

ESSENTIAL Computing Primary 5



Teacher's Guide



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ESSENTIAL Computing

Primary 5

Teacher's Guide

Silas Hibbert • Denise Taylor

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NNF Esquire Limited
P.O. Box AN 8644, Accra - North, Ghana.



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Shaftesbury Road, Cambridge CB2 8EA, United Kingdom
One Liberty Plaza, 20th Floor, New York, NY 10006, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
314-321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi - 110025, India
103 Penang Road, #05-06/07, Visioncrest Commercial, Singapore 238467
Old Warehouse Building, Black River Park, 2 Fir Street, Observatory, Cape Town, 7925, South Africa

Cambridge University Press & Assessment is a department of the University of Cambridge.

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www.cambridge.org

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First published 2020

Updated 2025

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Printed in South Africa by Academic Press

ISBN 978-9988-8965-1-5 Paperback

Authors: Silas Hibbert, Denise Taylor

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Cover artwork: adventtr/GettyImages

Acknowledgements

The publisher and authors would like to thank the following individuals and organisations for permission to use their material in either the original or adapted form:

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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 indicators. Additional resources are available from Cambridge GO with additional printable worksheets and PowerPoint presentations that can be used on a projector in your classroom or printed out. The downloadable content accompanying the Teacher's Guide is available from Cambridge GO at <https://www.cambridge.org/go/>. 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 fourth Industrial Revolution.

In this Teacher's Guide for Basic 4, 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 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 is underpinned by Bloom's taxonomy. Additional 21st-century pedagogical approaches, such as the 'flipped classroom', 'CLIL' and 'task 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 lists the 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 task 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 tasks per academic year. Some content, concepts or practical tasks may require slightly more time than might be available in a task 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 is linked to the corresponding sub-strand. Each sub-strand and its related 'Content standard' is 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 task 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 English speakers. The methodology uses a variety of creative ways to familiarise learners with the key words for each task, mostly in the 'Phase 1: Start of task' section.

Resources for use during a task can be found in the section 'Downloadable content'. 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 five to eight 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 tasks. 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 task.

The '**Phase 3: End of task**' section can be used to reflect on the learning in each task or for consolidation of key concepts learned. 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 five to eight minutes.

Low-resource schools

The 'Low-resource school' section caters for schools 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 flash cards 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 board, developing a discussion or explanation while you draw. Use 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 serves as differentiation materials to challenge the more able learners in a class. Teachers might wish to use the extension activities as follows:

- with the moreable learners only
- in pairs where a more able learner works together with a less able learner
- in mixed ability groups that 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 for download from Cambridge GO. 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.

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

Strand I: Introduction to computing

Introduction

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

- Generations 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 Microsoft 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 Windows interface – a more in-depth exposition of the features of the 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 in the local community.

Sub-strand I: Generations of computers and their parts

Task: 1 of 28

Sub-strand I: Generations 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: soft copy, hard copy, computer monitor, projector, audio-electrical signals, printed images, printer, speakers

In this task:

The teacher should use the **Task 1 Presentation.pptx** 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

Learner’s Book pages 2–6

Downloadable content

- 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 Revision

Learner's Book page 2

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.

I.

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 and text.
Keyboard	An input device used to enter letters, numbers and symbols into a computer.
Monitor	An output device that lets you interact with your computer. You can see what you enter and what the computer has processed.
Speaker	Hardware that produces audio (sound) from a computer to be heard by the listener.
Printer	Hardware that prints onto paper. It can print text, graphics and numbers.



Joystick	A hardware device that controls a cursor (like a mouse), often used when playing games.
Light pen	An input device that allows you to point to objects or to draw on the screen.
Pointing stick	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	A touch-sensitive area on a computer or tablet that acts as a means to place the cursor where you want it to be.
Webcam	A camera integrated into a computer that is used to take photographs for inputting into the computer.

