

TRADE OF
Pipefitting

PHASE 2

Module 1

Introduction to Pipefitting

UNIT: 5

Information Technology Basics

Produced by

SOLAS

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Further Education and Training Authority

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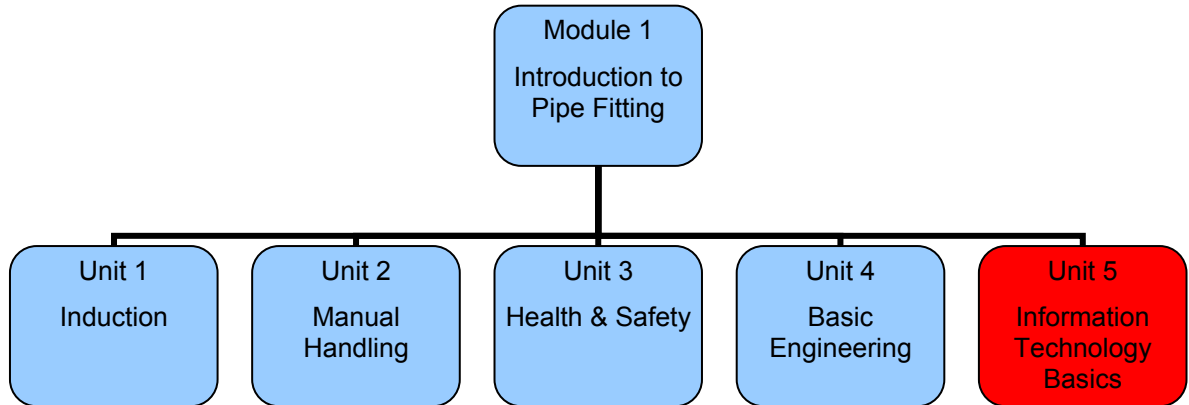
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Unit Objective

There are five Units in Module 1. Unit 1 focuses on Induction, Fire Drill and Behaviour Guidelines, Unit 2; Manual handling, Unit 3; Health and Safety, Unit 4; Basic Engineering and Unit 5; Information Technology basics.

In this unit you will receive instruction on the basics of information technology in a workshop environment.



Learning Outcome

By the end of this unit *each apprentice* will be able to:

- State and apply the safety and precautionary procedures applicable to working on personal computers (PC's) and PC based workshop equipment
- Follow recommended procedures for start-up, shutdown and restarting of a computer
- Open a computer program/application (word) and save a file generated by the application
- Open Excel and use it to perform a basic calculation
- Be aware of different email applications and be able to receive and send emails
- Start a web exploring programme and search for specific information.
- Use a printer to print information

1.0 Safety and Precautionary Procedures

Key Learning Points

- Safety and precautionary procedures applicable to working on computers and PC-based workshop equipment; (avoidance of dust, liquid or other foreign body infiltrating the keyboard or disc drive; avoidance of trailing or tangled cables; use of appropriate measures to avoid damage to CDs etc.).

1.1 Health and Safety

Tips to minimise the risk of a computer-related accident:

- the computer should always be sited near an electric socket to avoid trailing wires across the floor; if an extension cable is used make sure it doesn't overheat and nobody can trip over it
- do not overload electric sockets, use trailing multi-socket units rather than plug adapters
- do not use a computer if the plug is damaged or the electrical cable is frayed
- electricity and water do not mix - keep drinks well away from computers

2.0 Start-Up, Shutdown and Restarting a Computer

Key Learning Points

- Recommended procedures for computer start-up, shutdown and restart. function and use of on-screen icons

2.1 Turning on a Computer

To turn on a computer first press the ‘on button’ on the computer. The computer will run through various tests and will then load up the operating system. A dialogue box may appear on the screen which will ask you for your ‘username’ and ‘password’. If you do not know this ask your employer. Starting your computer can also be called ‘booting up your computer’.

2.2 Shutting Down a Computer

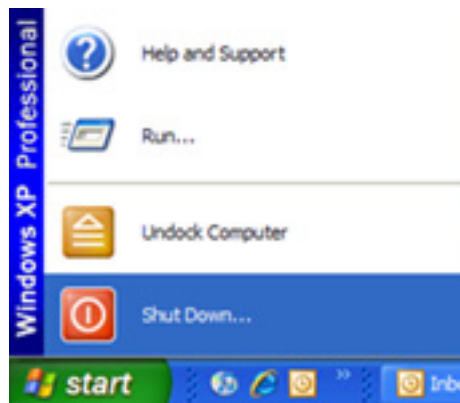
In order to ensure that no data is lost it is important to shut down a computer properly. Computers should never be turned off by pressing the power button – or by removing the plug.

