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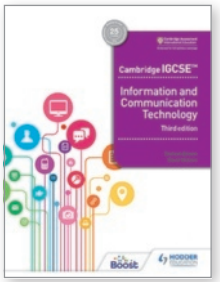

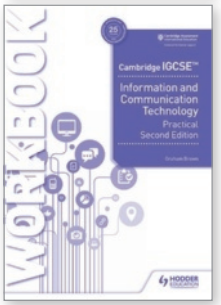

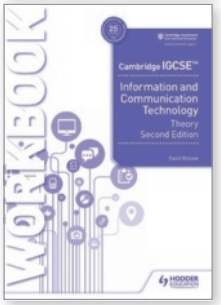

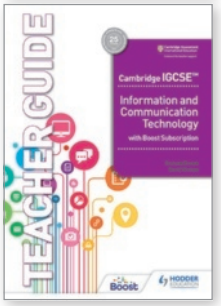

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ICT

Third Edition

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Contents

12 Images

In this chapter you will learn how to:

- ★ insert an image
- ★ resize an image to maintain or adjust the aspect ratio of an image
- ★ wrap text around an image
- ★ place an image with precision
- ★ place a border around an image
- ★ rotate an image
- ★ crop an image
- ★ reflect an image
- ★ adjust the brightness and contrast of an image
- ★ group and layer images

In this chapter you will need the following source files:

- ★ dog.png
- ★ elephant.jpg
- ★ remora.jpg
- ★ robin.png
- ★ snow.rtf
- ★ snowangel.png
- ★ snowball.jpg
- ★ snowman.jpg
- ★ text1.png
- ★ text2.png
- ★ text3.png
- ★ trees.jpg
- ★ winter.pptx

12.1 Software tools

Link

See Chapter 21.2.7

You will need to know how to place image files into different application packages. Where this is required in a web page please refer to Section 21.2.7. Images are unlikely to be included in the spreadsheets and databases elements of the course. However, images will be placed in both word-processed documents and presentations. First you must select images appropriate for the document's audience.

Task 12A

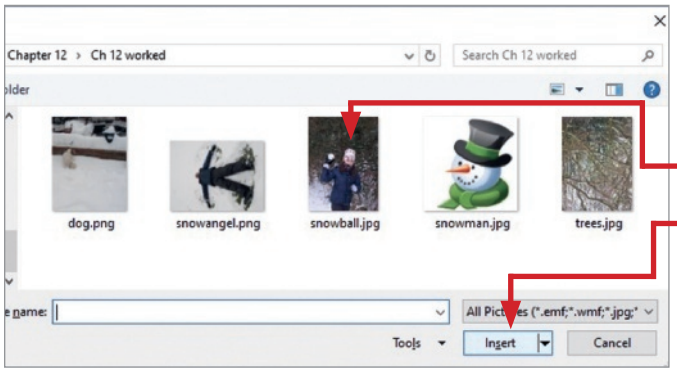
A short historical news article is to be given to young adults aged 15–25 to study.

Open the document **snow.rtf**. Insert the images **snowball.jpg**, **snowman.jpg** and **trees.jpg** at the end of the document.

This task requires a document rather than a presentation, although the methods shown are identical in both packages. Use the **Search tool** to find *Microsoft Word* and open this package.

From the **File** tab, select **Open** and locate and open the file **snow.rtf**. Replace the text <Your Name> with your name, centre number and candidate number. Create a new folder called Task 12a. Select the **File** tab, then **Save As** to save your document, in this folder, as a *Word* document (.docx) with the filename task12a.

12.1.1 Insert images in a document or presentation



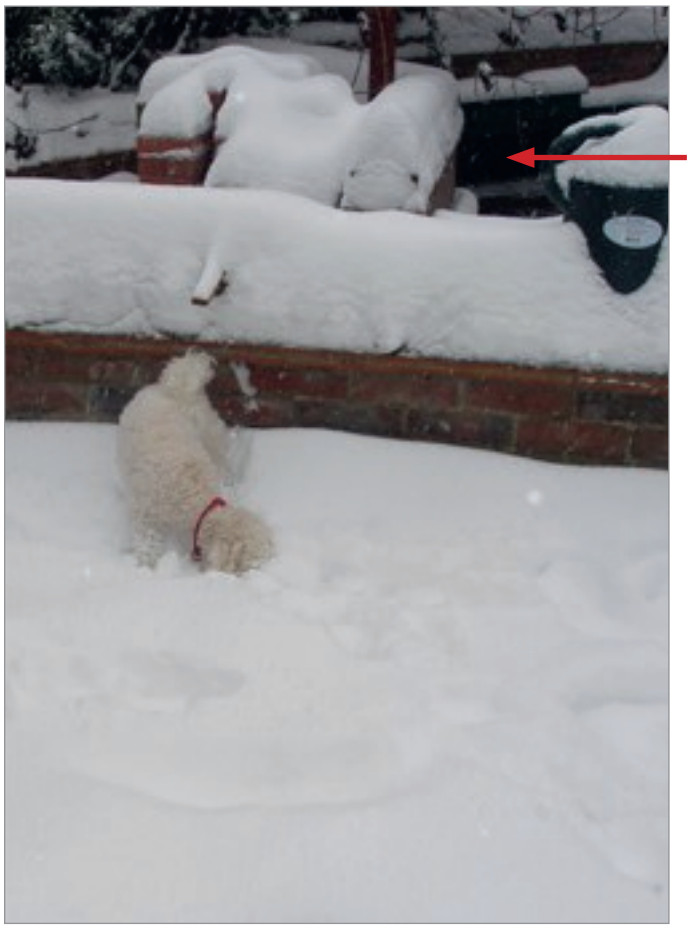
Move the cursor to the end of the document. Select the **Insert** tab, followed by **Picture**. This opens the **Insert Picture** window. Browse through the folders and files until you locate the file **snowball.jpg.**

