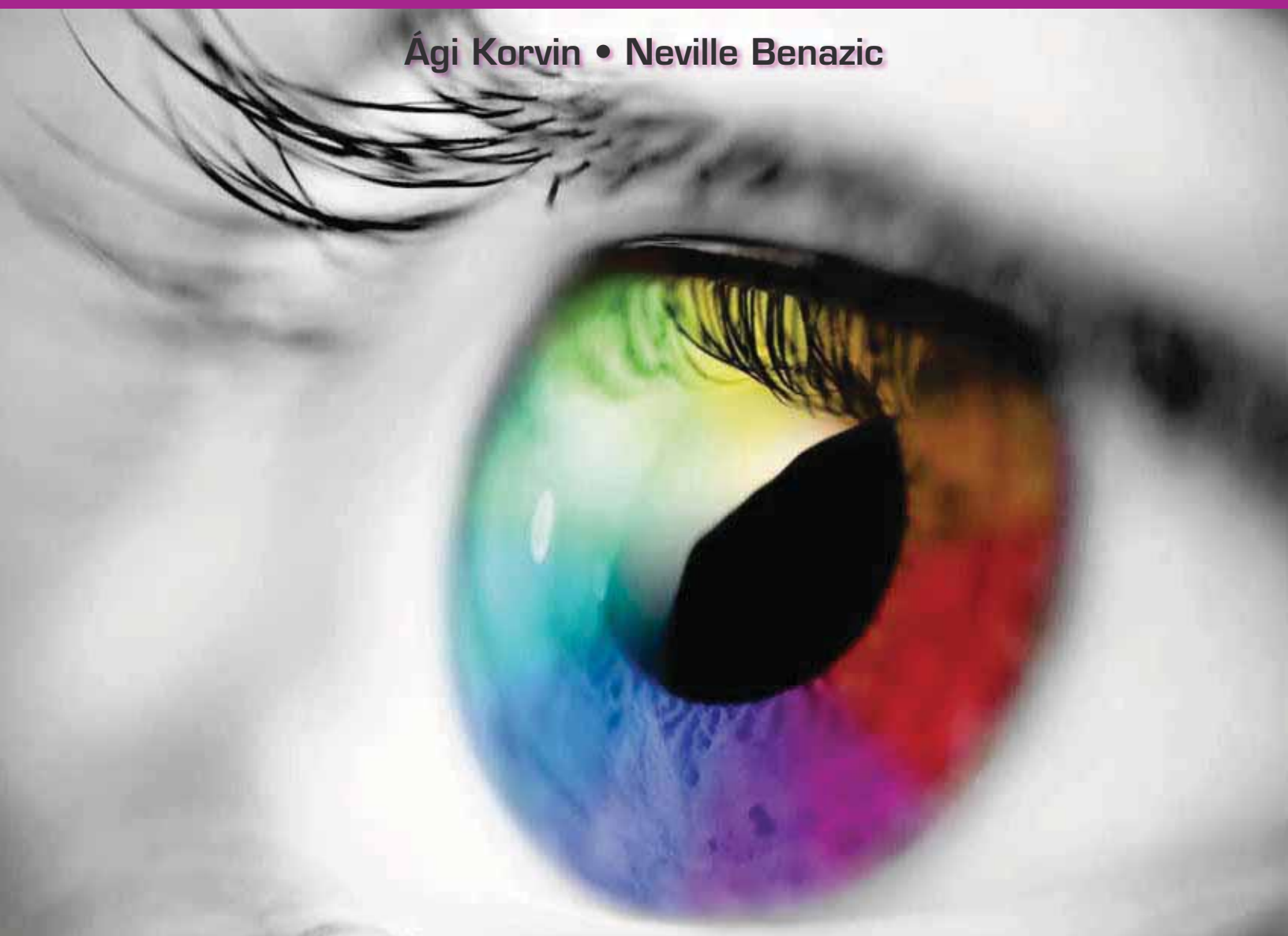


# ACTIVE GRAPHICS AND DESIGN

REVISED EDITION

Ági Korvin • Neville Benazic



**S**

Science Press

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# Introduction

Graphic communications and designs cannot be avoided – they surround us – identifying, explaining, instructing and clarifying so we can more easily function in our daily lives.