To turn off a computer:

Click the ‘Start Button’ in the bottom left hand corner of the computer screen



Click ‘Shutdown’ on the popup menu



Select 'Shut down' from the dialogue box



Click the OK button in the dialogue box

The computer will then turn itself off

2.3 Restarting a Computer

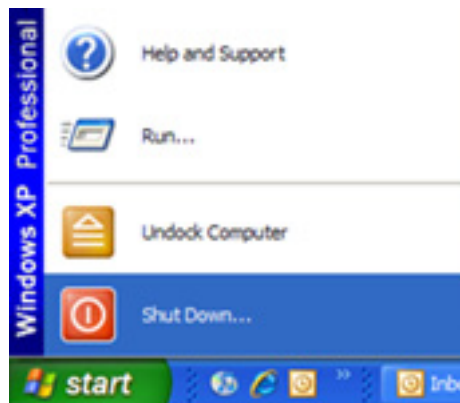
You may be asked to restart your computer – for example if your computer has crashed (stopped unexpectedly) or if you have just installed a new piece of hardware or software.

To Restart a computer:

Click the 'Start Button' in the bottom left hand corner of the computer screen



Click 'Shutdown' on the popup menu



Select 'Restart' from the dialogue box



Click the OK button in the dialogue box

The computer will then shut down and restart itself

2.4 Screen Icons

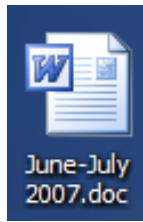


Above is an image of the desktop on a PC. The desktop displays a series of icons which can be used to open files, folders and programs.

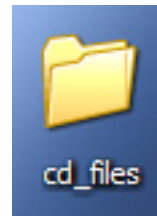
An Icon is a picture on the desktop that represents a specific program, file, or folder.



Program Icon



File Icon



Folder Icon

The Icons are used to open either:

- a program
- a file or
- a folder.

To open the program, file or folder, double click on the Icon using the left button of the mouse.

3.0 Opening and Saving a Word Document

Key Learning Points

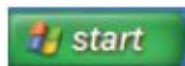
- Recommended procedures for opening and saving a word document.

3.1 Starting a Word Processing Application

There are many different word processing packages available on the market, which are used to produce letters, text based documents and reports. We have selected to use Microsoft's Word application as it is typically found on most PC based computers.

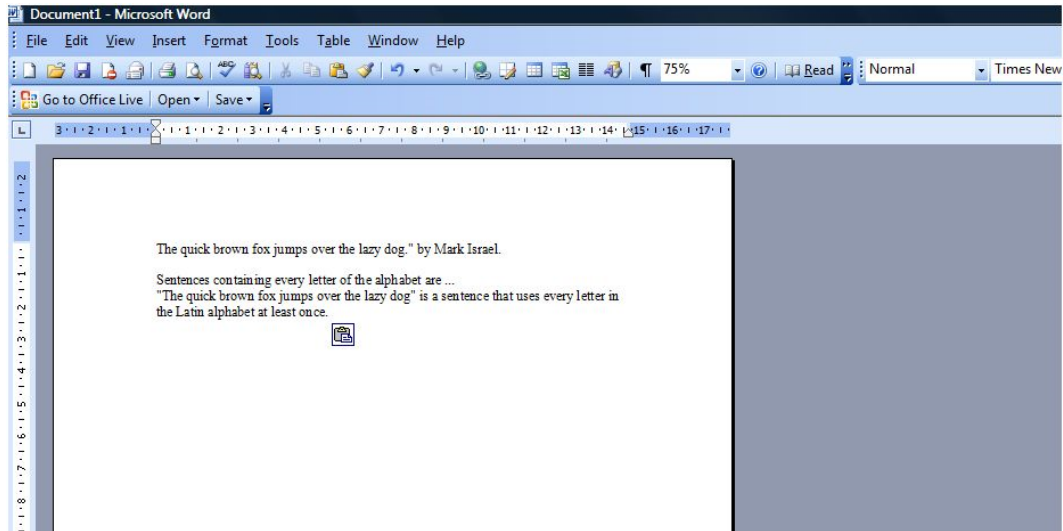
To start begin by opening the Word program from either:

The 'Start Button' in the bottom left hand corner of the computer screen or through a desktop icon on your computer.