Click the left mouse button on this file followed by **Insert**.

This will insert the image at the end of the document. Repeat this process for the files **snowman.jpg** and **trees.jpg**. Save the document as task12a.

You will notice that the images are inserted where the cursor was placed, at the end of the document. These will now need manipulating so that they become a part of the document, rather than just added to the end.

12.2 Edit an image

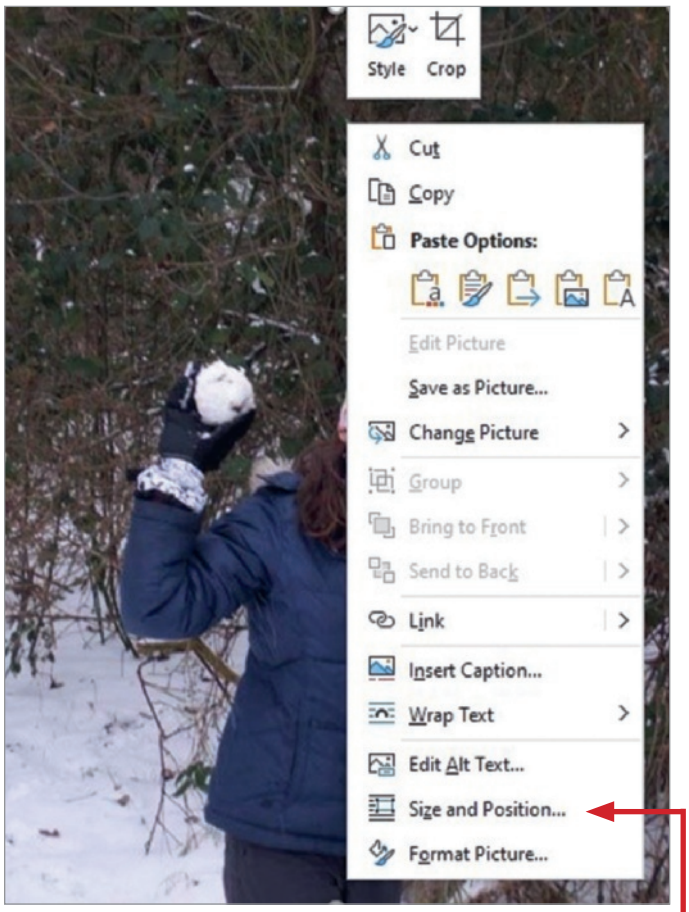


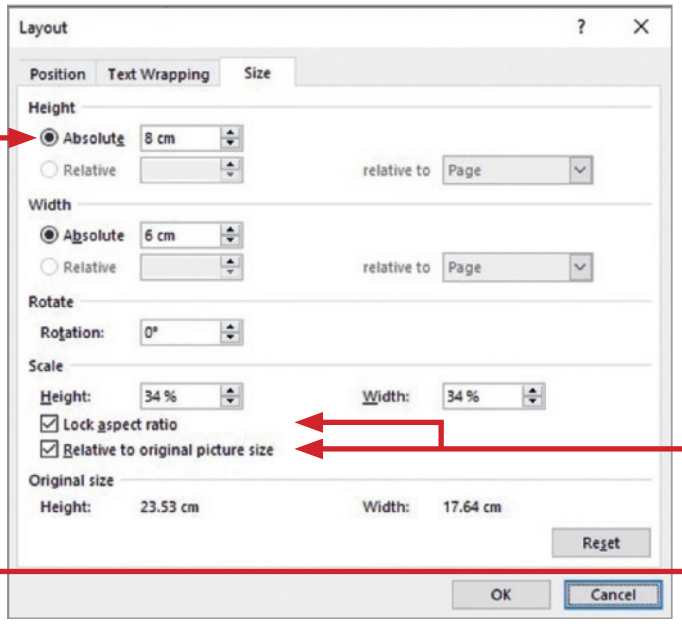
It is important that an image included in any document, presentation or publication in any form should be appropriate to the subject matter. If a document was about the snow, you may expect to see an image like this.

