners to complete the **Task 17 Worksheet**, using the Learner's Book section on search engines and the internet to find answers to the questions.

Phase 3: End of task

Ask learners to collect logos from as many search engines as possible for use in the next task.

Task: 18 of 43

Sub-strand: 4. Favourite places and search engines

Content standard: B5.6.4.1 Demonstrate how to use search engines.

Indicator: B5.6.4.1.2 Explore how smart search engines work.

Performance indicator:	**Core competencies:**
ALL learners will be able to explore partially how smart search engines work.	1. Creativity and innovation
	2. Communication and collaboration
SOME learners will be able to explore mostly how smart search engines work.	3. Cultural identity and global citizenship
	4. Personal development and leadership
FEW learners will be able to explore how smart search engines work.	5. Digital literacy

Key words: smart search engines, personalised, measurable, specific, achievable, relevant, time-based

In this task:

The teacher should assist learners in completing the **Task 18 Worksheet.pdf**.

Learners should use the Learner's Book and the internet to find answers to the questions in the **Task 18 Worksheet.pdf**.

Resources required

On CD

- Task 18 Worksheet.pdf

Phase 1: Start of task

Brainstorm the term 'smart', as in smartphones, smart cars, smart watch, smart meters, etc.
Possible answers include the following: specific, measurable, achievable, relevant, time-based, personalised, uses new technologies, is tailored for your personal needs, location-based, automatically updates readings into its database, etc.

Phase 2: Main

Let learners complete the **Task 18 Worksheet.pdf**.

Phase 3: End of task

Create an infographic using the search engine logos from the previous task. If not completed in this task, it can be completed in the next task.

Answers to Task 18 Worksheet

1. A smart search engine refers to personalising your search to include your location, take into consideration your recent searches and excludes items that do not match the data held about you in your search engine's database.

2. Possible answer: It would give the names of all the after-school clubs that do Computing classes in the areas around where the learner lives and not mention those in another country that is too far away. It should also only show the clubs for children and not for adults because the database would know how old the computer user is based on the information input on the computer.

Task: 19 of 43	
Sub-strand: 4. Favourite places and search engines	
Content standard: B5.6.4.1 Demonstrate how to use search engines.	**Indicator:** B5.6.4.1.3 Demonstrate how to handle search results.

Performance indicator:	**Core competencies:**

Performance indicator:

ALL learners will be able to demonstrate how to handle some search results.

SOME learners will be able to demonstrate how to handle most search results.

FEW learners will be able to demonstrate how to handle search results.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: search techniques

In this task:

The teacher should explain search techniques to narrow searches down to make your results more specific to want you really want.

Learners should work in pairs to search for information using search techniques.

Resources required

On CD

- Task 19 Worksheet.pdf

Phase 1: Start of task

Ask learners to use their search engines to find information on Romeo and Juliet. How many results are returned by the search engine?
Now search for this exact phrase in the search engine, "Romeo and Juliet" (include the inverted commas). How many results are returned by the search engine?
Explain that the reason for the difference is that it narrows down the search to only include the instances where the three words (Romeo and Juliet) are found together and just anywhere in the files.

Phase 2: Main

Refer to the Learner's Book section on search engine results to try out different search techniques and note the differences in the results from each search attempt.
Allow learners to work in pairs to complete the **Task 19 Worksheet.pdf**.

Phase 3: End of task

Complete the infographic using the images collected in a previous task. Display each group's infographic on the classroom display boards.

Answers to Task 19 Worksheet

1. Possible results:

Search technique	Number of results
cats and dogs	724,000,000 results
"cats and dogs"	30,500,000 results
"cats" and "dogs"	251,000,000 results
cats AND dogs	866,000,000 results

cats OR dogs	972,000,000 results
cats NOT dogs	421,000,000 results
"cats AND dogs"	31,200,000 results
"cats OR dogs"	1,030,000,000 results
"cats NOT dogs"	15,100 results

2. Possible answers:

a) The highest results include every instance of the three words (**cats**, **and,** and **dogs**). The search without the inverted commas would return only those with all three words together (**cats and dogs**), so these are less in number.

b) The capital letters **AND** is a Boolean operator, which means the results include all three words. The small letter **and** only returns instances where all three words are found together; so, it has fewer results.

c) **Cats NOT dogs** includes instances where all three words (**cats**, **NOT** and **dogs**) are found separately in their database, so it is a higher number than **"cats NOT dogs"** because this Boolean operator only finds instances where all three words (**cats**, **not** and **dogs**) appear together, so it is lower.

3. Possible answer: "computer club children NOT adults". This would return the lowest number of results because it would only find those results where the three words **computer**, **club** and **children** appear and not those where adults are mentioned.

Sub-strand 5: Using online forms

Task: 20 of 43
Sub-strand: 5. Using online forms

Content standard: B5.6.5.1 Demonstrate the usage of forms.	**Indicator:** B5.6.5.1.1 Identify and describe forms in a web page.
Performance indicator: **ALL** learners will be able to identify forms in a web page. **SOME** learners will be able to describe forms in a web page. **FEW** learners will be able to identify and describe forms in a web page.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: online forms, drop-down list, tick-box, sliders, tabs, buttons, text boxes, checkboxes, radio buttons, submit buttons, combo boxes

In this task: **The teacher should** explain that web forms are created using html and show learners the web form elements. **Learners should** identify web form elements and fill out an online form that uses dropdown lists, combo boxes, text fields, etc.