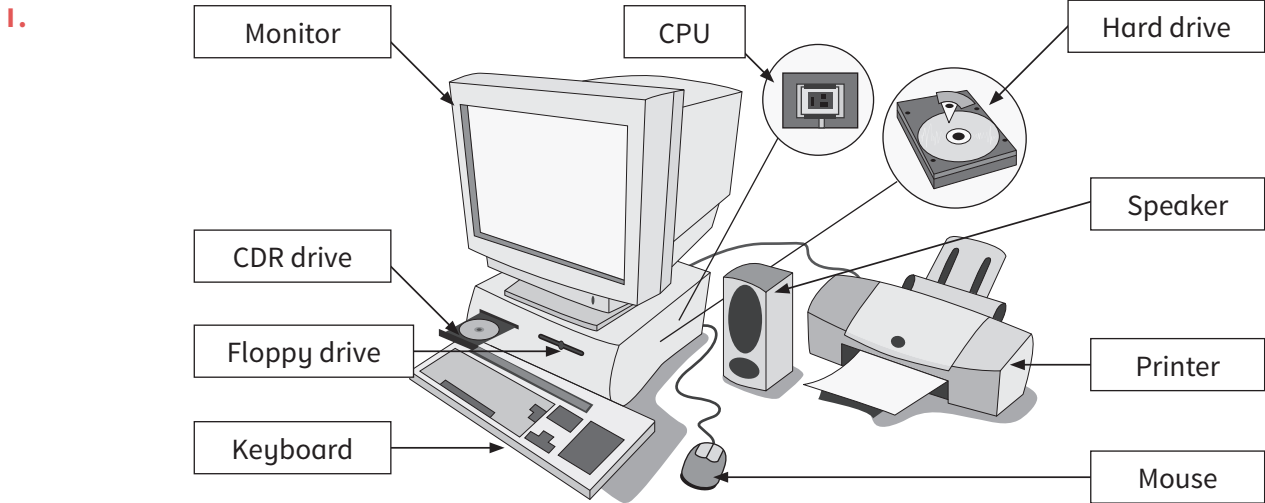
- The learners write the names of any two other input devices in the last two rows of the table.
- List of output devices:
 - printer – hardcopy printout copies and be regarded as output, such as the contents of a program on the computer
 - monitor or screen – allows the user to see the contents of the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

Answers to Activity 1.2 Compare computer screens

Learner's Book page 4

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.	Uses a lot of power. Fewer dark areas.
OLED	Are needed for portable gadgets.	
Touchscreen	Does not need separate keyboard or mouse. Can use fingers instead. Therefore much more portable.	Because it is used on portable gadgets, can be easily damaged.

Answers to Task I Worksheet



Task: 2 of 28	
Sub-strand I: Generations of computers and parts of a computer and other gadgets	
Content standard: B5. I. I. I Identify parts of a computer and technology tools.	Indicator: B5. I. I. I.3 Distinguish the differences 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

Learner’s Book pages 7–9

Downloadable content

- 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 versus 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 Know about output devices

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, etc.
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 Compare analogue and digital

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 I: Generations 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 and right mouse button; holding of mouse; performing single-, double- and triple-clicking and dragging object.



Strand 1: Introduction to computing

Performance indicator:

ALL learners will be able to identify the left and 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 groups to carry out the specific tasks for their groups.

Resources required

Learner's Book pages 9–10

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 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: Generations 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 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

Learner's Book pages 10–11

Downloadable content

- 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 key words by drawing a circle 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. Fifty words is approximately four or five lines.

Task: 5 of 28

Sub-strand 1: Generations 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 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

Learner's Book pages 11–14

Downloadable content

- 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 I: Generations 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.pdf** to attempt all the tasks mentioned.

Resources required

Learner's Book pages 15–17

Downloadable content

- 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 Learn more about computer generations

Learner's Book page 14

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.

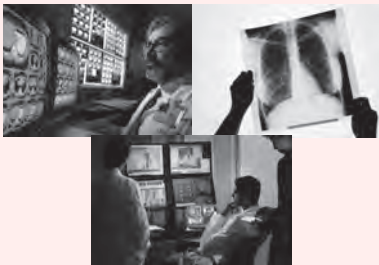
2nd generation: Advantages – much smaller than 1st generation; they used transistors which were less expensive than vacuum tubes.

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 health care		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, 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 show drivers the route to follow to reach their destinations. GPS devices can sometimes lead drivers into unsafe territories or through back roads unsuitable for the size of the vehicle.
Vending machine		Vending machines have small microchips that store the exact place where each product is positioned. Users can then select from the options and the onboard computers release the product selected and paid for by the user. The vending machine 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 drawings by police computers can sometimes lead to wrongful arrests.

Sub-strand 2: Introduction to the Microsoft® Windows interface

Task: 7 of 28

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



Strand 1: Introduction to computing

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 software package and then edit their current desktop background image by importing that image onto their desktop background image.