In our increasingly technological society there is an ever-present need for quick, clear, international communications, ranging from the relatively simple, e.g. road signs, webpages, to the more complex, e.g. the planning and building of a skyscraper or a spacecraft.



The aim of this book is to teach you a visual alphabet to better understand and appreciate the designed environment. You will be equipped with skills to produce new and better designs for your world. The skills you will learn include: sketching, technical drawing, researching, developing, organising, selecting, refining ideas, and most importantly thinking logically.

The book covers both traditional and multimedia methods and the conventional topics of two- and three-dimensional drawing, graphs, diagrams, symbols and mapping are covered in detail. You will also learn about: the elements and principles of design; typography; product and packaging design; architectural drawing; and careers in graphics and design.

# 1 Equipment Basics and Pathways into the World of Design



After completing this chapter you should be able to:

- assess what equipment is applicable for each specific task
- evaluate the appropriateness of equipment, both traditional and multimedia
- apply drafting conventions to produce a page layout, including grids, borders and title blocks
- be aware of traditional drafting equipment and its appropriate use
- be aware of multimedia technologies and how they may enhance communication
- understand input and output options, including printers, plotters, scanners and digital cameras
- identify various careers in the graphics field
- analyse the roles and responsibilities of people who work in the graphics industry
- use appropriate pencil grades
- understand the concept of guidelines
- firm in drawings using fineliners
- draw accurate horizontal, vertical and angled lines using a drawing board, T-square and set square
- understand paper sizing standards
- use thumbnail drawings
- understand the reasons for using multimedia equipment
- have an overview of different software program options.

# Traditional equipment

Graphics is all about presentation ...

Visual language is most important for graphic designers and architects. And, succeeding in communicating solutions visually, to share with others, is their biggest challenge.

Highly specialised, expensive equipment will not make you into a good designer. Because visual communication is about deciding how best to communicate various forms of information to different people, your main tool will always be your agile, logical, lateral thinking brain. But, getting your solutions into a form for others to understand needs at least some minimal equipment. A rough pencil sketch might suffice in some situations, whereas a PowerPoint presentation might be the best solution in other circumstances. How much equipment you will need depends on your projects, audience, finances and preferences – both yours and your client's.

So, where do we start? Here are some options when selecting equipment.

## Lead pencils

Lead pencils are graded according to the type of lead in the pencil (Figure 1.1). You will find the grading on the side or end of the pencil, or on the box of refills for propelling (pacer) pencil leads.

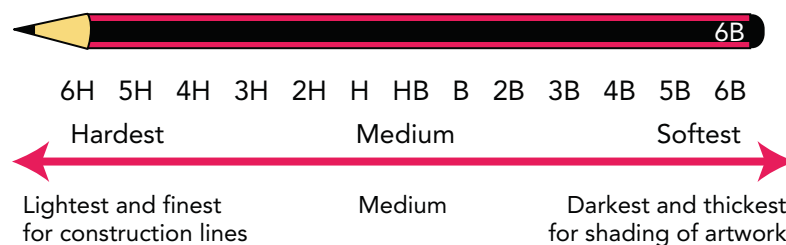


Figure 1.1

Confusing? Just remember: 'H' stands for hard, 'B' stands for black.

HB is equally hard and soft, like the equal setting on the volume of your iPod, and it is good for general use. Also remember to sharpen your pencils regularly, because to write with a broken pencil is pointless!

### Activity 1.1

Shade in various tones, using the pencil grades indicated.

<b>4H</b> or <b>6H</b>	<b>2H</b> or <b>3H</b>	<b>HB</b>	<b>2B</b> or <b>3B</b>	<b>4B</b> or <b>6B</b>

## Fineliners

Fineliners are used to give a dynamic, sharp edge to your work (Figure 1.2). The line thickness is measured in millimetres. Pens range from 0.2 mm to 0.8 mm. Fineliners are often used to firm in pencil lines.



