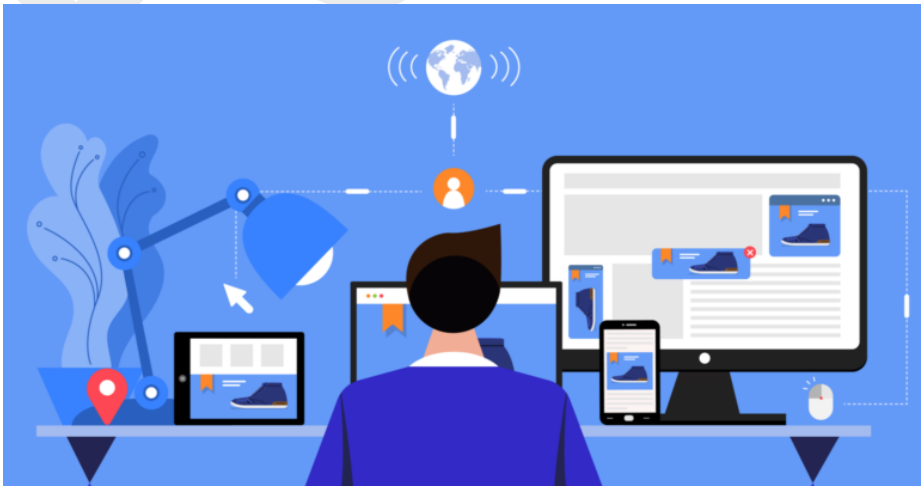
Edexcel

IGCSE - ICT

CODE: (4IT1)

Unit 05

Applying information and communication technology



Chapter 13 - Applying ICT

EFFECTIVE AND APPROPRIATE USE OF SOFTWARE

In Unit 6 Software skills, you will learn to use different pieces of software effectively. In order to work effectively, you also need to be able to select appropriate applications to meet the needs of a task. Table 13.1 lists different types of applications and some of the appropriate uses of those applications.

▼ Table 13.1 Application software and the purposes for which they can be used

TYPE OF APPLICATION	TASKS
Word processor	• Writing letters • Writing menus • Producing reports • Writing essays • Writing books
Database management	• Entering, editing and searching data • Producing reports
Graphics	• Creating images • Manipulating and editing images
Web authoring	Creating web pages and websites
Presentation	Creating slides to display **multimedia** content to accompany a talk
Spreadsheet	• Performing calculations, such as tax or student grades from test percentages • Modelling scenarios • Financial budgeting • Producing graphs and charts to visualise data as information

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multimedia a combination of more than one medium, such as audio and video together

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data raw numbers, text, sounds, images or animations, which are meaningless until they are processed
information data that has been processed to be given context and meaning

THE DIFFERENCE BETWEEN DATA AND INFORMATION

Data is raw and unprocessed numbers, text, sounds, images or animations. In this form, data is meaningless.

Information is the term used to describe data after it is processed to be given context and meaning.

▼ Table 13.2 Examples of data and information

EXAMPLE OF DATA	CONTEXT	EXAMPLE OF INFORMATION
February	Average temperatures in Kenya	The warmest month in Kenya
59, 79, 81, 90, 93, 99, 111	Students' marks	Grades 5, 6, 7, 8, 8, 9, 9
Deep Thought	Characters in the books of Douglas Adams	Deep Thought is a fictional computer created by the author Douglas Adams
	Photographs taken on cobbled streets	This is a photograph of light reflecting off stone, which you may not have recognised without the context, as at first it looks like water

DIFFERENT TYPES OF DATA

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characters the letters and symbols used to write text

Data may come in different forms, such as text or images.

Text

Example of text data: **characters**.
Possible method to produce meaning from text data: the syntax that is used.
Uses of text data: words, email addresses, product codes, postal codes.

Numbers

Examples of numeric data: integers, decimals, currency, percentages.
Possible methods to produce meaning from numeric data: graphs, charts.
Use of numeric data: to perform calculations.

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alphanumeric containing both letters and numbers

KEY POINT

Text data can contain numbers but numeric data cannot contain text. Text data is therefore sometimes referred to as **alphanumeric** data.

Images

Examples of image data: bitmap graphics, vector graphics. For more information about bitmap and vector graphics, see Unit 6 Software skills (page 239).
Possible methods to produce meaning from image data: the surrounding information (such as the rest of the web page or page of text), informative text within the image, metaphor and semiotics.
Uses of image data: logos, photographs.