Resources required

Learner's Book pages 18–21

Downloadable content

- 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 would 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

ID, 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

Downloadable content

- 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 advanced 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

Learner's Book pages 21–22

Downloadable content

- Task 9 Worksheet.pdf

Phase 1: Start of task

- Play the Hot Seat game using the key words listed above. Rules:
Ask a learner to sit on a chair at the front of the classroom, facing the class.
- Behind the learner, write a key word on the board so that they 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

Learner's Book pages 21–22

Downloadable content

- 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 how 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

Learner’s Book pages 21–22

Downloadable content

- 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, they must remove a question and try to answer it or open it up to the rest of the class for discussion. Eventually all should be 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 File Explorer.
Performance indicator: ALL learners will be able to demonstrate understanding of the locations on the computer through File Explorer. SOME learners will be able to demonstrate understanding of the File Explorer window on the computer through File Explorer. FEW learners will be able to demonstrate understanding of the File Explorer window and locations on the computer through File Explorer.	Core competencies: 1. Creativity and innovation 2. Digital literacy 3. Cultural identity and global citizenship



Strand 1: Introduction to computing

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 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

Learner's Book pages 21–24

Downloadable content

- Task 12 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 be 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

Learner's Book pages 25–26

Downloadable content

- 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 in 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 activities

Activity 1.7 Collect data from an experiment on pages 27 and 28. Let stronger learners partner with learners who struggle with practical tasks.
Read and discuss the **Task 13 Reading Worksheet.pdf** with the learners.

Task: 14 of 28

Sub-strand 3: Data, sources and usage



Strand I: Introduction to computing

Content standard: B5. I.3. I Illustrate the use of data and identify their sources.

Indicator: B5. I.3. I. I 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 I4 Presentation.pptx** on identifying data and conversion between different file formats.

Learners should complete the **Task I4 Worksheet.pdf**.

Resources required

Learner's Book pages 25–29

Downloadable content

- Task I4 Presentation.pptx
- Task I4 Worksheet.pdf

Phase I: Start of task

Teacher to provide copies of the **Task I4 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 I4 Presentation.pptx** or **Task I4 Worksheet.pdf**.

Phase 3: End of task

Discuss question 5 of the **Task I4 Presentation.pptx**.

Low-resource school

Provide copies of the **Task I4 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 I.8 to I.11. Consider pairing them with other learners for the practical tasks.

Answers to Activity 1.8 Is it data or information?

Learner's Book page pages 28–29

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

Learner's Book page 27

Downloadable content

- 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

Learner's Book page 27

Downloadable content

- Task I6 Presentation.pptx
- Task I6 Worksheet.pdf

Phase 1: Start of task

Ask learners to complete question 1 of the **Task I6 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 I6 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 I6 Worksheet.pdf**, where they peer-assess each other's posters.

Low-resource school

Provide copies of the **Task I6 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 I.11 and I.12. in the Learner's Book.

Answers to Task I6 Worksheet

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



Strand 1: Introduction to computing

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

Answers to Activity 1.12 Create a questionnaire

Learner's Book page 34

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.

Answers to Activity 1.13 Analyse data

Learner's Book page 35

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

Learner's Book page 29

Downloadable content

- 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 ten 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 to 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

Learner's Book pages 30–32

Downloadable content

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

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 many 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 3 rd	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 3 rd	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.xlsx**.

Resources required

Learner's Book pages 31–32

Downloadable content

- Task 19 Spreadsheet.xlsx
- Task 19 Spreadsheet_Extension.xlsx

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.xlsx**.
- 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 many got none 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.xlsx**.

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. I.3. I Illustrate the use of data and identify their sources.

Indicator: B5. I.3. I.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

Learner's Book pages 32–33

Downloadable content

- 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 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 six or seven 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

Learner’s Book page 29

Downloadable content

- 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 2 I Worksheet.pdf** about sending SMSes.
- Use the **Task 2 I 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 2 I Worksheet.pdf**.

Phase 3: End of task

Ask learners to reply to any SMSes 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 SMSes 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. I.3. I Illustrate the use of data and identify their sources.

Indicator: B5. I.3. I.8 Select the samples and collect data (e.g. listening to radio, newspaper, talking to people).



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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 samples and compile their questionnaires before going out to interview teachers using simple questionnaires. They must record the data in their books.

Resources required

Learner's Book pages 33–34

Downloadable content

- 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 doing 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 Microsoft 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

Learner's Book page 34

Downloadable content

- Task 23 Spreadsheet.xlsx

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.xlsx** 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, 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



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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 the tables they created in the previous task and analyse it, generalise the results and make suggestions.	

Resources required

Learner's Book pages 32–33

Downloadable content

- Task 23 Spreadsheet.xlsx
- 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. Follow the link for examples of websites where such maps and photographs can be found.
<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 from the downloadable content. 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.xlsx**) 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 that 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

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. FEW learners will be able to investigate the types of technology in the community including the positive and negative effects.	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: 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 and entertainment.	

Resources required

Learner's Book page 37

Phase I: 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:





Strand 1: Introduction to computing

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.
 - Health care
 - Education
 - Manufacturing
 - Agriculture
 - Transport
 - 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 once they have finished. An example of a Prezi presentation for the healthcare technologies can be found at the link below.
<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. Note that the answers here include the answers to Activity 1.14 on page 38 of the Learner's Book.