Once you have opened the Word program a window will appear on the screen displaying a blank Word document.

We will use the blank document that is already open on your screen to type the desired text.



3.2 Saving a Word Document

At the top left-hand corner of the window, click on **File** to access the menu of commands. The options will appear in the drop down list.

New, Open, Save, and Save As.

Clicking on the **Save As** button will allow you to save your document to a file location on your computer. This will also allow you to edit the title of the document to make recognition simpler in the future. The **Save** button right above the 'Save as' button will simply re-save material which has already been allocated to a specific file and named as desired. It is to save any modifications or changes to your work quickly and efficiently.

4.0 Using a Spreadsheet to Perform Basic Calculations

Key Learning Points

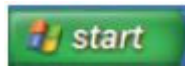
- Procedure to open a spreadsheet and input data in a required format.
- Procedure how to perform basic calculations with the data inputted.

4.1 Opening a Spread Sheet and Inputting Data

There are many spreadsheet packages available on the market, which are used to produce number based documents and reports. We have selected to use Microsoft's Excel application as it is typically found on most PC based computers.

To start begin by opening the Excel program from either:

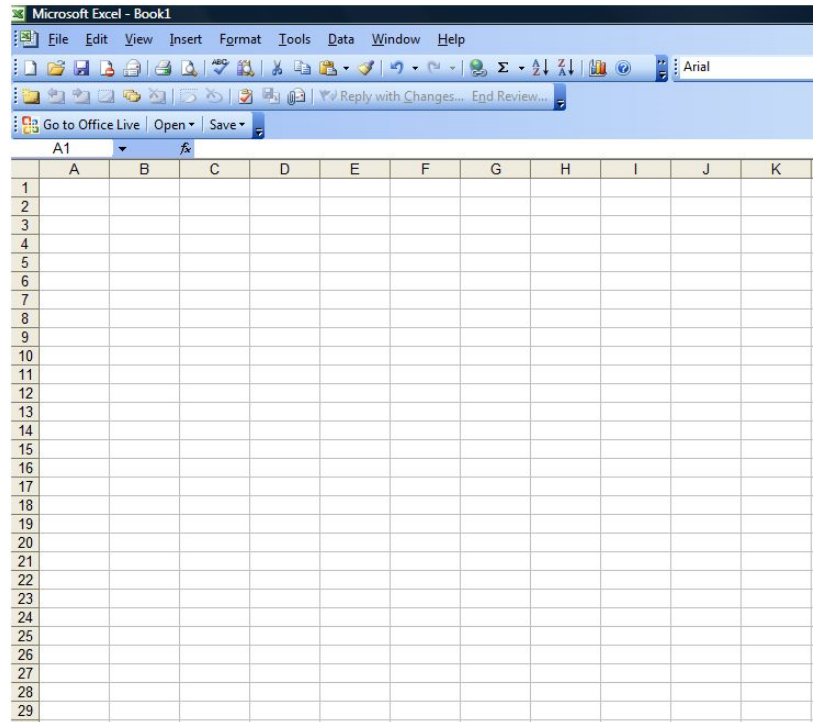
The 'Start Button' in the bottom left hand corner of the computer screen



Or through a desktop icon on your computer desktop.

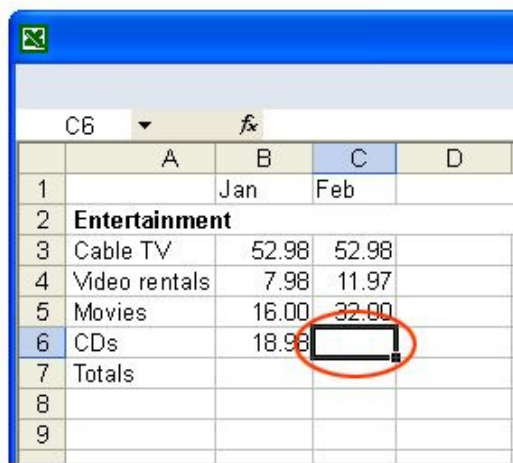


Once you have opened the Excel program you will be presented with a blank spreadsheet.