Resources required

On CD

• Task 20 Worksheet.pdf

Phase 1: Start of task

Prepare flashcards of the key words listed above, with the words on one side of the card and its meaning on the reverse side.
Issue each learner with a flashcard and call out one of the key words. Get all the learners with the same key word to come up to try to explain what they think it means and let the rest of the class choose the explanation that best fits the correct meaning.

Phase 2: Main

Explain that web forms are created using html and show learners the web form elements. If possible, let learners try it out for themselves using the online tutorials in an online coding tutorial.
Let learners complete the **Task 20 Worksheet.pdf**. Question 1 requires learners to use the link to login to fill in an online form. Question 2 requires learners to label the form correctly using the labels provided in the list.

Phase 3: End of task

Learners swap their work for peer-assessment and give feedback to each other in pairs.

Task: 21 of 43	
Sub-strand: 5. Using online forms	
Content standard: B5.6.5.1 Demonstrate the usage of forms.	**Indicator:** B5.6.5.1.2 Demonstrate working on or offline.
Performance indicator: **ALL** learners will be able to demonstrate working on or offline some of the time. **SOME** learners will be able to demonstrate working on or offline most of the time. **FEW** learners will be able to demonstrate working on or offline.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: online, offline	
In this task: **The teacher should** refer to the Learner's Book section on working online and offline. **Learners should** fill in a PDF form and email it to a friend in class.	

Resources required

On CD

• Task 21 PDF Form.pdf

Phase 1: Start of task

Ask learners to consider which of the following happen online or offline:
- Filling in a paper form that arrived in the post today and then returning it via post.
- Downloading a PDF form, signing it and then scanning in the signed form and emailing it back to the person who sent it to you.
- Filling in a form on a website and pressing the submit button when you have finished filling it in.

Phase 2: Main

Send a copy of the **Task 21 PDF Form.pdf** (field trip information) to each learner's email. Ask them to do the following:
- Fill it in using the 'Fill In and Sign' tool in the PDF software.
- Save the file.
- Email it to one of their friends in the class and to cc it to you.

Phase 3: End of task

Ask learners to check their emails to receive the completed PDF form from their friend and to check that it was all filled in. Let them give feedback to their friend.

Task: 22 of 43	
Sub-strand: 5. Using online forms	
Content standard: B5.6.5.1. Demonstrate the usage of forms.	**Indicator:** B5.6.5.1.3 Demonstrate downloading of files (e.g. pictures, audio, pdf, etc.).
Performance indicator: **ALL** learners will be able to demonstrate downloading some types of files. **SOME** learners will be able to demonstrate downloading most types of files. **FEW** learners will be able to demonstrate downloading all types of files.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: download, images, audio, video, file extensions, .mp3, .mp4, .png, .jpeg, .docx, .pdf	
In this task: **The teacher should** refer learners to the section in the Learner's Book on downloading files and support them in creating their advertisements in MS PowerPoint. This task may be spread over two tasks if necessary. **Learners should** complete the tasks on the **Task 22 Worksheet.pdf** and carry out a peer assessment.	

Resources required

On CD

- Task 22 Worksheet.pdf

Phase 1: Start of task

Let learners complete question 1 of the **Task 22 Worksheet.pdf**, in which they match file extensions to file types.

Go through the correct answers after they have all completed question 1.

Phase 2: Main

Let learners complete question 2 of the **Task 22 Worksheet.pdf**, in which they create a single-page MS PowerPoint advertisement about a new fun fair coming to the area.

Phase 3: End of task

Ask learners to swap their work with a friend for peer-assessment. Let them use the table in question 3 on the **Task 22 Worksheet.pdf** and give constructive feedback.

Answers to Task 22 Worksheet

1.

File extension	File type
.jpeg	image
.mp4	video or movie
.docx	word processed document
.pdf	PDF document
.png	image
.html	web page

Task: 23 of 43	
Sub-strand: 5. Using online forms	
Content standard: B5.6.5.1. Demonstrate the usage of forms.	**Indicator:** B5.6.5.1.3 Demonstrate downloading of files (e.g. pictures, audio, pdf, etc.).
Performance indicator: **ALL** learners will be able to demonstrate downloading some types of files. **SOME** learners will be able to demonstrate downloading most types of files. **FEW** learners will be able to demonstrate downloading all types of files.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: download, images, audio, video, file extensions, .mp3, .mp4, .png, .jpeg, .docx, .pdf	
In this task: **The teacher should** provide further support as learners work on their advertisement started in the previous task and showcase some of the learners' work. **Learners should** continue to work on the advertisement started in the previous task.	

Resources required

On CD

- Task 22 Worksheet.pdf

Phase 1: Start of task

Check learners' progress in the previous task and let them continue from where they left off.

Phase 2: Main

Allow learners to continue working on their advertisements or improving them after they have been peer-assessed and received feedback from their friends.

Phase 3: End of task

Showcase a few of the best ones and discuss what went well and what still needs a bit of improvement.

Sub-strand 6: Customising your browser

Task: 24 of 43	
Sub-strand: 6. Customising your browser	
Content standard: B5.6.6.1 Show how to customise a browser.	**Indicator:** B5.6.6.1.1 Demonstrate how to set default search engines. B5.6.6.1.2. Show how to set homepages. B5.6.6.1.3. Show how to make browser apps, add-ons, plug-ins, and extensions. B5.6.6.1.4. Illustrate how to customise the browser toolbar. B5.6.6.1.5. Identify cookies in web browsers. B5.6.6.1.6. Illustrate how to set disk space or cache usage.
Performance indicator: See Tasks 25 to 30, as this is a preparation task for the next six tasks.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: self-assessment, assessment criteria	
In this task: **The teacher should** explain the approach to be adopted for the next six tasks and allow all groups of learners to prepare all their presentations during this task. **Learners should** prepare their group presentations. They will have a chance to present their work to the class in the next six lessons.	