Animation

Examples of animation data: SWF files (commonly known as 'FlashR files') and animated GIF files.
Possible methods to produce meaning from animation data: use of storytelling techniques, surrounding information, informative text within the animation.
Uses of animation data: web banners and other digital adverts.

Sound

Possible method to produce meaning from sound data: processing the sound data through a digital-to-analogue converter on a sound card and attaching a speaker. However, with some sounds, especially sounds that sound similar to one another, additional data such as text, video or images may be required to produce meaning from sound data.
Uses of sound data: music, speech.

ENTER, ORGANISE, DEVELOP, REFINE AND FORMAT INFORMATION, APPLYING EDITING TECHNIQUES TO MEET NEEDS

When you work with application software, you will enter data using input devices such as keyboards, mice and microphones. Selecting the appropriate data, editing it and refining it turns this data into information. In Unit 6 Software skills, you will use the editing features of application software to organise the layout of the information, as well as to develop, refine and format the information to meet the needs of your chosen design.

▼ Table 13.3 Methods of turning data into information using different application software

TYPE OF APPLICATION	ENTER	ORGANISE	DEVELOP	REFINE	FORMAT
WORD PROCESSOR	• Text • Images • Graphs • Charts	• Paragraphs • Pagination • Bullet points • Tables • Wrapping	• Add image captions • Duplicate text and images	• Spell check • Thesaurus	• Style • Size • Emphasis • Colour • Export or publish
DATABASE MANAGEMENT	• Data into tables	• Sort • Filter	• New fields • Relationships	• Queries • Group • Validation	• Reports • Export or publish
GRAPHICS	• Images • Text	• Layers • Positioning	• Resize • Animation	• Filters	• Export or publish options
WEB AUTHORING	• Text • Images • Buttons • Animation	• Tables • Frames	• Hyperlinks • Navigation	• Menus	• Font enhancements • Alignment
PRESENTATION	• Text • Images • Buttons • Sound Video	• Content on slide • Slide order	• Animations • Transitions	• Notes • Timings	• Master slide • Font
SPREADSHEET	• Numbers • Text	• Sort • Filter • Use of columns and rows	• Functions • Formulae • Graphs • Charts	• Chart features • Absolute referencing	• Cell • Column • Row • Sheet • Print layout

PURPOSE

When you use application software to create digital products, you will combine and organise information in order to achieve a purpose. When you are developing a digital product, it is important that you ask yourself whether your product fulfils the required purpose. At every stage, ask yourself whether this product meets the needs of the task.

USER

Your users are the people who will use or view the digital product that you produce.

LAYOUTS

Different types of digital products use different layouts.

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purpose what something (such as a digital product) is required to do

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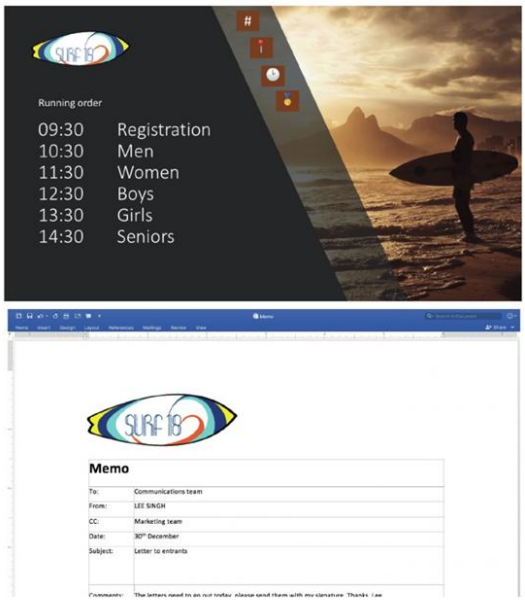
layout the way in which text and/or images appear on a page



▲ Figure 13.2 The layout of a presentation is different to the layout of a memo

The following are some of the elements to consider when laying out information.

Title and logo position: Titles and logos are usually placed at the top.

Images: Consider the overall appearance of a document when arranging images. If images appear in a document with text, then the text can be made to flow around or through the images.

White space: Good use of white space means not leaving large amounts of empty space between text and images, but also providing enough space to avoid packing the information together too tightly. Figures 13.4 and 13.5 are examples of too much and too little white space.