Sector	Positives	Negatives
Health care	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, graphic 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, software, and network terminology.

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

Resources required

Learner's Book pages 38–40

Downloadable content

- 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



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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 key words 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-strand4: 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

Learner's Book pages 40–41

Downloadable content

- 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.pptx** 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 to prolong life for much longer than today's average life expectancy?
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 ten 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 inventories 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 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



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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

Learner's Book pages 40–45

Downloadable content

- 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, encyclopaedia, magazine article, journal, newspaper (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.

Strand 2: Presentations

Introduction

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

Sub-strand I: Introduction to Microsoft® PowerPoint

Task: 1 of 2

Sub-strand I: 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, Animations and Transitions 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, Animations and Transitions in the ribbons, 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 PowerPoint slide.

Learners should create a drawing of the Ghana flag using PowerPoint.

Resources required

Learner's Book pages 50–55

Downloadable content

- Task 1 Presentation.pptx

Phase I: 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 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 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 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.

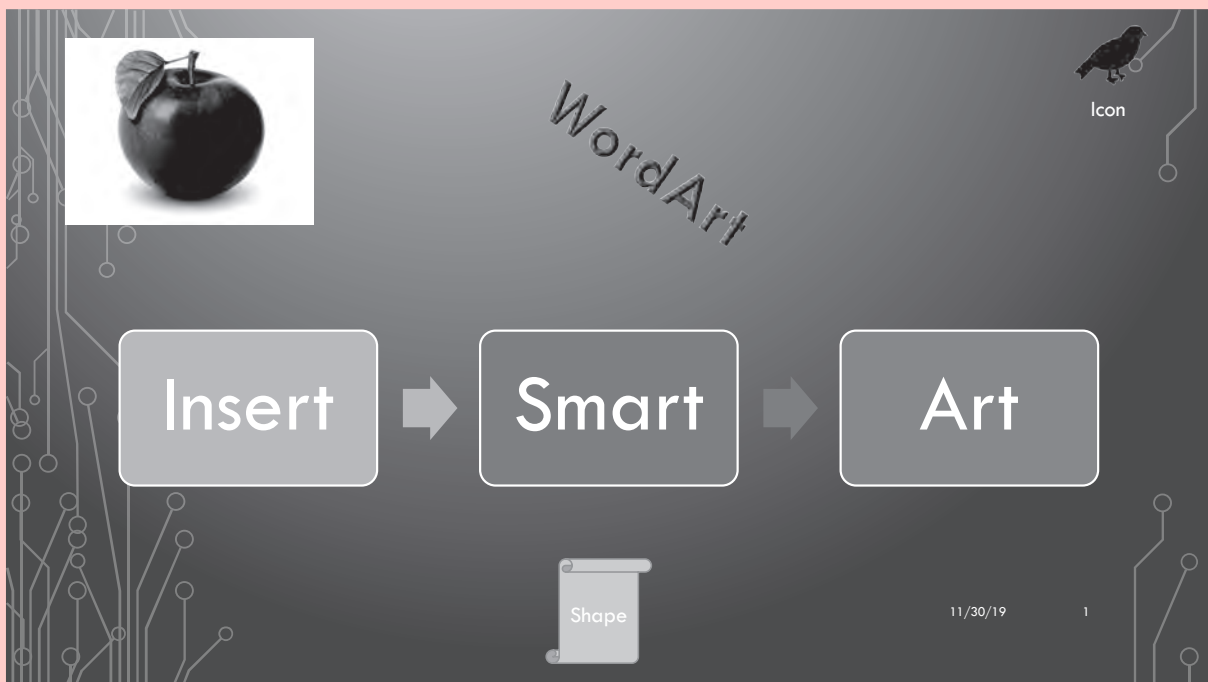
Extension activity

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

Answers to Activity 2.1 Practise using the Insert tab

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 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 Transitions of the ribbons studied.
Performance indicator: ALL learners will be able to create a 5-slide presentation showing the use of Insert, Design, Animations and Transitions in the ribbons section. SOME learners will be able to create a 5-slide presentation showing the use of Insert, Design, Animations and Transitions in the ribbons section on the topic of 'Myself'. FEW learners will be able to create a colourful 5-slide presentation showing the use of Insert, Design, Animations and Transitions in the ribbons section on the topic of 'Myself'.	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: 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 five-slide presentation about 'Myself' that fulfils a set of criteria.	

Resources required

Learner's Book pages 56–60

Downloadable content

- 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, Animations, Colour, Transitions and Slide Show.

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 presentations.