Making choices

Read the question and text carefully to try and understand which image would be the best and why. Does this image need editing? Is the image the correct shape to fit the position you wish to place it? If the image needed to be in landscape orientation you would need to crop it. Where do you crop it? If you crop the top off the image the watering can on the wall will be lost, which gives the viewer an idea of the depth of the snow, but so do the bricks in the wall. Do you crop the bottom from the image and remove lots of the white snow? The choices are yours depending upon what message you want the image to give. Is it the depth of the snow? Is it the dog playing in the snow?

If this image needs to be in landscape orientation and no alternative image is available, then you must crop the image rather than compressing or distorting it. Images should retain the correct proportions between width and height; this is called the **aspect ratio**.





Advice

Please note that you **must** ask for and be given permission to use an image in any publication. Copyright law in many countries will not allow you to use an image belonging to another person without their written consent.

Many copyright holders are happy for students to use their images for educational purposes without charging them, but you must obtain their permission to do so.

Task 12B

Open the file task12a.

Resize the image **snowball.jpg** to 8 cm high and maintain its aspect ratio. Place this at the top right of the first paragraph.

Resize the image of the snowman to 2.6 cm high and 2 cm wide. Save the document as task12b.

12.2.1 Resize an image

Resize an image in *Microsoft Word*

Find the image **snowball.jpg** in your document. Click the right mouse button on this image to get a drop-down menu. Select from this menu the **Size and Position...** option.

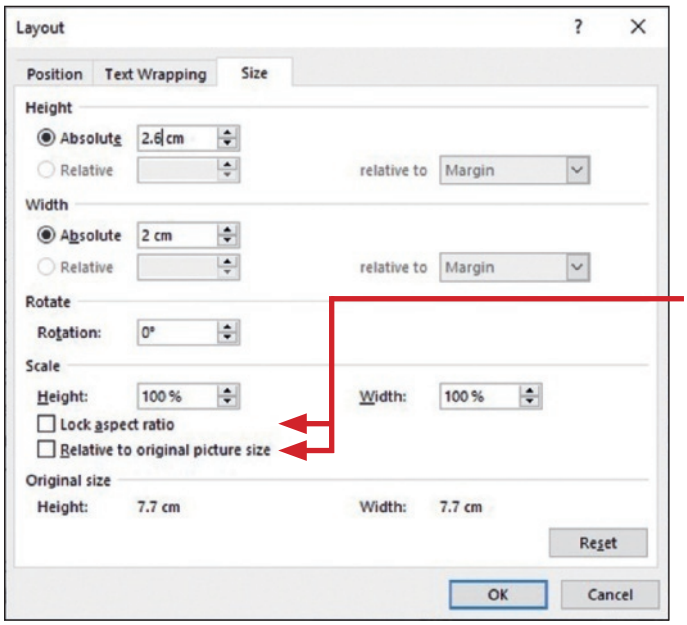
Advice

If the **Size and Position...** option does not appear, select **Format Picture...** followed by the **Size** tab.

This opens the **Layout** window which should be in the **Size** tab. If not select it.

The task instructs you to resize the image maintaining its aspect ratio. This means to keep the height and width in the same proportions as the original image, usually to ensure that you do not distort it. To do this, ensure that the two tick boxes related to the aspect ratio are both selected.

Change the **Height** of the image to 8 cm and click on **OK**.



Use a similar method to resize the clip-art image to 2.6 cm high by 2 cm wide. Select the snowman image and open the **Layout** window in the **Size** tab for that image. In this case different lengths and widths have been specified, but you have not been instructed to crop the image. This means that you will probably distort the image from its original proportions. To do this, first, make sure that both of the aspect ratio tick boxes have their ticks removed.

Use the **Height** box to change this setting to 2.6 cm and the Width box to 2 cm before clicking on **OK**.

This will change the aspect ratio (proportions) of the image from this:


to this:


Notice how the second image is slightly thinner but the same height. Save the document as task12b. This task is continued in the next section.

Advice

If evidence of an image size or the aspect ratio is required, you can use screenshot evidence of this window.