▲ **Figure 13.4** Too much white space can make products look empty and digital assets isolated

▲ **Figure 13.5** Too little white space can make products look too full and confusing

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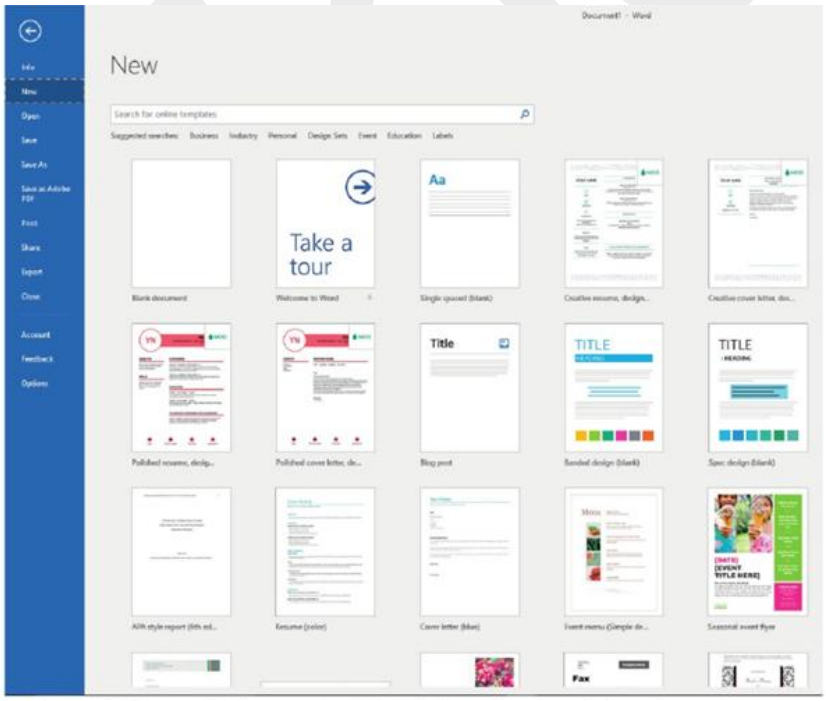
house style an organisation's preferred style of writing and layout of content
white space the part of a page or digital product that is left blank
digital assets content used in a digital product such as digital images

Document styles: Some word-processed documents, such as formal letters, arrange information in specific ways.

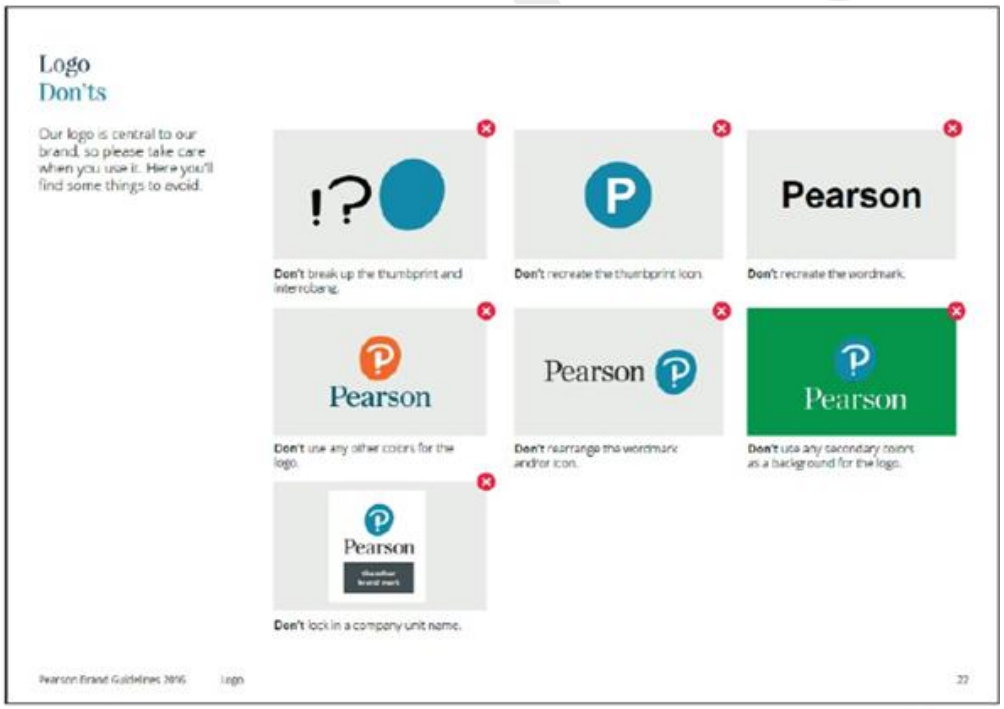


▲ **Figure 13.6** Some applications use templates to help you layout your information