Resources required

Phase 1: Start of task

Divide the class into six groups and allocate one topic per group according to the following table.

Task	Group	Topic
1	1	Show how to set default search engine
2	2	Show how to set home pages
3	3	Show how to place browser apps, add-ons, plug-ins and extensions
4	4	Show how to customise the browser toolbar
5	5	Show how to identify cookies in web browsers
6	6	Show how to set disk space or cache usage

Explain that each group must prepare a presentation showing how to perform the actions described in their topic.

Explain that each group will have a turn to present their work in the next six lessons, starting with Group 1.

Phase 2: Main

Allow all the groups to prepare their presentations, which should last for about 6–10 minutes, including answering questions from the class. To guide their presentations, let them consider the criteria listed under questions 3 and 4 on the relevant worksheet from the **Task 25 Worksheet.pdf** to the **Task 29 Worksheet.pdf**.

Phase 3: End of task

Explain that one group will show their presentation in each of the next six tasks. The tasks will take the following form:

- one group will present their work while everyone watches
- everyone will complete questions 1 to 3 on the worksheet relevant to the topic presented
- only the group that presented will complete question 4 on the relevant worksheet.

Task: 25 of 43	
Sub-strand: 6. Customising your browser	
Content standard: B5.6.6.1 Show how to customise a browser.	**Indicator:** B5.6.6.1.1 Demonstrate how to set default search engines.
Performance indicator: **ALL** learners will be able to demonstrate how to set some default search engines. **SOME** learners will be able to demonstrate how to set most default search engines. **FEW** learners will be able to demonstrate how to set default search engines.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: default, search engine, search box, key words, customise, settings	

In this task:

The teacher should help to set Group 1 up for their presentation and explain what everyone should be doing during this task.

Learners should watch Group 1's presentation and complete the **Task 25 Worksheet.pdf**.

Resources required

On CD

•   Task 25 Worksheet.pdf

Phase 1: Start of task

Allow everyone to watch Group 1's presentation on how to set default search engines, which they prepared in Task 24.

Phase 2: Main

Ask all learners to complete the **Task 25 Worksheet.pdf**. Remind learners that only Group 1 should complete question 4 of the worksheet, as it is a self-assessment of their presentation.

Phase 3: End of task

Ask Group 1 to share their self-assessments and have a whole-class discussion about it.

Task: 26 of 43	
Sub-strand: 6.Customising your browser	
Content standard: B5.6.6.1 Show how to customise a browser.	**Indicator:** B5.6.6.1.2 Show how to set homepages.
Performance indicator: **ALL** learners will be able to show how to set some homepages. **SOME** learners will be able to show how to set most homepages. **FEW** learners will be able to show how to set homepages.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: homepage, customise	
In this task: **The teacher should** help to set Group 2 up for their presentation and explain what everyone should be doing during this task. **Learners should** watch Group 2's presentation and complete the **Task 26 Worksheet.pdf**.	

Resources required

On CD

- Task 26 Worksheet.pdf

Phase 1: Start of task

Allow everyone to watch Group 2's presentation on how to set home pages, which they prepared in Task 24.

Phase 2: Main

Ask all learners to complete the **Task 26 Worksheet.pdf**. Remind learners that only Group 2 should complete question 4 of the worksheet, as it is a self-assessment of their presentation.

Phase 3: End of task

Ask Group 2 to share their self-assessments and have a whole-class discussion about it.

Task: 27 of 43	
Sub-strand: 6.Customising your browser	
Content standard: B5.6.6.1 Show how to customise a browser.	**Indicator:** B5.6.6.1.3 Show how to place browser apps, add-ons, plug-ins and extensions.
Performance indicator: **ALL** learners will be able to show how to place browser apps and add-ons. **SOME** learners will be able to show how to place browser plug-ins and extensions. **FEW** learners will be able to show how to place browser apps, add-ons, plug-ins and extensions.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: app, add-on, plug-in, extension	
In this task: **The teacher should** help to set Group 3 up for their presentation and explain what everyone should be doing during this task. **Learners should** watch Group 3's presentation and complete the **Task 27 Worksheet.pdf**.	

Resources required

On CD

- Task 27 Worksheet.pdf

Phase 1: Start of task

Allow everyone to watch Group 3's presentation on how to place browser apps, add-ons, plug-ins and extensions, which they prepared in Task 24.

Phase 2: Main

Ask all learners to complete the **Task 27 Worksheet.pdf**. Remind learners that only Group 3 should complete question 4 of the worksheet, as it is a self-assessment of their presentation.

Phase 3: End of task

Ask Group 3 to share their self-assessments and have a whole-class discussion about it.

Task: 28 of 43

Sub-strand: 6.Customising your browser

Content standard: B5.6.6.1 Show how to customise a browser.	**Indicator:** B5.6.6.1.4 Illustrate how to customise the browser toolbar.

Performance indicator: **ALL** learners will be able to illustrate how to customise some parts of the browser toolbar. **SOME** learners will be able to illustrate how to customise most parts of the browser toolbar. **FEW** learners will be able to illustrate how to customise the browser toolbar.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: browser, toolbar, customise, settings

In this task:

The teacher should help to set Group 4 up for their presentation and explain what everyone should be doing during this task.

Learners should watch Group 4's presentation and complete the **Task 28 Worksheet.pdf**.