Figure 1.2



Figure 1.3

## Markers

Markers may be water soluble or permanent ink markers (Figure 1.3). They are available in many different thicknesses with a variety of tips: bullet, chisel, brush. It is recommended that you experiment to see the effect that each type may achieve. Some markers are made specifically for rendering and come in a myriad of different colours.

## Coloured pencils

Coloured pencils are excellent for rendering drawings and overlaying with markers for some great effects (Figure 1.4).



Figure 1.4

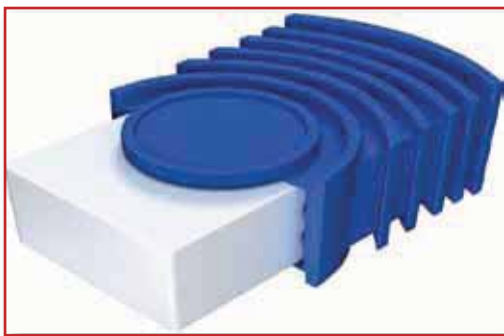


Figure 1.5

## Erasers

White plastic erasers are best to rub out pencil lines without leaving a mark (Figure 1.5). A soft, kneadable rubber which can be squeezed into a fine point, can be useful.

## Erasing shields

Erasing shields are made from very thin stainless steel (Figure 1.6). They are excellent for finetuning your structural drawings, enabling you to erase only the area exposed.



Figure 1.6

## Tracing paper

Tracing paper is available in sheets or rolls. It can be used for transferring images if a light box or window pane is not available.

## Masking tape

Masking tape is ideal for taping the edge of the paper onto a drawing board or masking out areas when rendering (Figure 1.7).



Figure 1.7



Figure 1.8

## Glue

Using a gluestick is a good, quick way to combine papers on your presentation (Figure 1.8).

Rubber cement (also called milliners solution), achieves a more professional look. It is easier to move the paper being glued to the exact position and any glue marks can be easily and invisibly rubbed off the finished artwork.

## Scissors, craft knives, scalpels

Cutting equipment is useful for cutting out paper and detailed areas (Figure 1.9). Craft knives and scalpels are especially useful for building three-dimensional objects from card.



Figure 1.9



Figure 1.10

## Steel rulers

A steel ruler is essential for use with a craft knife (Figure 1.10).

## Cutting mat

It is advisable to use a cutting mat when using craft knives or scalpels (Figure 1.11). The mat is made from a self-healing plastic material and is printed with grid lines. It not only protects the work surface, but is most useful to line up your work, avoiding the need for constant measuring and marking up.

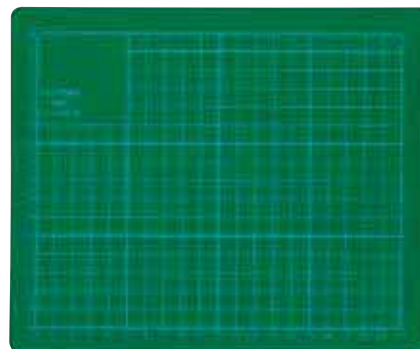


Figure 1.11



## Plastic rulers

A 40 cm long transparent ruler is most useful for drawing lines and measuring.

## Set squares

Two set squares, one at  $45^\circ$ , the other at  $60^\circ/30^\circ$  will assist you greatly in producing many technical drawings (Figure 1.12). Both set squares have a  $90^\circ$  right angle enabling you to draw a true vertical line.

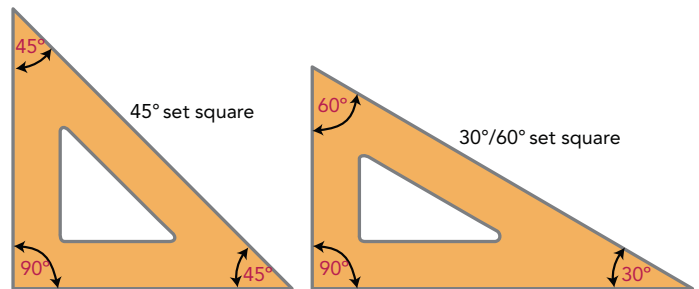


Figure 1.12



Figure 1.13

## Protractors

Protractors are used to measure angles (Figure 1.13). There are two types: a full circle which measures the full  $360^\circ$ , and the more common semicircle which measures  $180^\circ$ .