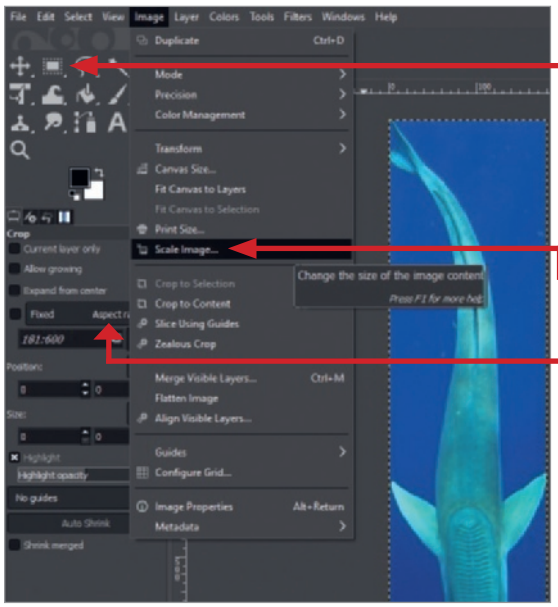
Resize an image using a graphics package

This method is to physically resize the image in a graphics package and then save the new image (usually with a new filename). This method has the advantage of being able to reduce the file size of an image, which is very useful in helping a web page to be downloaded and displayed more quickly. It has the disadvantage of using lower resolution images, which can appear pixelated, particularly if you wish to enlarge them. The graphics package we will use is called GIMP.

Task 12C

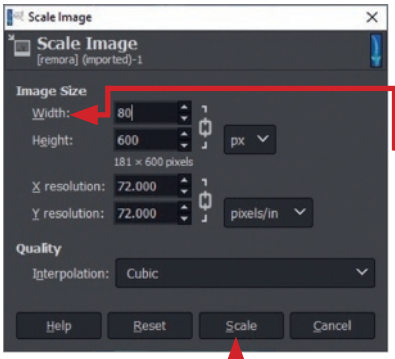
Open the file **remora.jpg**. Save a copy of this file in your 'Worked' folder. Resize this file to 80 pixels wide. Save this file as **remora1.jpg**. Reduce the resolution of the image further by downsampling and save the new image as **remora2.jpg**.

Open your 'Source Files' folder in the **File Explorer** window. Open the 'Worked' folder in a second copy of the **File Explorer** window. Click on the file in the 'Source Files' folder, hold down the left mouse button and drag the file from this folder into the 'Worked' folder.



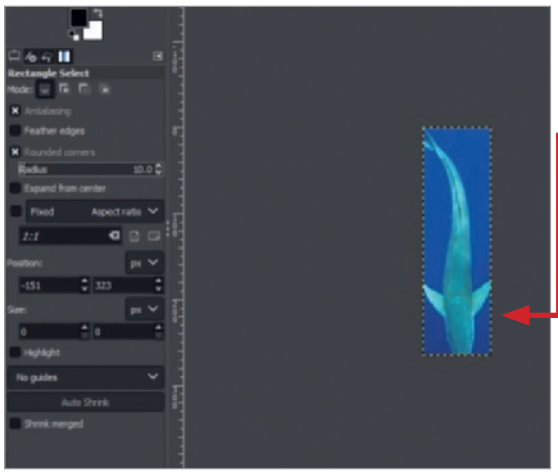
From the 'Worked' folder, open the image **remora.jpg** in your graphics manipulation package. We have chosen GIMP for this task. Select the **Rectangle Select Tool** and use this to lasso the image of the remora. Before changing the image size check whether the **Fixed** drop-down menu is set to **Aspect ratio**.

In GIMP (and many other packages, such as *Adobe Photoshop*) images are resized using the **Image** tab, followed by **Scale Image...**.



This opens the **Scale Image** window. To set the image width to **80** pixels, change the value in the **Width:** box.

There is no need to enter a height as the image will maintain its aspect ratio as this had been fixed. To change the image size, click on the **Scale** button.

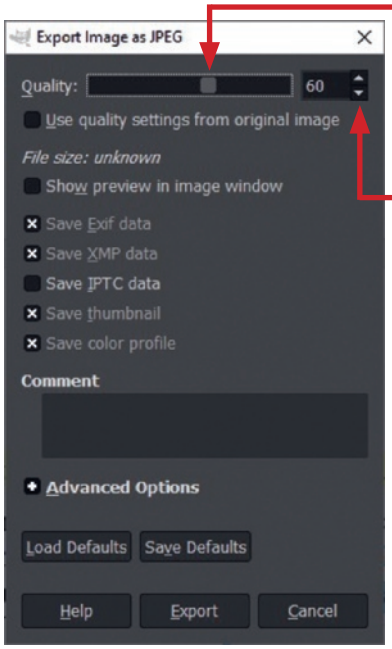


This will alter the size of the image within the package like this.

Advice

To intentionally distort an image you would fix the new width (or height) using the **Fixed** drop-down menu and enter a height as well as a width for the image.