Resources required

On CD

• Task 28 Worksheet.pdf

Phase 1: Start of task

Allow everyone to watch Group 4's presentation on how to customise the browser toolbar, which they prepared in Task 24.

Phase 2: Main

Ask all learners to complete the **Task 28 Worksheet.pdf**. Remind learners that only Group 4 should complete question 4 of the worksheet, as it is a self-assessment of their presentation.

Phase 3: End of task

Ask Group 4 to share their self-assessments and have a whole-class discussion about it.

Task: 29 of 43

Sub-strand: 6.Customising your browser

Content standard: B5.6.6.1 Show how to customise a browser.	**Indicator:** B5.6.6.1.5 Identify cookies in web browsers.

Performance indicator:

ALL learners will be able to identify some cookies in a web browser.

SOME learners will be able to identify cookies in some web browsers.

FEW learners will be able to identify cookies in web browsers.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: cookies, web browser, customise

In this task:

The teacher should help to set Group 5 up for their presentation and explain what everyone should be doing during this task.

Learners should watch Group 5's presentation and complete the **Task 29 Worksheet.pdf**.

Resources required

On CD

- Task 29 Worksheet.pdf

Phase 1: Start of task

Allow everyone to watch Group 5's presentation on how to identify cookies in web browsers, which they prepared in Task 24.

Phase 2: Main

Ask all learners to complete the **Task 29 Worksheet.pdf**. Remind learners that only Group 5 should complete question 4 of the worksheet, as it is a self-assessment of their presentation.

Phase 3: End of task

Ask Group 5 to share their self-assessments and have a whole-class discussion about it.

Task: 30 of 43	
Sub-strand: 6. Customising your browser	
Content standard: B5.6.6.1 Show how to customise a browser.	**Indicator:** B5.6.6.1.6 Illustrate how to set disk space and cache usage.
Performance indicator: **ALL** learners will be able to illustrate how to set disk space. **SOME** learners will be able to illustrate how to set cache usage. **FEW** learners will be able to illustrate how to set disk space and cache usage.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: disk, disk space, cache, cache usage	

In this task:

The teacher should help to set Group 6 up for their presentation and explain what everyone should be doing during this task.

Learners should watch Group 6's presentation and complete the **Task 30 Worksheet.pdf**.

Resources required

On CD

- Task 30 Worksheet.pdf

Phase 1: Start of task

Allow everyone to watch Group 6's presentation on how to identify cookies in web browsers, which they prepared in Task 24.

Phase 2: Main

Ask all learners to complete the **Task 30 Worksheet.pdf**. Remind learners that only Group 6 should complete question 4 of the worksheet, as it is a self-assessment of their presentation.

Phase 3: End of task

Ask Group 6 to share their self-assessments and have a whole-class discussion about it.

Sub-strand 7: Electronic mail

Task: 31 of 43	
Sub-strand: 7. Electronic mail	
Content standard: B5.6.7.1 Demonstrate the use of electronic mail.	**Indicator:** B5.6.7.1.1 Identify the various email service providers.
Performance indicator: **ALL** learners will be able to identify the various locally based email service providers. **SOME** learners will be able to identify the various global email service providers. **FEW** learners will be able to identify the various web-based email service providers.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: electronic mail, email service provider, web-based emails	
In this task: **The teacher should** assist learners in understanding the Learner's Book section on email service providers and the newspaper article in the **Task 31 Worksheet.pdf**. **Learners should** complete the **Task 31 Worksheet.pdf** and then discuss the answers as a class.	

Resources required

On CD

- Task 31 Worksheet.pdf

Phase 1: Start of task

Brainstorm the names of all the email or internet service providers learners use at home or know about.
Confirm that all those mentioned are authentic email service providers.
Discuss the quality of service from different email service providers the learners use at home.
Refer to the Learner's Book section on electronic mail.

Phase 2: Main

Ask learners to complete the **Task 31 Worksheet.pdf**, in which they read through a newspaper article and then answer the questions.

Phase 3: End of task

Check the answers together as a whole-class discussion.

Answers to Task 31 Worksheet

Possible answers:

1. Gmail, AOL, Yahoo, Hotmail
2. They are free to join.
   They have lots of space to keep all old emails and pictures.
   They do not limit the sizes of attachments you can send.
   They are very quick in sending emails around the world.
3. Gmail: Most people around the world use Gmail, so it is quicker to receive and send emails as it goes through the same email system. There is no limit on the email size and they have excellent support services.
   Microsoft live: You can use more than one email and configure them all through one portal, so all your emails come through and you do not have to open many different windows to see all your emails.

Task: 32 of 43	
Sub-strand: 7. Electronic mail	
Content standard: B5.6.7.1 Demonstrate the use of electronic mail.	**Indicator:** B5.6.7.1.3 Create an email account.
Performance indicator: **ALL** learners will be able to create an email account. **SOME** learners will be able to create an email account. **FEW** learners will be able to create an email account.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: email address, email account	

In this task:

The teacher should assist learners to create email accounts and to send and reply to emails.

Learners should create email accounts and send and reply to emails.

Resources required

Phase 1: Start of task

Ensure all learners can access the Google email new account signup page. Explain to learners that they need to have a username and a password ready and to ensure they can remember both.

Phase 2: Main

Allow learners to follow the online instructions to create the email account. Support those who are struggling and ask learners who have completed to assist others who may need more support.
Ask learners to send one email to a friend – just a polite message introducing themselves. Let them cc you in their emails.

Phase 3: End of task

Ask learners to reply to the email they received and to cc you in their replies.