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 Microsoft Word in 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 Microsoft® Word

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 Ribbons.

SOME learners will be able to use the Design and Layout Ribbons.

FEW learners will be able to use the File Menu, 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 use the Learner's Book pages to demonstrate how to use the File menu and Insert, Design and Layout tabs.

Learners should complete the **Task 1 Worksheet.docx** on word processing features.

Resources required

Learner's Book pages 63–72

Downloadable content

- 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.

Strand 3: Word processing

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 Ribbons. SOME learners will be able to use the Design and Layout Ribbons. FEW learners will be able to use the File Menu, 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 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

Learner's Book pages 63–72

Downloadable content

- 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 I: 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

Downloadable content

- 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 absorb all at once. It will need to be approached 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. For Activity 3.5, 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 separately on two different pages.
 - d) Select Portrait 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 Activity 3.5, 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.

Strand 5: Programming and databases

Introduction

In Strand 5, learners are introduced to Microsoft Access as a database software package, and they explore the databases, spreadsheets and programming languages.

Sub-strand I: Introduction to databases, algorithms and programming

Task: 1 of 12

Sub-strand I: Introduction to databases, algorithms and programming

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

Learner's Book pages 78–82

Downloadable content

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

Phase I: Start of task

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

○ Customer ID	○ Customer ID	○ Invoice ID	○ Product ID
Customer Name	Invoice ID	Product ID	Product Name
Address	Order Date	Unit Price	Unit Price
Country	Subtotal	Qty	Stock
○ Phone	○ Discount	○ Extended Price	○ Category
Order Date	Region	Product Name	Discount
Salesperson	Salesperson	Total	Total in Stock
○ Region	○	○ Total in Stock	○
		Order Date	

Customers table Invoices table Line Items table 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, age, length of 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 at the link below.
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 Revise database terms
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 I: Introduction to databases, algorithms and programming

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:

ALL learners will be able to discuss the importance of a database.

SOME learners will be able to discuss the uses of a database.

FEW learners will be able to discuss the importance of a database and the uses of a 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: 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

Learner's Book pages 78–85

Downloadable content

- Task 2 Reading Worksheet.pdf
- Tasks 1–3 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

- 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 re-watch the following YouTube video at the link below.
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 I: Introduction to databases, algorithms and programming

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

Indicator: B5.5.1.3.3 Describe the types of databases.



Strand 5: Programming and 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

Learner's Book pages 78–79

Downloadable content

- 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 their 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, algorithms and programming

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

Learner's Book pages 80–83

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 groups' presentations during the next task.
- Make sure learners use the following evaluation criteria for their presentations:
 - The content must be correct for each data type.
 - There should be 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 I: Introduction to databases, algorithms and programming

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.



Strand 5: Programming and databases

Performance indicator:

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

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

FEW learners will be able to identify 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 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

Learner's Book pages 81–83

Phase 1: Start of task

Briefly remind learners that each group has only 3 minutes to do their presentation, and that there will be two 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 Understand data types

Learner's Book page 83

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 one or two 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 I: Introduction to databases, algorithms and programming

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

Learner's Book pages 80–86

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 Revise database concepts

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 I: Introduction to databases, algorithms and programming	
Content standard: B5.5. I.3 Demonstrate how to use databases.	Indicator: B5.5. I.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 I: Introduction to databases, algorithms and programming	
Content standard: B5.5. I.3 Demonstrate how to use databases.	Indicator: B5.5. I.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 spreadsheets

Task: 9 of 12

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

Content standard: B5.5.1.2 Demonstrate how to use electronic spreadsheets.

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 spreadsheets and 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: Microsoft 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

Learner's Book pages 88–91

Downloadable content

- 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:

- Use of a list with names and amounts paid; use of a table with names and amounts paid on different dates.
 - Possible drawings could include columns showing names, dates paid and amounts paid.
- 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 Excel with almost all of the same abilities. It can also open and save files in Excel's file format.
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.
 - 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 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.
- 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 spreadsheets.

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: Microsoft 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

Learner's Book page 88

Downloadable content

- 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 argue 'For' 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 spreadsheets (tabs, ribbons manipulation)



Strand 5: Programming and databases

Content standard: B5.5.1.2 Demonstrate how to use electronic spreadsheets.

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

Learner's Book pages 88–91

Downloadable content

- 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

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

Content standard: B5.5.1.2 Demonstrate how to use electronic spreadsheets.

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 Excel on their computers and display text.

SOME learners will be able to demonstrate how to access and display text in Excel on their computers and mobile gadgets.