To save the new image as a **JPEG** file, select **File**, then **Export As...** and enter the new filename **remora1.jpg** before clicking on **Export**. As this image will be saved in **JPEG** format, you are given options on the image quality that you require. These can be selected using the slide bar or selecting from the drop-down menu.

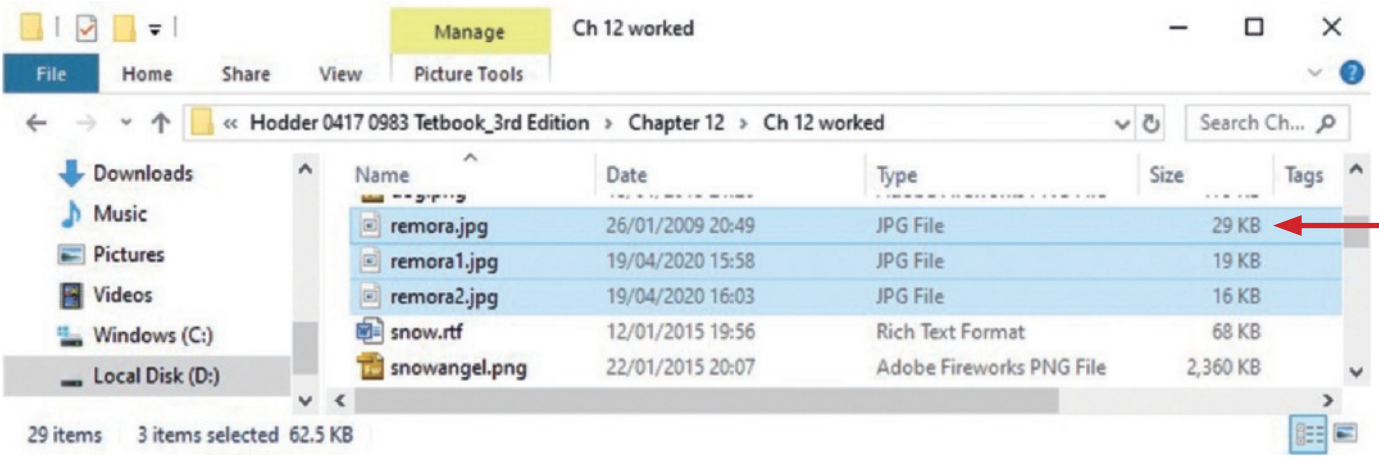


1 is the smallest file size that you can have, but also gives the poorest quality images. 100 is the highest quality, but results in large file sizes, which are much slower to download over the internet.

Resampling an image

This process of changing the image quality is called resampling. Images can be downsampled, meaning fewer pixels are used for the image, as you have just done by reducing the image quality. Images can also be upsampled by adding more pixels. Downsampling reduces the file size and therefore makes the web page load more quickly. Export the same image again, downsampling the image by lowering the resolution (quality) when

saving. This is one method of reducing the colour depth of an image. If you look at the files **remora.jpg**, **remora1.jpg** and **remora2.jpg**, you should see their sizes have decreased with each stage.



Task 12D

Open the file task12b.

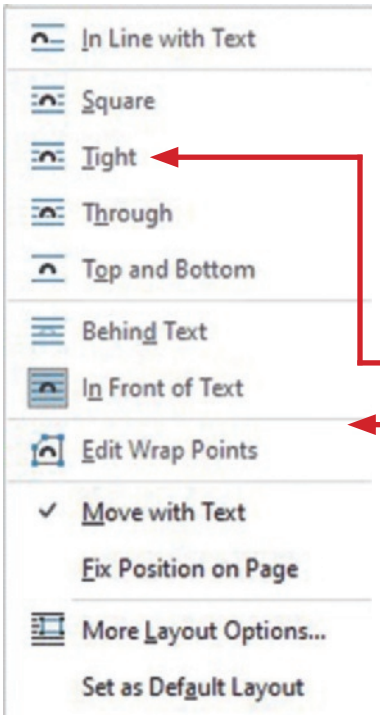
Place the snowman image at the top left of the second paragraph. Ensure that the text wraps around both of these images. Save the file as task12d.

12.2.2 Wrap text around an image

Task 12b asks you to place the resized **snowball.jpg** image at the top right of the first paragraph. You are expected to align the image to the margins and to the top of the paragraph and there is a further instruction to wrap the text around the image. It is better to set the text wrapping first, then place the image. Click the left mouse button on the image to select it. This opens the **Picture Format** tab. In the **Arrange** section, select the drop-down arrow next to the **Wrap Text** icon.