## French curves

French curves are rigid plastic shapes, available in various sizes (Figure 1.14). They are used like a ruler, to help you draw flowing curved lines, usually between three or more fixed points.



Figure 1.14



Figure 1.15

## Flexi-curves

Flexi-curves are adjustable, flexible plastic rods (Figure 1.15). They can be manipulated to form desirable, flowing, curved lines and are used for the same purpose as French curves.

## Circle templates

Circle templates can be quicker and easier to use than a compass for drawing small circles (Figure 1.16).

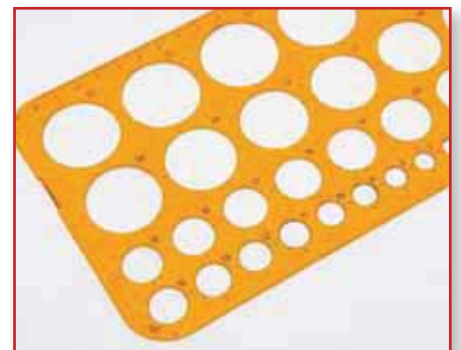


Figure 1.16

## Compasses

Used with a pencil or fineliner, a compass enables you to draw accurate circles and arcs (Figure 1.17). Compasses with an extension arm are available, enabling a larger variety of sizes to be achieved.



Figure 1.17

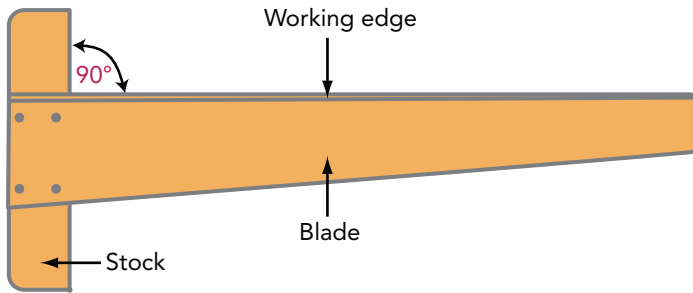


Figure 1.18

## T-squares

Made from plastic or wood, the T-square is a fundamental tool for producing technical drawings (Figure 1.18). Used with a drawing board, it enables you to draw true 180° lines, and together with the set squares, 90°, 45°, 30° and 60° lines, quickly and accurately.

## Drawing boards

Drawing boards have a true or 90° straight edge for the edge of the T-square to slide against (Figure 1.19). Some drawing boards have a locking device that will lock in the T-square or the paper. It is best to position the board on a slightly inclined angle for ergonomic reasons, so your neck and eyes do not get strained.



Figure 1.19



## Paper

Paper is graded by weight in grams per square metre (gsm). The higher the grading the heavier the paper, e.g. 80 gsm is heavier than 60 gsm.

The four main types of paper you will come across are:

- Printer or photocopy paper (usually 80 gsm).
- Cartridge paper (110-120 gsm) for final artwork.
- Newsprint (52-54 gsm) is a dull off-white colour. It is used for initial, rough idea sketching.
- Bank paper (44 gsm), usually called layout paper, is quite translucent. It is available in various-sized pads, and is used for tracing, rough idea sketching and preliminary layout designs.

**Paper sizes.** The most common standard in paper sizing is the international 'A' system (Figure 1.20). It is based on a rectangular sheet measuring 1189 mm × 841 mm with an area of exactly one square metre, called 'A0'. The sizes, as seen from the diagram, are derived from dissecting this sheet, so that:

- A1 is half of A0
- A2 is half of A1
- A3 is half of A2
- A4 is half of A3 (A4 is the size of printer or copy paper)
- A5 is half of A4
- A6 is half of A5 (this size is not commonly used).