FEW learners will be able to demonstrate how to access and display text in Excel on their computers, 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: Microsoft Excel, Worksheet, Tabs, Ribbons

In this task:

The teacher should refer learners to the Learner's Book section on the Excel interface. Ensure the learners are able to access the 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

Learner's Book pages 89–91

Downloadable content

- Task 12 Worksheet.pdf

Phase 1: Start of task

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

Phase 2: Main

- Refer learners to the Learner's Book pages on the 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 Work in Excel

Learner's Book pages 90–91

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

- 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
- 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

Strand 6: Internet and social media

Introduction

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

Tasks in Strand 6 are covered in ten sub-strands as follows:

- Networks and how the internet works
- Web browsers and web pages, including home pages, favourites and hyperlinks
- Surfing the World Wide Web, including creating favourites, search engines and smart search engines
- Favourite places and search engines, including how to handle search results
- Using online forms, including working online and offline, and downloading files and folders
- Customising your browser, including how to set default search engines, home pages, apps, add-ons and plug-ins
- Electronic mail, including creating and using different email accounts
- Internet of Things (IoT), including its purpose, examples, components and the role of sensors in the IoT
- Digital literacy, including digital safety and describing personal and private information
- 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 fully 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

Learner’s Book pages 95–98

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 Identify network components

Learner’s Book page 99

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 comprehensively 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

Learner's Book pages 94–95

Downloadable content

- Task 2 Worksheet.pdf

Phase 1: Start of task

Read the text on **Task 2 Worksheet.pdf** with the class and make sure that they 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 I: 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 comprehensively 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

Learner's Book page 97

Downloadable content

- 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 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. I Demonstrate how to use web pages.	Indicator: B5.6.2. I. I 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 comprehensively 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

Downloadable content

- Task 4 Worksheet.pdf

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

- I. a) WorldWideWeb
- b) web server; web browser
- 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: Mozilla, Firefox, Opera, Microsoft 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 Task 5 Worksheet.pdf .	

Resources required

Learner's Book page 100

Downloadable content

- 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: All show mostly the same information.
Differences:
 - The layout on the page differs slightly.
 - A larger section of the website is displayed on the 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 Use search engines

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 Internet Explorer.

SOME learners will be able to demonstrate mostly the use of Internet Explorer.

FEW learners will be able to demonstrate fully the use of 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: Microsoft Internet Explorer, Microsoft 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

Learner's Book pages 101–103

Downloadable content

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

Phase 1: Start of task

Open Edge and find the 'ADD NOTES' tool. Experiment with the pens, highlighters and other tools.

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 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 Set a default search engine

Learner's Book page 110

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 remove a favourites link.

SOME learners will be able to show how to remove a favourites link.

FEW learners will be able to show how to create 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

Learner's Book page 104

Downloadable content

- 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

Learner's Book page 104

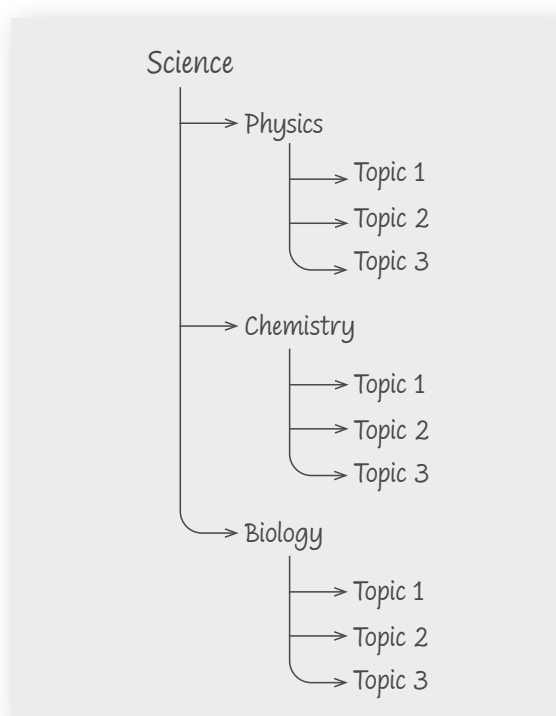
Phase 1: Start of task

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 all of 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 and how 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

Learner's Book page 102

Downloadable content

- 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 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 fully 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 as well as all the elements on a web page that are actually just links to 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

Learner's Book pages 102–103

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 the video at the link below.
<https://www.youtube.com/watch?v=yIbQrYhfaI8>
- Ask learners to create an outline drawing for their own website and add these labels to it: 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.



Strand 6: Internet and social media

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 comprehensively 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

Learner's Book pages 100–103

Phase 1: Start of task

- Explain that the learners are expected to create a short video on 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

Learner's Book pages 100–103

Phase 1: Start of task

Let learners create a word cloud of the key words listed above. Provide each group of five or six with 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.

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.