Task: 33 of 43	
Sub-strand: 7. Electronic mail	
Content standard: B5.6.7.1 Demonstrate the use of electronic mail.	**Indicator:** B5.6.7.1.2 Demonstrate the use of internet email addresses.
Performance indicator: **ALL** learners will be able to use an email address to send an email. **SOME** learners will be able to use an email address to send an email. **FEW** learners will be able to use an email address to send an email.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: attachments, cc, bcc, email	
In this task: **The teacher should** discuss email attachments and how they work. **Learners should** send emails containing images and information as attachments.	

Resources required

Phase 1: Start of task

Discuss what an email attachment is, what it can be and why people use them.

Phase 2: Main

Ask learners to find, download and save images of robots used in car manufacturing, as well as information

about how the use of robots in car production is changing the workforce.

Explain that learners must then create a new email message to send the images and information they downloaded to three friends in their class.

Support learners who are struggling with any aspects of attaching images as attachments in emails.

Phase 3: End of task

Recap the meanings of key words such as these: attachment, cc, bcc, emails, etc.

Task: 34 of 43

Sub-strand: 7: Electronic email

Content standard: B5.6.7.1 Demonstrate the use of electronic mail.	**Indicator:** B5.6.7.1.4 Illustrate viewing received messages and create or compose messages.

Performance indicator: **ALL** learners will be able to illustrate viewing received messages. **SOME** learners will be able to create or compose messages. **FEW** learners will be able to illustrate viewing received messages and create or compose messages	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: Compose email, format text

In this task:

The teacher should send the attachment found on the CD called, 'Dear Learner ATTACHMENT' to all the learners and ensure they have managed to open it to get the instruction to complete the worksheet for today's task.

Learners should open the email attachment sent to them by their teacher and work through the instructions in the attachment and the **Task 34 Worksheet.pdf.**

Resources required

On CD

- Task 34 Worksheet.pdf
- Task 34 Dear Learner Attachment.pdf

Phase 1: Start of task

Send all the learners an email message with the file **Task 34 Dear Learner Attachment.pdf** as an attachment. This document contains instructions to the learner about an email they need to compile, including formatting the text and changing the background of the email message.

Phase 2: Main

Ensure all learners can open the email and attachment you sent. Let them use the attachment to complete questions 1 and 2 of the **Task 34 Worksheet.pdf**.

Phase 3: End of task

Ask learners to do self-assessment by completing question 3 of the **Task 34 Worksheet.pdf**.

Sub-strand 8: Internet of Things (IoT)

Task: 35 of 43

Sub-strand: 8. Internet of Things (IoT)

Content standard: B5.6.8.1. Demonstrate the use of the Internet of Things.	**Indicator:** B5.6.8.1.1 Describe the purpose of the Internet of Things.

Performance indicator: **ALL** learners will be able to describe the purpose of some aspects of the IoT. **SOME** learners will be able to describe the purpose of most aspects of the IoT. **FEW** learners will be able to describe the purpose of some aspects of the IoT.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy

Key words: Internet of Things (IoT), interconnected devices, sensors, thermostat, smart phones, smart homes, smart cars

In this task:

The teacher should refer learners to the Learner's Book section on the IoT and discuss what it is.

Learners should complete the **Task 35 Worksheet.pdf**.

Resources required

On CD

- Task 35 Worksheet.pdf

Phase 1: Start of task
Refer learners to the Learner's Book in the section of the IoT and discuss what it is.

Phase 2: Main
Let learners complete the **Task 35 Worksheet.pdf**.

Phase 3: End of task
Discuss learners' answers to the **Task 35 Worksheet.pdf**.

Answers to Task 35 Worksheet

Possible answers:
1. It is the interconnection between electronic and smart devices without direct human-to-human interaction to provide services.
2. Security systems, electronic devices, mobile phones, tablets, lights in a house, speakers, vending machines, thermostats, cars, alarm clocks, etc.
3. To automate some of the more mundane tasks and to create more efficient ways of doing things in many spheres of daily living.

Task: 36 of 43

Sub-strand: 8. Internet of Things (IoT)

Content standard: B5.6.8.1. Demonstrate the use of the Internet of Things.	**Indicator:** B5.6.8.1.2. Give examples of the Internet of Things with a consumer part and an industrial/business segment.

Performance indicator:	**Core competencies:**
ALL learners will be able to give some examples of the IoT.	1. Creativity and innovation
	2. Communication and collaboration
SOME learners will be able to partially give examples of the IoT with a consumer part and industrial/business segment.	3. Cultural identity and global citizenship
	4. Personal development and leadership
FEW learners will be able to confidently give examples of the IoT with a consumer part and industrial/business segment.	5. Digital literacy

Key words: Internet of Things (IoT), interconnected devices, sensors, thermostat, smart phones, smart homes, smart cars

In this task:

The teacher should lead introductory discussions about examples of the IoT with a consumer part and industrial/business segment.

Learners should complete the **Task 36 Worksheet.pdf**, which includes watching two videos to improve their understanding of the IoT with a consumer part and industrial/business segment.

Resources required

On CD

• Task 36 Worksheet.pdf

Phase 1: Start of task

Refer to the Learner's Book section of the IoT and discuss question 1 of the **Task 36 Worksheet.pdf** with the class.

Phase 2: Main

Allow learners to complete questions 2 and 3 of the **Task 36 Worksheet.pdf**.

Phase 3: End of task

Lead a discussion about how learners' answers had been improved following a better understanding of the IoT.

Task: 37 of 43

Sub-strand: 8. Internet of Things

Content standard: B5.6.8.1. Demonstrate the use of the Internet of Things.