HOUSE STYLES

As you have already learned, some organisations have a house style that specifies how their documents and other digital products should be laid out. This makes sure that the organisation's corporate identity is maintained, meaning they are immediately recognisable to anyone looking at their digital products.

▲ **Figure 13.7** An example of a house style document



▲ **Figure 13.8** Organisations are often very specific about how people should use their **branding**

House styles usually include guidelines for how designers should treat components such as:

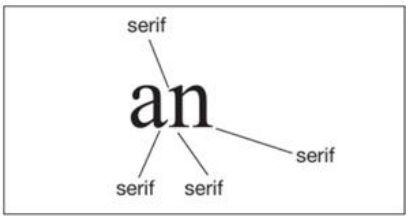
- Images
- Colours
- Logos
- Typeface or font style
- White space
- Layouts.

FONT STYLES

There are two main font styles: serif and sans serif.

Serif

A serif font is a typeface that adds a short, flat line, known as a serif, to the ends of some letters, as shown in Figure 13.9. For example, Times New Roman is a serif font.



▲ **Figure 13.9** Serifs are used in serif fonts, such as Times New Roman

Sans serif

Sans serif fonts are often used in digital products. This is because they may have to be read on digital devices that use lower resolution screens. A low- resolution screen may not be able to show the detail of serif fonts, which will make the text more difficult to read. However, as screen resolution improves, it is less likely that the use of serif fonts will cause this problem.

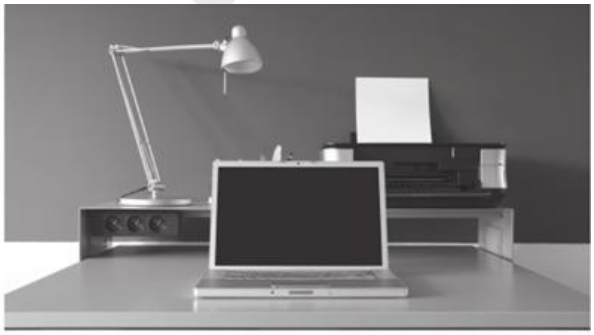
▲ **Figure 13.10** Verdana is a sans serif font

KEY POINT

In products that are designed for higher resolution screens and for print, the choice between serif or sans serif font is often made on the basis of **aesthetics**. However, some people consider sans serif fonts to be more accessible, especially for people who have visual impairments or learning difficulties that affect their reading.

COLOUR CHOICE

You can add colour to digital products by including colourful backgrounds, images, buttons or logos. Alternatively, you can use different-coloured text, such as in paragraphs, links and headings.



▲ **Figure 13.11** Greyscale can be very effective

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monochrome using a range of shades of one colour
greyscale using a range of shades of grey

EMOTION AND MEANING

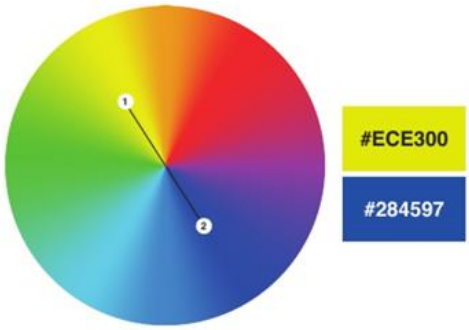
Colour can be used to suggest a certain mood or atmosphere. When using colour in digital products, you must consider the purpose and audience of your product. The first poster should convey fun and excitement while the other will need to suggest mystery and fear.

▲ **Figure 13.12** These posters use different colours to convey very different moods

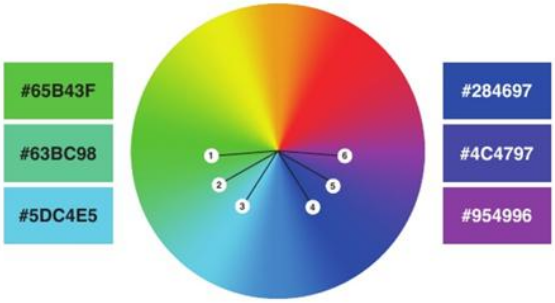
HARMONY

Once you have considered the emotional effect of the colours that you will use, you can create a colour pattern. Some patterns of colour work well together. These can be described as harmonious colours.