Indicator: B5.6.3.1.1 Show how to create a favourite 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 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

Learner’s Book page 104

Downloadable content

- Task 13 Worksheet.pdf

Phase 1: Start of task

- Watch the first seven to ten 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

Learner’s Book page 104

Downloadable content

- Task 14 Worksheet.pdf

Phase 1: Start of task

Watch the next seven to ten 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 possible, 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

Learner's Book page 104

Downloadable content

- Task 15 Presentation.pptx
- 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.



Strand 6: Internet and social media

Performance indicator:

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

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

FEW learners will be fully 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

Learner's Book page 103

Downloadable content

- 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 quite 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 all 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

Learner's Book pages 105–107

Downloadable content

- Task 17 Worksheet.pdf

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 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:

ALL learners will be able to explore partially how smart search engines work.

SOME learners will be able to explore mostly how smart search engines work.

FEW learners will be able to explore completely how smart search engines work.

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 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

Learner's Book pages 105–107

Downloadable content

- 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

- 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.
- 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 are 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 inputted 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: 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 all search results.	Core competencies: - Creativity and innovation - Communication and collaboration - Cultural identity and global citizenship - Personal development and leadership - 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 what you really want. Learners should work in pairs to search for information using search techniques.	

Resources required

Learner's Book pages 105–107

Downloadable content

- 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 not 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 with 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.



Strand 6: Internet and social media

- 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

Learner's Book page 108

Downloadable content

- 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 online or offline.
Performance indicator: ALL learners will be able to demonstrate working online or offline some of the time. SOME learners will be able to demonstrate working online or offline most of the time. FEW learners will be able to demonstrate working on line or offline all of the time.	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

Learner's Book page 109

Downloadable content

- 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 arrives in the post 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 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

Learner's Book page 109

Downloadable content

- 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 PowerPoint advertisement about a new funfair 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. I. Demonstrate the usage of forms.

Indicator: B5.6.5. I.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

Learner's Book page 109

Downloadable content

- 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

Learner's Book pages 110–114

Downloadable content

- Task 25 Worksheet.pdf
- Task 29 Worksheet.pdf

Phase I: 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 six to ten 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 all 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

Learner’s Book page 110

Downloadable content

- 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 home pages.
Performance indicator: ALL learners will be able to show how to set some home pages. SOME learners will be able to show how to set all most home pages. FEW learners will be able to show how to set all home pages.	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, 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

Learner’s Book pages 110–111

Downloadable content

- 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 apps, 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

Learner's Book pages 111–112

Downloadable content

- 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.



Strand 6: Internet and social media

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 all parts of 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

Learner's Book pages page 112

Downloadable content

- 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

Learner’s Book pages 112–113

Downloadable content

- 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

Learner's Book page 114

Downloadable content

- 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

Learner's Book 115–116

Downloadable content

- 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 3 I 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 3 I 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. I Demonstrate the use of electronic mail.	Indicator: B5.6.7. I.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

Learner’s Book page 117

Phase I: 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.



Strand 6: Internet and social media

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

Learner's Book page 117

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 available for download from Cambridge GO called, Task 34 Dear Learner Attachment.pdf 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

Learner's Book page 117

Downloadable content

- 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.



Strand 6: Internet and social media

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 all 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

Learner's Book | 118–120

Downloadable content

- 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: ALL learners will be able to give some examples of the IoT. SOME learners will be able to give several examples of the IoT with a consumer part and industrial/business segment. FEW learners will be able to give many examples of the IoT with a consumer part and industrial/business segment.	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 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

Learner's Book | 118–120

Downloadable content

- 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 many components of the IoT. FEW learners will be able to identify most 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



Strand 6: Internet and social media

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

Learner's Book | 118–120

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 many smart sensors in the IoT.

FEW learners will be able to identify the role of most or all 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

Learner's Book | 118–120

Downloadable content

- 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

Learner’s Book pages 121–122

Downloadable content

- 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**.



Strand 6: Internet and social media

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 Identify personal information

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

Learner's Book pages 122–124

Downloadable content

- Task 40 Article.pdf
- Task 40 Assessment Sheet.pdf

Phase 1: Start of task

Discuss what identity theft is.

Phase 2: Main

- **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 from 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 many 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

Downloadable content

- 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: Internet etiquette

Task: 42 of 43	
Sub-strand 10: Internet etiquette	
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

Learner's Book pages 125–126

Downloadable content

- 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: Internet etiquette

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

Learner's Book pages 125–126

Phase 1: Start of task

Have a brief discussion about what learners feel comfortable sharing online.