Entering your data into a spreadsheet is always a three step process. These steps are:

1. Click on the cell (each rectangular box is referred to as a cell) where you want the data to go.



2. Type your data into the cell.
3. Press the **ENTER** key on the keyboard or click on another cell with the mouse.

Excel formulas are one of the most useful features of the program. Formulas can be as simple as adding two numbers or can be complex calculations needed for high end business projections. All Excel formulas start with an equal (=) sign. This tells Excel that it is a formula. Once you learn the basic format of creating a formula, Excel does all the calculations for you.

4.2 Performing Simple Calculations

Once the data is entered correctly in the desired format we can then perform basic calculations.

The symbols for addition, subtraction, multiplication, and division are: + - * /

Adding Up

You've seen how to add up in Excel. You either used individual cells to add up, like this:

= A1 + A2 + A3 + A4

Or you have used a range of cells with the Sum function. Like this:

= Sum (A1:A4)

Either way you get the same answer. But you can combine the two to add up. For example, if you wanted to add up cells A1 to A4 and cell A10, you'd do it like this:

= Sum (A1:A4) + A10

You can also use the Sum function alone. Like this:

= Sum (A1:A4, A10)

Here we have entered a range of cells in the brackets - A1:A4. But after that, we added a comma then the final cell we wanted to add up. If we also wanted to add cells A12 and A14 to our sum, we just add a comma then the cell reference. Like this:

= Sum (A1:A4, A10, A12, A14)

Multiplying

You saw how to multiply two numbers together. Just use the asterisk symbol with the cell references. Like this:

= A1 * A2

But what if you wanted to multiply a long range of values together? You might want to multiply all the numbers in the cells A1 to A10. Surely you don't have to do this

= A1 * A2 * A3 * A4 * A5, etc?

You'd be right - you don't have to enter all the cell references. You can do the same as in the Sum Function, just use A1:A5. But instead of using the word Sum you use the word Product. Like this:

=Product(A1:A5)

If you look back at Exercise 2, the number 3 was in the cells A1 to E1. We then added them up. If you wanted to multiply them all instead, use Product. To further illustrate what Product does, this is what we wanted to multiply:

= 3 * 3 * 3 * 3 * 3

So 3 times 3 = 9. Multiply the 9 by the third 3 to give 27. Multiply the 27 by the fourth 3 to give 81. Multiply the 81 by the fifth 3 to give 243. And that's what Product does: Multiplies a range of cells together. Just like the Sum function, you can add other cells after a comma. Like this:

= Product(A1:E1, A3)

In the above function, our answer of 243 will be multiplied by whatever is in cell A3.

Subtraction

To subtract one value from another, you just use the minus sign in between your cell references. Like this:

= A1 - A2

Below is an image from a spreadsheet showing a subtraction formula:

	A	B	C	D
1	25	14		
2				
3	11			
4				

Cell A3 is where the answer is displayed, and where we entered the formula.

If you want to subtract more than two cells you can do it like this:

= A1 - B1 - C1

Subtraction is fairly straightforward in spreadsheets, and shouldn't cause you too many problems.

Division

If you want to divide one number by another the symbol to use is this one:

/

That's the forward slash, and can be found just to the right of the full stop on your keyboard. You use it like this:

= A1 / C1

There are times when you will want to combine the arithmetic operators in your calculations. Here are a few examples of combining the operators:

Example 1

- Start a new spreadsheet
- Enter the number 25 in cell A1
- Enter the number 50 in cell A2
- Enter the number 2 in cell A3
- In cell A5 enter the following formula

= (A1 + A2) * A3

Press the Return key on your keyboard to get the answer.

The answer you should have got was 150. Notice the brackets in the formula. The brackets group part of your sum together. Without them, Excel will normally calculate from left to right. But it does some calculation before others. Excel sees multiplication as more important than adding up. To see what happens without the brackets, do this:

- Click on cell A5
- Click inside the formula bar at the top
- Delete both the brackets from the formula
- Press the return key on your keyboard to see the answer
- Now the answer is different! This time you should have gotten 125.

Here are the picture versions of both formulas:

A5		= (A1 + A2) * A3			
	A	B	C	D	
1	25				
2	50				
3	2				
4					
5	150				
6					

A5		= A1 + A2 * A3			
	A	B	C	D	
1	25				
2	50				
3	2				
4					
5	125				
6					

With Brackets

Without Brackets

You might think the second one is wrong. But it's not. It's just the way Excel works things out. Because it sees multiplication as more important than adding up, it will multiply cell A2 by cell A3 first. That gets the answer of 100. Excel will then add this answer to cell A1, which gives the answer 125.