A colour wheel, such as that shown in Figure 13.13 shows that some colours complement and contrast with each other. These colours are the colours opposite to one another on the wheel.



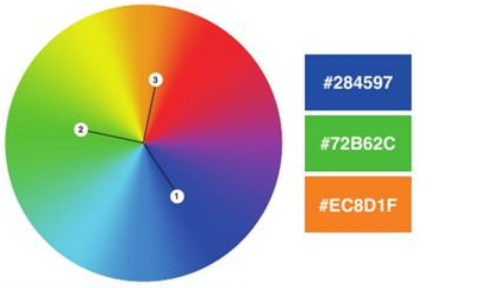
▲ **Figure 13.13** Colours opposite each other on the colour wheel complement each other and can be used to produce bright and lively colour patterns



▲ **Figure 13.14** Analogous colours are next to each other on the colour wheel

CONSTRAT

If two or more objects appear together in a product, such as text on a background, then the colours that you choose must be suitable so that the objects can be seen or read clearly. In particular, there must be enough contrast between them.



▲ **Figure 13.15 Split-complementary colours** can provide more choice of colours

ACCESSIBILITY

Designing digital products should consider the impact of sight-related conditions, such as colour-blindness, on users' ability to read information. Different types of colour blindness can cause issues, so it's crucial to consider their vision to ensure all necessary information is visible. Figure 13.17 illustrates the effects of color-blindness, including protanopia.

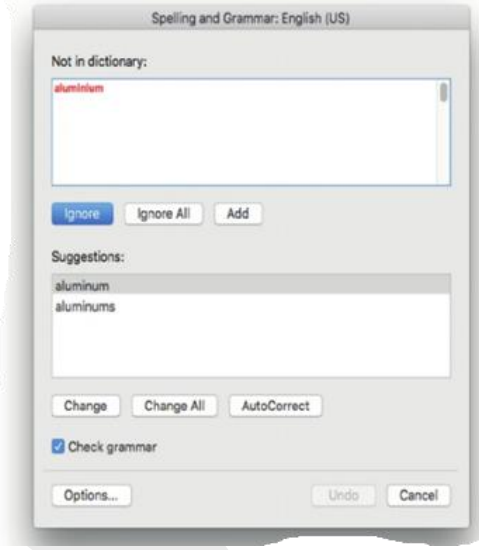
▲ **Figure 13.17** The effects of protanopia

CHECKING CONTENT

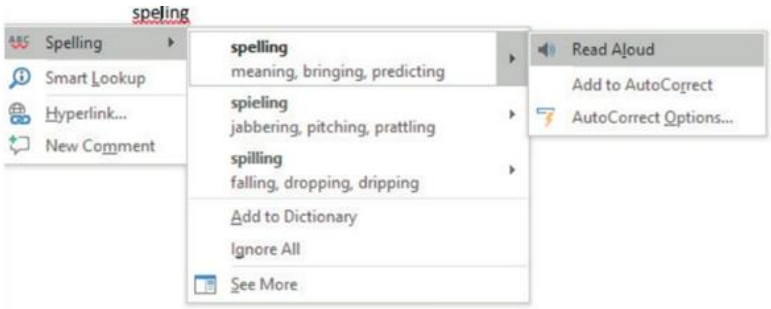
It is important to check that the content in a digital product is correct before it is published.

Automated checking tools

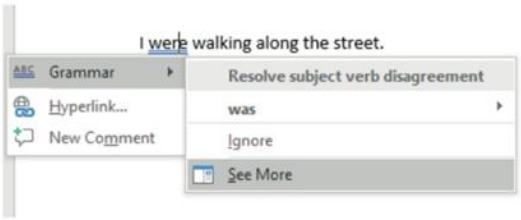
It is easy to make mistakes when entering data using application software. However, many applications provide automatic tools to help you check your work, such as spelling and grammar checkers. These tools sometimes indicate spelling and grammar errors as you type, such as by underlining them in red, but you can also run these tools manually.