Phase 2: Main

- Follow the link and 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

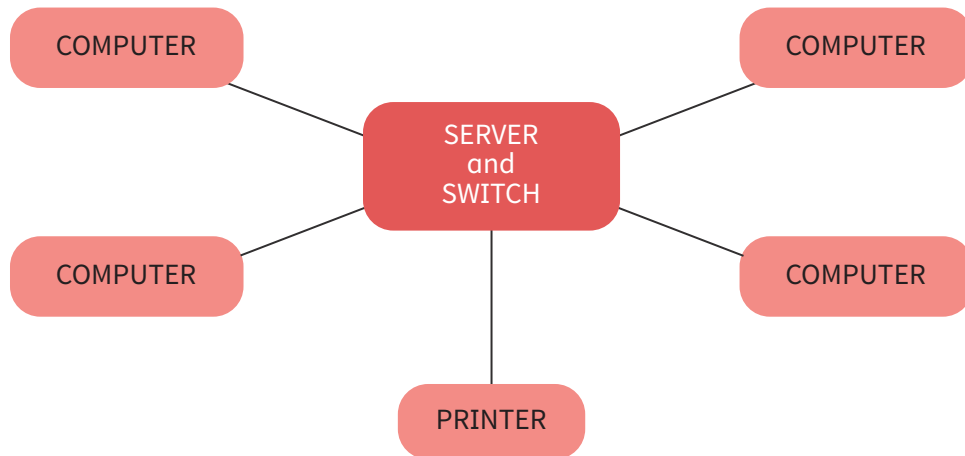
Recap the meanings of the key words listed in the table above.



Check your progress

Revision

1.



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:

- M I n a m e I s V I c t O r I a (the letters 'y' and 'I' are replaced with a one 'I'. And the letter 'o' is replaced with a zero '0'.)
- B * a * r * n * a * b * y *

Strand 7: Health and safety in using ICT tools

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 I: Health and safety in using ICT tools

Task: 1 of 2

Sub-strand I: 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.

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.

Indicator: B5.7.1.1.1 Demonstrate some major health hazards associated with the use of ICT tools' 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: 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

Downloadable content

- Task 1 Worksheet.pdf

Phase I: 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.)



Strand 7: Health and safety in using ICT tools

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:
 - lying on a sofa or couch relaxing reading a book
 - sitting in an office
 - sitting at a dinner table
 - as a passenger in 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

- a) headaches
 - b) eye strain
 - c) wrist pain
 - d) backache
 - e) neck pain
- 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

Learner's Book pages 131–136

Downloadable content

- Task 2 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

- 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. Learners' 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 Identify correct posture for a computer user

Learner's Book page 136

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.

ESSENTIAL Computing

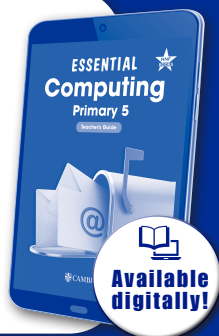
Primary 5

Teacher's Guide

ESSENTIAL Computing is an exciting, learner-centred course specifically developed in accordance with the new Standards-based curriculum by the National Council for Curriculum and Assessment (NaCCA). The course provides a solid foundation for the development of Computing skills in everyday life. This prepares learners to be active and successful citizens in the workplace, once they leave school.

ESSENTIAL Computing Primary provides a broad perspective on the necessary knowledge and practical skills related to using a variety of technologies in everyday life. The book guides development in areas such as Information Communication Skills (ICT) literacy, effective communication using digital tools, internet usage, ethical use of ICT tools and basic programming and database skills.

Each Learner's Book comes with a **FREE digital edition** of the book. The code for the digital edition appears on the inside front cover of the book and provides access for one year.



Important features of **ESSENTIAL Computing Primary 5** Learner's Book:

- Careful development of theoretical and practical activities in the use of a computer for
 - presentation
 - word processing
- Clear screenshots and step-by-step instructions on how to complete computing tasks
- Complete coverage of the core curriculum competencies such as problem-solving, innovation, collaboration, global citizenship, personal development and digital literacy
- Plenty of activities so that learners can apply the skills they have acquired
- Regular assessments, with marks, that can be done on a weekly, fortnightly or monthly basis.

Features of **ESSENTIAL Computing Primary 5** Teacher's Guide:

- Clear teaching guidelines, including planning notes, for all the content in the curriculum
- Downloadable content with all the files needed for learners to complete the activities available from Cambridge GO at <https://www.cambridge.org/go/>, plus
 - additional PowerPoint files introducing topics
 - printable worksheets for enrichment activities
- Memoranda for activities that can be used for continuous assessment during the year
- Extension activities to challenge learners who have quickly grasped the skills taught in each topic
- Guidance for teachers in low-resourced schools.

ESSENTIAL, your guarantee of success!