With the brackets in, you force Excel to work things out your way. You're saying "Do the sum in brackets first, then multiply". When you do the brackets first, you get a different answer. $A1 + A2 = 75$. Multiply 75 by cell A3 and you get the answer 150.

The moral is: take care when you are grouping operators together. And force Excel to work things out your way by using brackets to group your sums.

Example 2

Substitute the asterisk symbol from example 1 with the forward slash. So the formula will be changed from this:

$$= (A1 + A2) * A3$$

to this:

$$= (A1 + A2) / A3$$

Press the Return key on your keyboard to reveal the answer. It should be 37.5. Now take the brackets out and try again. Again, you get a different answer. The total will now be 50!

Again the same process is at work. Excel sees division as more important than adding up, so it does that first. So it will divide 50 by 2 to get 25. Then it will add the contents of cell A1 to get 50. With the brackets, we force Excel to do the adding up first, then divide by the cell A3.

Example 3

This time, enter the following formula for cell A5:

$$= (A1 * A2) / A3$$

Press the Return key on your keyboard to reveal the answer. It should be 625.

Remove the brackets and try again. The answer should be 625 again. This is because Excel sees Multiplication and division as being of equal importance. When all things are equal, Excel calculates from left to right.

Likewise, Excel sees addition and subtraction as being of equal importance. So it will calculate from left to right if you use addition and subtraction in the same formula. As an example, study this formula below:

	A	B	C	D
1	25			
2	50			
3	2			
4				
5	73			
6				

As you can see, the formula in cell A5 is = A1 + A2 - A3. Now does that mean this:

$$= (A1 + A2) - A3$$

Or this:

$$= A1 + (A2 - A3)$$

Excel error messages will display inside a cell and start with the pound sign (#). The most common error you will see will be ##### inside of a cell. Excel is merely telling you that your column is too narrow to display the number. Make your column wider by putting your cursor on the right side of the column heading and slightly dragging to the right.

5.0 Email Applications and How to Receive and Send Emails

Key Learning Points

- Be aware of different email providers
- Be aware of different email managing applications
- Procedure how to receive and send emails Microsoft Outlook.

5.1 Email Providers and Email Managing Applications

There are many different email providers who provide a service much like mobile phone companies to assign an email address and send and receive email messages on behalf of their clients. Some of these providers such as Eircom, Hotmail and Yahoo provide this as a free service; however for larger accounts for companies (where there are many email addresses for one account) service providers charge for receiving, sending and storing email messages.

Depending on the volume of emails, users will use different types of email managing applications to store and file emails.

Low volume personal use – web based email application such as Eircom or Hotmail

Medium volume personal use – PC based application such as Outlook Express

High volume company use – Server based applications such as Outlook

5.2 Receiving and Sending Emails Using Microsoft Outlook Express

To receive or send emails using a PC based email application the user must first configure the settings with the relevant email address and service provider settings. This is done by:

There are many ways to start Outlook Express, but here's a sure-fire way to find and start it.

1. Click the Start button.
2. Point to All Programs.
3. Click Outlook Express.

These first three steps are shown in the image below:



Opening Outlook Express from the Start menu.

If asked whether you'd like to open this particular account automatically every time you start Outlook Express, click Yes (if you do) or No (if you don't).

If you don't want to be asked this question again, click to check the Always perform this check... box.

Check When Outlook Express starts, go directly to my Inbox.

Outlook Express directs all incoming mail to the Inbox, so it makes sense to bypass this opening page.

If you don't see the list of folders and contacts on the left, click Layout on the View menu. Click Contacts and Folder List to check them, and then click OK.



Outlook Express list of folders

The Internet Connection Wizard makes short work of setting up your online mailbox by walking you through each step for every e-mail account you set up.

Before you get going, make sure you know your email address along with the following information. (You may need to contact your ISP, Internet Service Provider, to get it.)