▶ **Figure 13.18** A UK spelling being highlighted as incorrect by a spell checker set to US English



▲ **Figure 13.19** A spell checker picking up a spelling error



▲ **Figure 13.20** A spell checker picking up a grammatical error

Proofreading

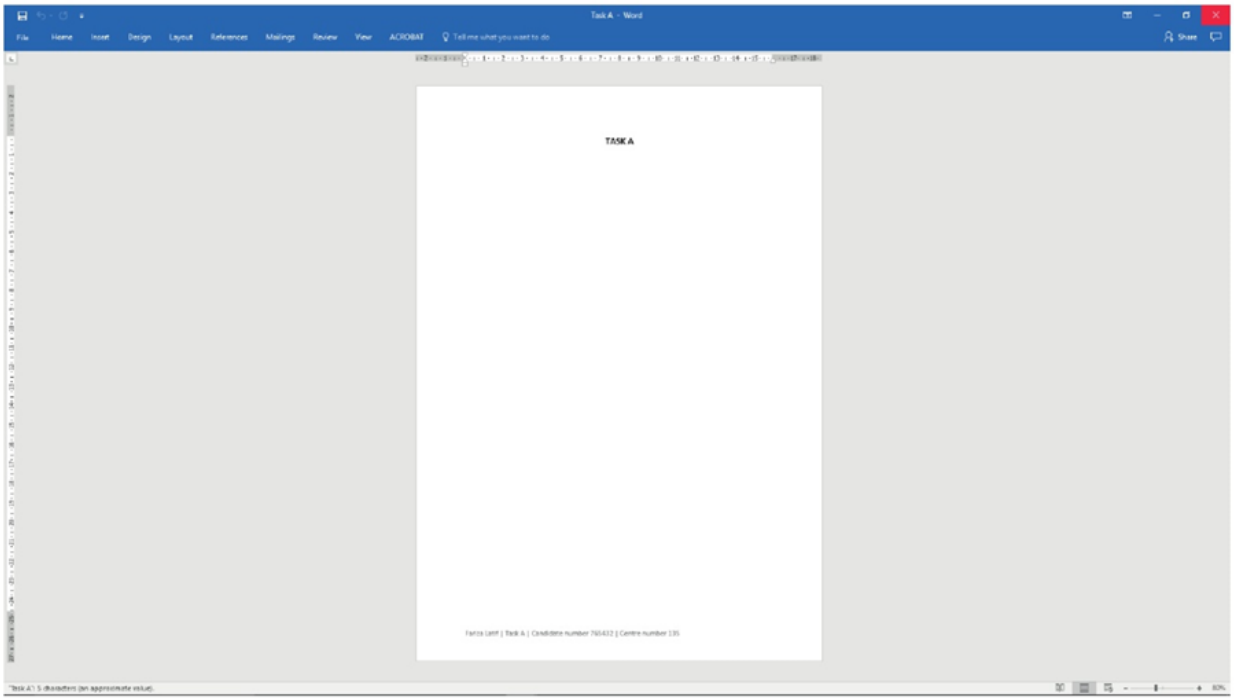
While automated tools are useful, they will not always find every error. This means that it is important to proofread your own work, particularly as the spell checker may suggest changes with which you disagree.

REVIEWING OUTCOMES

As you create your digital products, you should regularly check that they meet the requirements that you have been asked to meet. You should consider the products' strengths and weaknesses, which will help you to understand how you will update and improve those products. This process is called iterative development and allows you to improve your products by being critical throughout the process of creating them.
You should also review products after you have created them.

Requirements

As you develop a digital product, it is important to compare what you are producing with the requirements of the task. You should do this several times, at different stages of the development process as well as once the final product has been produced.



▲ **Figure 13.21** A document created to meet the requirements set out in the activity

You can see that the document in Figure 13.21 meets none of the requirements.