Indicator: B5.6.8.1.3 Identify components of the IoT.

Performance indicator:

ALL learners will be able to identify some components of the IoT.

SOME learners will be able to identify most components of the IoT.

FEW learners will be able to identify components of the IoT.

Core competencies:
1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: interconnected devices, internet, sensors, smart devices

In this task:

The teacher should facilitate a brainstorm session on devices that could be used in an IoT system.

Learners should make a drawing showing an IoT system consisting of their own chosen components.

Resources required

Phase 1: Start of task

Brainstorm smart devices and devices with sensors that could be used in an IoT system.

Phase 2: Main

Ask learners to summarise the section Learner's Book on the IoT and to add a drawing of how they would like an IoT to work with their own list of components.

Phase 3: End of task

Recap learners' interpretations of their IoT systems and attach their drawing to the classroom display boards.

Task: 38 of 43

Sub-strand: 8. Internet of Things (IoT)

Content standard: B5.6.8.1 Demonstrate how to use the IoT.

Indicator: B5.6.8.1.4 Identify the role of smart sensors in the IoT.

Performance indicator:

ALL learners will be able to identify the role of some smart sensors in the IoT.

SOME learners will be able to identify the role of most smart sensors in the IoT.

FEW learners will be able to identify the role of smart sensors in the IoT.

Core competencies:
1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: smart sensors, smart phones, smart cars, electronic doors, RFID, CCTV camera, robots

In this task:

The teacher should facilitate a discussion on smart sensors and their role in the IoT.

Learners should complete the **Task 38 Worksheet.pdf**.

Resources required

On CD

• Task 38 Worksheet.pdf

Phase 1: Start of task

Discuss smart sensors in the IoT by referring to the relevant Learner's Book section.

Phase 2: Main

Allow learners to complete the **Task 38 Worksheet.pdf**.

Phase 3: End of task

Help learners to recap the meanings of the key words listed in the table above.

Answers to the Task 38 Worksheet

2. **a)** Possible answer: Alexa or a voice-activated personal household assistant.

Sub-strand 9: Digital literacy

Task: 39 of 43	
Sub-strand: 9. Digital literacy	
Content standard: B5.6.9.1 Demonstrate proficiency in digital literacy.	**Indicator:** B5.6.9.1.1 Describe private and personal information.
Performance indicator: **ALL** learners will be able to describe personal information. **SOME** learners will be able to describe private information. **FEW** learners will be able to describe private and personal information.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: personal information, private information, safety online	
In this task: **The teacher should** facilitate a brainstorming session and a discussion on examples of personal and private information. **Learners should** follow all the instructions on the **Task 39 Worksheet.pdf**. It includes using a smartphone.	

Resources required

On CD

• Task 39 Worksheet.pdf

Phase 1: Start of task

Brainstorm all the types of information that are personal and should be kept private online.

Phase 2: Main

Explore the ideas learners have about personal and private information, what personal information smart gadgets record and store about individuals and how important it is to safeguard personal and private information.

Allow learners to complete the **Task 39 Worksheet.pdf**.

Phase 3: End of task

Have a class discussion around the following question: 'What is the key message that you received from today's task?'

Extension activity

Ask the more able learners to attempt Activity 6.5.

Answers to Activity 6.5

Learner's Book page 121

1. Every option should be ticked as they are all examples of personal information.

Task: 40 of 43	
Sub-strand: 9. Digital literacy	
Content standard: B5.6.9.1 Demonstrate proficiency in digital literacy.	**Indicator:** B5.6.9.1.2 Discuss various techniques in online protection from online identity theft.
Performance indicator: **ALL** learners will be able to discuss some techniques in online protection from online identity theft. **SOME** learners will be able to discuss various techniques in online protection from online identity theft. **FEW** learners will be able to confidently discuss various techniques in online protection from online identity theft.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: identity theft, phishing, anti-virus software, malware, pass codes, Virtual Private Network (VPN), two-factor authentication, manage privacy	

In this task:

The teacher should divide the class into 12 groups and allocate one part of the **Task 40 Article.pdf** to each group.

Learners should create an information poster about ways to protect yourself online.

Resources required

On CD

• Task 40 Article.pdf
• Task 40 Assessment Sheet.pdf

Phase 1: Start of task

Discuss what identity theft is.

Phase 2: Main

The **Task 40 Article.pdf** is about ways to protect yourself online. Divide the class into 12 groups. Allocate one part of the 12 parts of the **Task 40 Article.pdf** to each group.
Ask each group to create an information poster to explain the contents of their part of the article. They can use the Learner's Book and the internet for further research.
Let learners refer to the **Task 40 Assessment Sheet.pdf**, which lists the criteria that the posters should fulfil.
Explain that the groups will have a chance to explain their posters to the class in the next task.
Allow learners to create their posters during this task and to explain their posters to the whole class in the next task.

Phase 3: End of task

Ask learners to list five steps they intend to take to ensure they are safe form identity theft online.

Task: 41 of 43	
Sub-strand: 9. Digital literacy	
Content standard: B5.6.9.1 Demonstrate proficiency in digital literacy.	**Indicator:** B5.6.9.1.2 Discuss various techniques in online protection from online identity theft.
Performance indicator: **ALL** learners will be able to discuss some techniques in online protection from online identity theft. **SOME** learners will be able to discuss various techniques in online protection from online identity theft. **FEW** learners will be able to confidently discuss various techniques in online protection from online identity theft.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: identity theft, phishing, anti-virus software, malware, pass codes, Virtual Private Network (VPN), two-factor authentication, manage privacy	

In this task:

The teacher should facilitate the presentation of the posters that the groups prepared in the previous lesson.