You get a drop-down menu with layout options. Useful ones include:

- **In Line with Text** – this places the image as an in-line graphic which is treated as a text character within a line of text. It will move with the surrounding text if new text is inserted or deleted.
- **Square** – this places the image on the page and the text wraps (flows) around it. Use **More Layout Options...** to specify the type of wrapping that you require.
- **Tight** – this places the image on the page and the text wraps (flows) around it, like Square, but you cannot control the distance of the text from the image for the top and bottom settings, although you can to the left and right, using **More Layout Options...**.
- **Through** – this places the image on the page and the text wraps around the image with preset values.
- **Top and Bottom** – this places the image with the text above and below the image, but not wrapped to the side.



- **Behind Text** – this places the image behind the text. It can be used to set a background image in a document.
- **In Front of Text** – this places an image over the top of the text.
- **More Layout Options** – this can be used to give more options to the selected layout types above. For example, if a **Square** layout is selected you can specify where you wish to flow the text around the image and the distance of the text from the image on each side. This option also allows you to control the positioning of the image on the page.

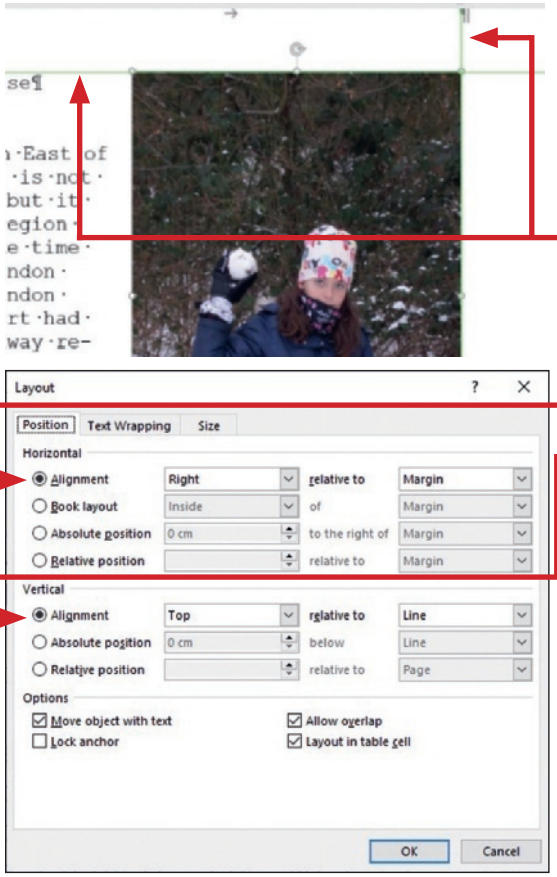
For this task, set the text wrapping of the image to **Tight** using the drop-down menu.

Advice

This menu can also be found by right clicking the mouse on an image and selecting **Wrap Text**.

Advice

Packages like *Microsoft PowerPoint* will not give text wrap options. Sometimes you have to layer objects on the slide or on the page in a document. To do this, click the right mouse button on the image and use the options like **Bring to Front** and **Send to Back**. This is also useful for placing overlapping images in a presentation or document.



12.2.3 Place an image with precision

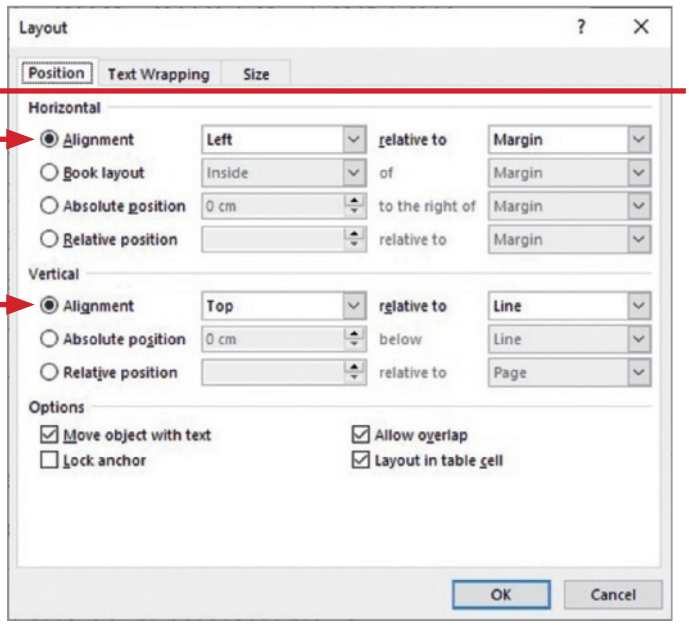
You will be expected to place images precisely. To move and place this snowball image, click and hold the left mouse button on the image and drag it to the top right corner of the first paragraph. There are two methods of placing the image: the first is to drag it until the green guidelines appear at the top and right side of the image like this.

The second method is to roughly place the image and then right click on the image again. Select the **Size and Position...** option to open the **Layout** window. Select the **Position** tab.