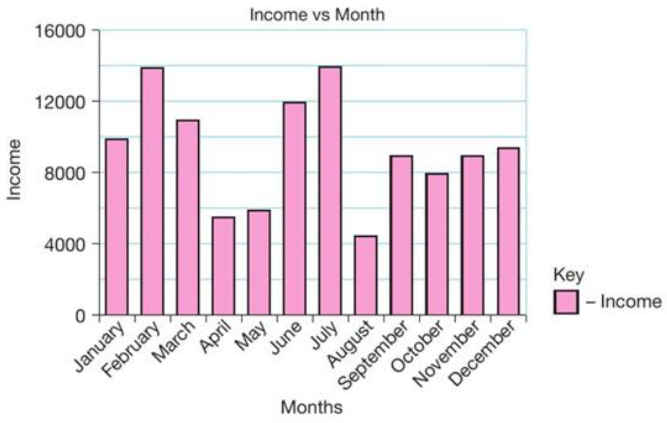
■SET the orientation to landscape: The page orientation is set to portrait, not landscape as required. For more information about page orientation, see Unit 6 Software skills (page 227).

■ENTER 'Task A1' and your name, candidate number and centre number in the footer: 'Task A' has been entered, rather than 'Task A1' as required.

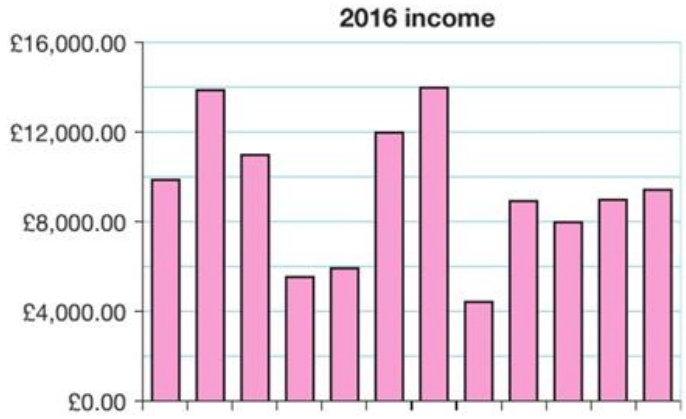
■SAVE the word-processed document as TASK A1: The document has been saved as 'TASK A', rather than 'TASK A1' as required.

Strengths, weaknesses and suggested improvements

You can identify strengths and weaknesses in your own products. It is also a good idea to ask others to look at your products to identify strengths and weaknesses as well. Other people will look at your product from a different perspective and will not be as biased as you may be about your own work. Imagine that you have produced the graph in Figure 13.22. A friend has reviewed the graph for you and has identified the strengths, weaknesses and suggested improvements in Table 13.4.



▲ Figure 13.22 The original graph



▲ Figure 13.23 The improved version of the graph with all changes made

EVALUATION

The evaluation process is very important, as it helps you to reflect on what went well and what you could improve for next time. When you complete an evaluation, you should think back to how you applied your knowledge of ICT. To help you do this, you can ask yourself a number of questions about your selection and use of the application software and the effectiveness of your products.

▼ Table 13.4 The strengths and weaknesses of the graph in Figure 13.22, with suggested improvements

STRENGTHS	
Good choice of chart type	
All months are present and clear	
There is a title	
WEAKNESS	**SUGGESTED IMPROVEMENT**
Title is quite small Title does not need to contain 'vs Month', as months are given so it is obviously monthly income	Increase title size Remove 'vs Month'
Legend (key) is unnecessary	Remove legend
It is not clear what currency the income is in	Add currency
The x and y axes do not need labels as it is obvious that these are months and income is given in title	Remove labels from each axis
It is not clear which year this relates to	Add year to title

Selecting the application software

■Did you select the best application for the job?

■Did you consider using alternative applications? If you did, what criteria did you use to decide which applications to consider?

■Why did you choose the application that you used? If there was a better choice of application, why did you not choose that one?

■What features made your choice of application appropriate? Were any of the application's features unique to it?

■ How familiar were you with the application that you chose? Did that affect your decision to select it?

Using the application software

■Did you make the best use of the application's features?

■ Did you apply skills that you learned during the course?

■Were there any additional skills that you applied that you had to learn elsewhere, such as from tutorial videos on the internet?

■Did you learn any new skills through your use of the application? Did you gain confidence in your use of those new skills?

■Did your understanding of the application's features improve? How?

■Did your efficiency in the use of the application's features improve?

Effectiveness of your products

■Did your products meet the needs of the client or brief you were given? How do you know?
■Were your products suitable for purpose and their intended audience? How do you know?
■Did you ask other people to check your products, and did you make good use of the feedback you received?
■Did you review others' products? Did you provide useful feedback on those products? How did that help you to improve your own skills and understanding?

Revision questions