Learners should present and explain their posters and do self-assessment of their work using the **Task 40 Assessment Sheet.pdf**.

Resources required

Learner's Book pages 122–124

On CD

• Task 40 Assessment Sheet.pdf

Phase 1: Start of task

Set up the room for groups to explain their posters, which they prepared in the previous task.

Phase 2: Main

Let the groups take turns to present and explain their posters to the rest of the class.

Phase 3: End of task

Ask learners to complete the **Task 40 Assessment Sheet.pdf** to self-assess their work in this task.

Sub-strand 10: Digital literacy

Task: 42 of 43	
Sub-strand: 10. Digital literacy	
Content standard: B5.6.10.1 Demonstrate the application of network etiquette (netiquette).	**Indicator:** B5.6.10.1.1 Define digital footprint.
Performance indicator: **ALL** learners will be able to define digital footprint. **SOME** learners will be able to explain digital footprint. **FEW** learners will be able to define and explain digital footprint.	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: digital footprint, googling yourself, disabled, deleted	
In this task: **The teacher should** facilitate a class debate about digital footprints. **Learners should** participate in a debate in which they argue for or against the points listed on the Task 42 Digital Footprint Poster.pdf.	

Resources required

On CD

- Task 42 Digital Footprint Poster.pdf

Phase 1: Start of task

Divide the class into two groups for a debate. Set the classroom up so that the two groups are seated and facing each other.

Phase 2: Main

Let the two groups debate the points on the **Task 42 Digital Footprint Poster.pdf**. Group A must agree with each of the 10 points and Group B must disagree with each of the 10. You should only award points for logical and reasonable arguments by either group. The group with the most points will be the winners.

Phase 3: End of task

Conclude this task with a brief discussion on the following questions:
- Define what your digital footprint is.
- Why is it important to be careful about the information you disclose about yourself online?

Task: 43 of 43	
Sub-strand: 10. Digital literacy	
Content standard: B5.6.10.1 Demonstrated the application of network etiquette (netiquette).	**Indicator:** B5.6.9.1.2 Illustrate how to keep some information from the public when using the internet.
Performance indicator: **ALL** learners will be able to keep some information from public online **SOME** learners will be able to keep most information from public online **FEW** learners will be able to keep information from public online	**Core competencies:** 1. Creativity and innovation 2. Communication and collaboration 3. Cultural identity and global citizenship 4. Personal development and leadership 5. Digital literacy
Key words: privacy settings, public, share, like, friends of friends	
In this task: **The teacher should** show the video on keeping information from public online and refer the learners to the Learner's Book section on keeping information from public online. **Learners should** watch the video on keeping information from public online and use the Learner's Book to summarise the main points about keeping information from public online.	

Resources required

Phase 1: Start of task

Have a brief discussion about what learners feel comfortable sharing online.

Phase 2: Main

Let learners watch the following video: https://www.thinkuknow.co.uk/8_10/
Discuss the video to ensure learners understand the consequences of not keeping information safe when online.
Ask learners to refer to the Learner's Book section on keeping information safe when online, and to summarise the main points.

Phase 3: End of task

Recap the meanings of the key words listed in the table above.

Check your progress

Revision

1.

COMPUTER	COMPUTER
SERVER and SWITCH	
COMPUTER	COMPUTER
PRINTER	
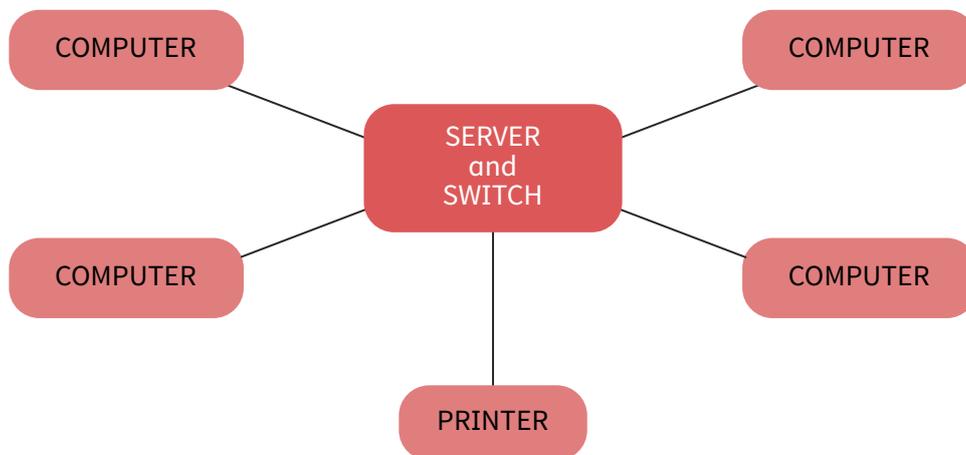
2. Cookies are small files that are stored on a user's computer.

3. PAN   Personal Area Network
   LAN   Local Area Network
   MAN   Metropolitan Area Network
   WAN   Wide Area Network

4.

5. Internet of Things

6. Any three from the following, or any reasonable answer: temperature sensor, proximity sensor, pressure sensor, light sensor, air pollution sensor, humistor

7. Any reasonable answer, for example:
   • M1name1sV1ct0r1a (the letters 'y' and 'I' are replaced with a one '1'. And the letter 'o' is replaces with a zero '0'.)
   • B*a*r*n*a*b*y*

Introduction

Strand 7 explores some major health hazards associated with the use of ICT tools and how to maintain the correct sitting posture. The topic of health and safety when using ICT is highly relevant in today's world.