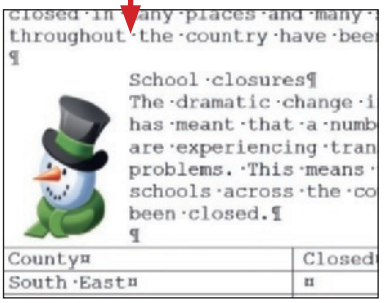
Set the **Horizontal** alignment to **Right** aligned to the **Margin**.

Set the **Vertical** alignment to **Top** aligned to the top of the **Line** of text.

Click the OK button to place the image. Check that this has worked correctly. If not, this is usually due to the image being placed with too little precision when it was dragged and dropped. Try dragging and dropping the image again and repeat the process.

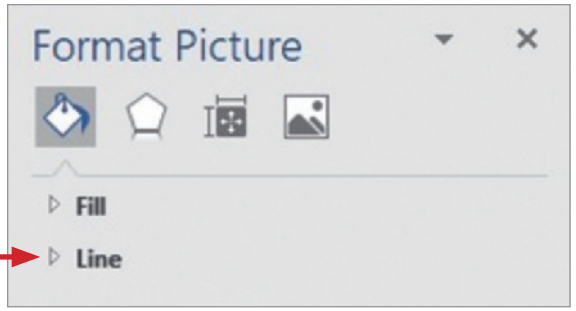


Repeat this process to place the resized image of the snowman at the top left of the second paragraph like this.



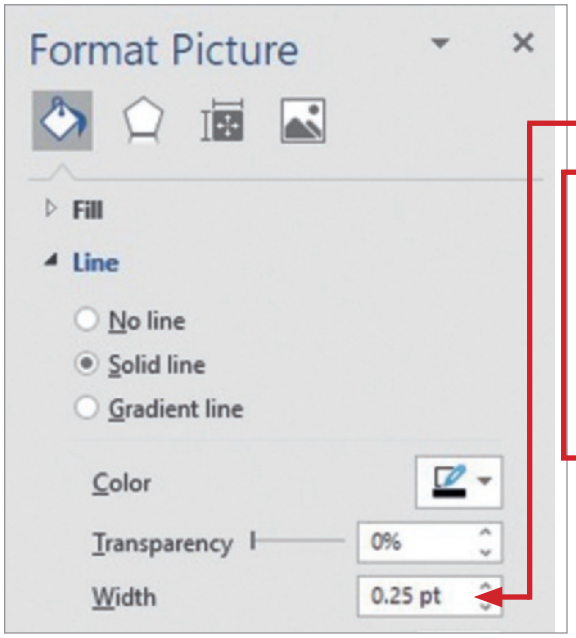
12.2.4 Place a border around an image

Although you have placed the image as specified, without a screenshot of the layout window it will not be possible to tell that you have placed the image correctly as it has a white background. A good tip is to place a thin border around the image so that its alignment can be seen.



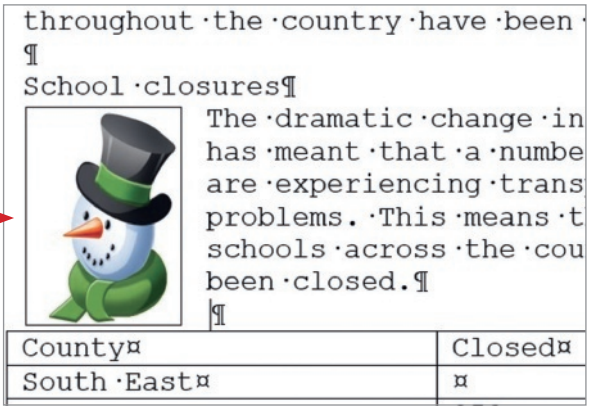
To set a border on the image, click the right mouse button on the image and select **Format Picture** from the drop-down menu. This opens the **Format Picture** pane to the right of the document. Click the left mouse button on the **Paint bucket** icon to select the **Fill** and **Line** section of this menu.

Click the left mouse button on the triangle for the **Line** section to extend the menu.



Left click on the radio button for **Solid line**, which again extends the options in the pane. Choose a (thin) line **Width** of 0.25pt.

The border now shows the precision placing of the image. Save your document as task12d.