First, Information about the E-Mail Servers

- The type of e-mail server you use: POP3 (most e-mail accounts), HTTP (such as Hotmail), or IMAP.
- The name of the incoming e-mail server.
- For POP3 and IMAP servers, the name of the outgoing e-mail server (generally SMTP)

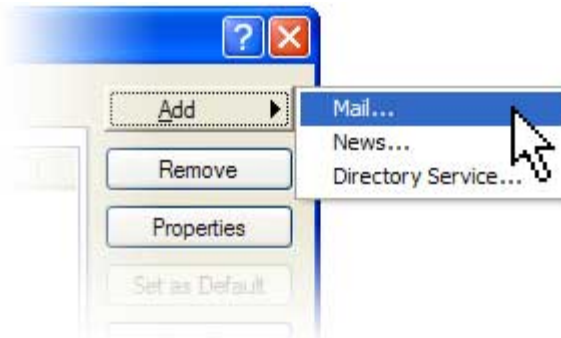
Second, Information About Your Account

Your account name and password

Find out if your ISP requires you to use Secure Password Authentication (SPA) to access your e-mail account—yes or no is all that's required.

Start Outlook Express, and on the Tools menu, click Accounts.

Click Add, and then click Mail to open the Internet Connection Wizard.



Mail option from the Add button

On the Your Name page of the wizard, type your name as you want it to appear to everyone who gets e-mail from you, and then click Next.

Most people use their full name, but you can use any name—even a nickname—that people will recognize.

On the Internet Explorer Address page, type your e-mail address, and then click Next.

On the E-mail Server Names page, fill in the first block of information that you gathered from your ISP in step 1, and then click Next.

E-mail Server Names

My incoming mail server is a server.

Incoming mail (POP3, IMAP or HTTP) server:

An SMTP server is the server that is used for your outgoing e-mail.

Outgoing mail (SMTP) server:

Internet Connection Wizard's E-mail Server Names

Note: If you chose HTTP as your incoming e-mail server—as for a Hotmail or MSN account—this wizard page changes slightly so you can identify your HTTP mail service provider.

On the Internet Mail Logon page, type your account name and password.



The screenshot shows a window titled "Internet Connection Wizard" with a sub-header "Internet Mail Logon". Below the header, there is a prompt: "Type the account name and password your Internet service provider". There are two input fields: "Account name:" with the text "katiemw" and "Password:" with a masked password of ten dots. Below the password field is a checked checkbox labeled "Remember password". At the bottom, there is a small note: "If your Internet service provider requires you to use Secure Password (SPA) to access your mail account, select the Use On-Line Sign..."

Internet Connection Wizard's Internet Mail Logon

Note: If you're concerned about break-ins to your e-mail, click to clear the check in the Remember Password box. You'll then be prompted for the password each time you send or retrieve mail.

Click Next, and then click Finish.

6.0 Surf the Web

Key Learning Points

- Be aware of different search engines
- How to search for information on the web and how to refine web searches for more accurate results.

6.1 Examples of Web Search Engines

- Google.com
- Ask.com
- Yahoo.com
- TripleMe.com
- Shopzilla.com
- ... and many more

In this example we will use Google.

Google search basics

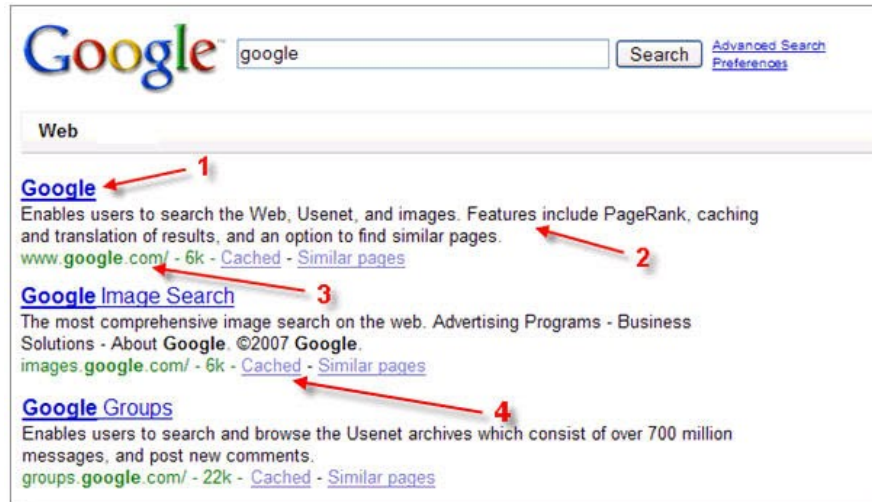
Search is simple: just type whatever comes to mind in the search box, hit Enter or click on the Google Search button, and Google will search the web for pages that are relevant to your query.

Guidelines for better search

- Keep it simple;
- Think how the page you are looking for will be written;
- Use the words that are most likely to appear on the page;
- Describe what you need with as few terms as possible;
- Choose descriptive words.