Sub-strand 1: Health and safety in using ICT tools

Task: 1 of 2

Sub-strand: 1. Health and safety in using ICT tools

Content standard: B5.7.1.1 Demonstrate the application of health and safety measures in using ICT tools.	**Indicator:** B5.7.1.1.1 Demonstrate some major health hazards associated with the use of ICT tools' use.

Performance indicator:

ALL learners will be able to identify a few health hazards associated with using ICT tools.

SOME learners will be able to identify most health hazards associated with using ICT tools.

FEW learners will be able identify the major health hazards associated with using ICT tools.

Core competencies:
1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: repetitive strain injury (RSI), eye strain, back problems, circulation problems

In this task:

The teacher should discuss the Learner's Book section on health and safety in using ICT tools and facilitate a role play in which learners adopt sitting postures in different scenarios.

Learners should complete the **Task 1 Worksheet.pdf** on health and safety hazards.

Resources required

Learner's Book pages 131–136

On CD

- Task 1 Worksheet.pdf

Phase 1: Start of task

Do this Quick Quiz with the class:
1. If you had to work for 8 hours a day inputting data into a computer, how many miles would your fingers be travelling? (Answer: over 12 km)
2. True or false: A computer screen should be kept at least 75–80 cm away from your eyes for safety. (Answer: false)
3. Is a cheap computer a health hazard? (Answer: No, not if it works properly.)

Phase 2: Main

Discuss the Learner's Book section on health and safety in using ICT tools.

Ask learners to role play the following sitting positions to demonstrate different postures:

- sofa or couch relaxing reading a book
- sitting in an office or
- a dinner table or
- a car.

Let other learners describe the differences in the postures for each role play.

Allow learners to answer the questions in the **Task 1 Worksheet.pdf**. They can refer to the relevant Learner's Book section to complete the worksheet.

Phase 3: End of task

Ask learners to swap their answers, and then go over the correct answers with the whole class for peer-assessment.

Extension activity

Ask learners to complete Activities 7.1 and 7.2 in the Learner's Book to practise identifying health hazards and adopt correct sitting posture.

Answers to the Task 1 Worksheet

1. a) headaches
   b) eye strain
   c) wrist pain
   d) backache
   e) neck pain

2. Possible answers:
   - The company should provide Kwando with a computer in an area that is well lit so that the light source does not shine directly into his eyes and cause him to suffer from eye strain.
   - They should also provide Kwando with an adjustable chair so that he can adjust to the height of the monitor and not have to strain his neck. A proper chair would also help him to maintain a comfortable posture while sitting and working at his computer.
   - The company should ensure that Kwando does not have to sit and work for long hours at the computer without regular breaks, so he can rest his wrists and not suffer from repetitive strain injury or eye fatigue.
   - Computer cabling should not be lying across the floor and cause Kwando to trip and fall over them by accident.
   - The monitor should have an anti-glare screen to prevent Kwando from suffering from eye irritation and he should be able to adjust the brightness settings on his monitor to avoid him suffering from eye irritation.

Task: 2 of 2	
Sub-strand: 7. Health and safety in using ICT tools	
Content standard: B5.7.1.1 Demonstrate the application of health and safety measures in using ICT tools.	**Indicator:** B5.7.1.1.2 Describe proper sitting posture.

Performance indicator:

ALL learners will be able to identify a few health hazards associated with using ICT tools.

SOME learners will be able to identify most health hazards associated with using ICT tools.

FEW learners will be able to identify the major health hazards associated with using ICT tools, including proper sitting posture.

Core competencies:

1. Creativity and innovation
2. Communication and collaboration
3. Cultural identity and global citizenship
4. Personal development and leadership
5. Digital literacy

Key words: repetitive strain injury (RSI), eye strain, back problems, circulation problems

In this task:

The teacher should play a short video for the class on health and safety in ICT and refer learners to the relevant Learner's Book section where necessary.

Learners should complete the **Task 2 Worksheet.pdf** on describing proper sitting posture.

Resources required

On CD

• Task 2 Worksheet.pdf

Phase 1: Start of task

Phase 2: Main

Allow learners to watch this short video on health and safety: https://www.youtube.com/watch?v=T8qGO7XQ0Uw
Let learners complete the **Task 2 Worksheet.pdf**. They should refer to the relevant Learner's Book section on health and safety to help them answer the worksheet questions.

Phase 3: End of task

Ask learners to swap their answers, and then go over the correct answers with the whole class for peer-assessment.

Extension activity

Ask learners to complete Activity 7.3 in the Learner's Book.

Answers to Task 2 Worksheet

1. Sitting in a relaxing position requires unsupported structures, such as a couch or sofa. Sitting in formal settings, such as at a dinner table or in school or a working environment requires a supportive structure, such as a chair that is adjustable in height or position.
2. Learner's pictures should show proper and improper postures in the various scenarios.
3. An adjustable chair will allow you to raise or lower the chair so that your eyes are in line with the top line of your monitor. This will ensure that you do not suffer from neck or back pain.

Answers to Activity 7.3

1. Differences include hunched shoulders, feet not flat on the floor, sitting slumped or not upright, and peering up at the keyboard.
2. The boy is sitting up straight with both feet on the floor. He is looking directly at the screen without leaning forward.

Check your progress

Revision

1. Statement (a) is wrong.
2. Statements (a) and (c) are correct.
3. All three options are correct.
4. Options (a) and (c) are correct.
5. Option (a) is correct.