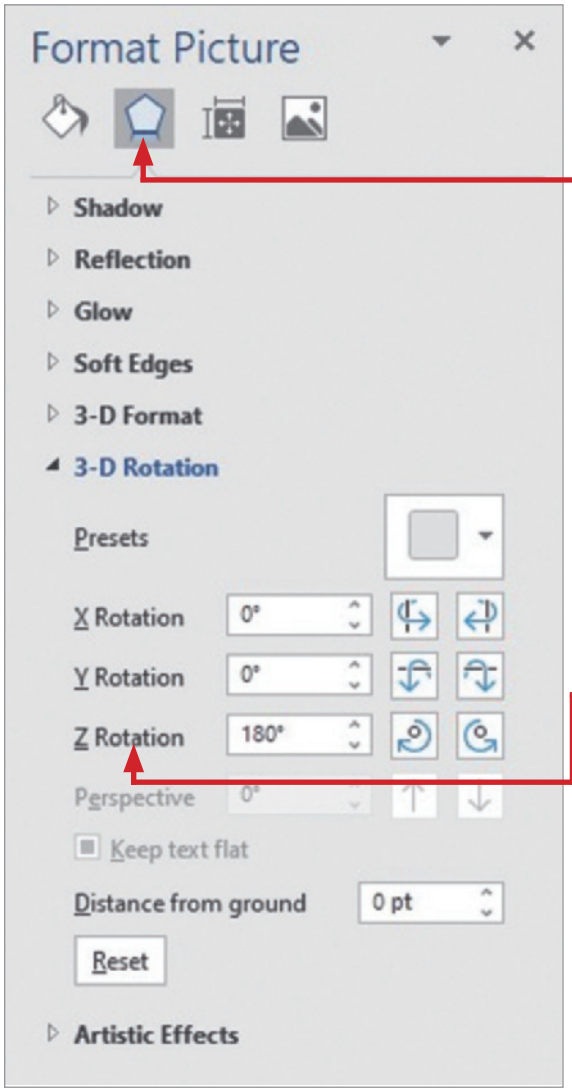


Task 12E

Open the file task12d.

The image **trees.jpg** has been taken on a digital camera. Place this image to the right of the table, aligned to the right margin. Resize this image if needed.

Place the image **trees.jpg** at the end of the document, as shown earlier in the chapter. Grab and drag the vertical borders in the table to narrow the column widths so that all text shows without wrapping, but no extra white space is shown. From this to this.



Using the ruler at the top, you can tell that the image will need to fit into a space from about 7 cm from the left of the page to 16 cm in. This means the image width should be about 9 cm wide (16 – 7 = 9). Use the methods learnt earlier in this chapter, to resize the image to 9 cm wide whilst maintaining its aspect ratio. Set the text wrap so as to allow the image to sit to the right of the table. Drag the image into the correct position to the right of the table.

12.2.5 Rotate an image

Rotate an image in *Microsoft Word*

Because the image **trees.jpg** has been taken using a digital camera and saved, the original image is upside down. The image could be saved and adjusted in an external graphics package, or it can be adjusted in the **Format Picture** pane within *Microsoft Word*. Click the left mouse button on the **Pentagon** icon to select the **Effects** section of this menu.

Click on the triangle to open the **3-D Rotation** options.

To turn the image upside down, we must rotate the image through 180 °. Select the **Z Rotation** section and use the small arrows until the image has been fully rotated.

Save your document as task12e.

Activity 12A

Open the image **snowangel.png** in a suitable package. Rotate the image 90° clockwise. Save the image as **snowangel1.png**. Save the image again as **snowangel1.jpg**. Show evidence of the finished image, the filenames and file sizes.

End of chapter exam-style questions

Please note that these exam-style questions are from another chapter in this book and are for sample purposes.

1 Which ten computer terms are being described below?

- **a** A matrix of filled in dark squares on a light background; read using a smartphone camera or tablet using an App.
- **b** A device that can read marks written in pen or pencil; the pencil or pen marks must be made in the correct position.
- **c** An input device that takes physical readings from the surroundings and sends the data back to a computer.
- **d** An input device that converts sound into electric signals that can be stored digitally on a computer.
- **e** Device that converts a photograph or document into a computer-readable file.
- **f** Device used to control the operation of other electronic devices using infra-red signals.
- **g** Direct data entry device that uses radio waves to read and capture information stored on an electronic tag.
- **h** Device that produces very high-quality hard copy output; uses dry ink cartridges and an electrically charged drum.
- **i** A device that prints by impacting a print head made up of an array of pins against an inked ribbon.
- **j** A printing device that moves around on a surface in an X-Y direction to control a cursor on a computer screen. [10 marks]

2 **a** **i** Describe how a QR reader works

ii What are QR codes used for? [4 marks]

b Give **two** advantages and **two** disadvantages of using QR codes. [4 marks]

c A touch screen can be used as both an input device and an output device. Explain how this is possible. [2 marks]

3 Give a use for each of the following input and output devices.

- **i** keyboard
- **ii** driving wheel or joystick
- **iii** QR code reader
- **iv** barcode reader
- **v** microphone
- **vi** touchscreen
- **vii** 3D printer
- **viii** dot matrix printer
- **ix** RFID
- **x** chip and PIN reader [10 marks]

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