How to Read Search Results

Google's goal is to provide you with results that are clear and easy to read. The diagram below points out four features that are important to understanding the search results page:



1. The title: The first line of any search result is the title of the webpage.
2. The snippet: A description of or an excerpt from the webpage.
3. The URL: The webpage's address.
4. Cached link: A link to an earlier version of this page. Click here if the page you wanted isn't available.

7.0 Using a Printer to Print Information

Key Learning Points

- Use of printer to print located information, implications of damp paper, incorrect handling of software, ingress of oil/grease on or in the disc/disc reader

7.1 Printing

To Print a document click on 'File' on the Menu Bar located at the top of the document you are about to print. Select 'Print' from the drop down menu.

The print dialogue box appears.

Clicking the 'OK' button prints one copy of the document. It is important that the paper used in the printer is stored in a dry place. If the paper is damp or folded it will not run through the printer properly and may jam the printer.

If you are printing from a CD or DVD be careful not to touch the flat surface. If this surface has scratches, grease or dust on it, the computer will not be able to open the document on the disk and therefore you will not be able to print it.

Suggested Exercises

- Start-up, shutdown and restart a computer using recommended procedures.
- Use the web to research and locate specific information.
- Use a printer to print located information.
- Install and explore a Computer Based Training (CBT) program.

Self Assessment

Q1: Which of the following statements is true; (Tick ONE box only)

- 1. A CD-R allows you to read, write, erase and write again
- 2. A CD is not easily damaged and can be stored anywhere
- 3. A CD-R is a onetime recordable compact disc
- 4. A CD-R can store up to 2MB of information

Q2: Which of the following is the best way to shut down your computer?

- 1. Click Start, Choose Shut Down, Shut down computer? Yes
- 2. Press Ctrl-Alt-Del
- 3. Close all applications and turn OFF the power switch
- 4. Click File, Exit and double-click OK

Q3: Which of the following statements is not true; (Tick ONE box only)

- 1. The computer desktop displays a series of icons which can be used to open files, folders and programs.
- 2. Icons are used to open either a program, a file or a folder
- 3. An Icon is a picture on the desktop that represents a specific program, file or folder
- 4. An icon is used to open the computer

Q4: Which of the following statements is not true; (Tick ONE box only)

- 1. The computer desktop displays a series of icons which can be used to open files, folders and programs.
- 2. Icons are used to open either a program, a file or a folder
- 3. An Icon is a picture on the desktop that represents a specific program, file or folder
- 4. An icon is used to open the computer

Q5: Scroll bars are used for:

- 1. To open a program on your computer.
- 2. To move around a page or a document that doesn't all fit onto the computer screen
- 3. To delete documents on your computer
- 4. To move the icons on your desktop to a new position

Q6: To print a document that is open on your desktop:

- 1. Click on 'View' on the Menu Bar and then select Print from the drop down menu.
- 2. Click on 'Edit' on the Menu Bar and then select Print from the drop down menu
- 3. Click on 'File' on the Menu Bar and then select Print from the drop down menu
- 4. Click on 'Tools' on the Menu Bar and then select Print from the drop down menu

Training Resources

Workshop or classroom based computers (complete with audio speakers) and printer.

Suggested Further Reading

Any of the “Dummies guide to...” for the computer application in question.

Microsoft’s web based tutorials for their computer applications.

Additional Resources

Title	Author	Ref. Code
The Induction Book, “ <i>Code of Behaviour & Health & Safety Guidelines</i> ”	SOLAS	
Basic Welding and Fabrication	W Kenyon	ISBN 0-582-00536-L
Fundamentals of Fabrication and Welding Engineering	FJM Smith	ISBN 0-582-09799-1
<i>Workshop processes, practices and materials</i> , 3 rd edition, Elsevier Science & Technology	Black, Bruce J 2004	ISBN-13: 9780750660730
New Engineering Technology	Lawrence Smyth & Liam Hennessy	ISBN 086 1674480

Videos:

- Understanding welding fumes
- Welder on Site...Be Aware (Vocam)
- Powered hand tool safety (Vocam)
- Industrial Ergonomics (Vocam)

Available from:

Vocam Ireland

Circle Organisation Ltd

Friar Street, Thurles, Co Tipperary, Ireland

Tel: +353 504 24666

S O L A S

An tSeirbhís Oideachais Leanúnaigh agus Scileanna
Further Education and Training Authority

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