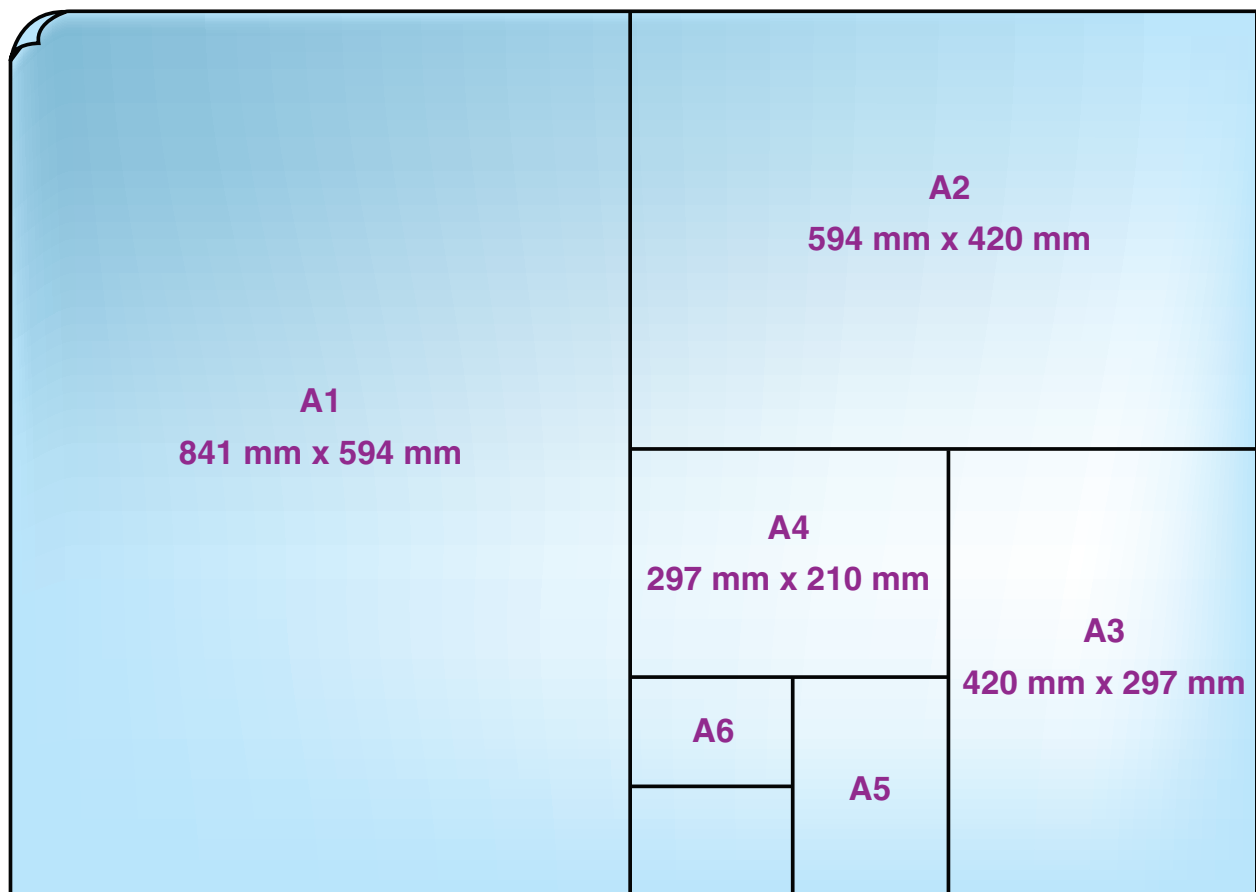


Figure 1.20 International 'A' system of paper sizing.

## Some extra equipment

There are many other pieces of traditional equipment to choose from (Figure 1.21).



Figure 1.21

They include:

- poster paints
- coloured inks
- ruling pen (used with inks)
- coloured papers
- light box
- air brush
- pantograph
- guillotine
- camera.

**Computer.** A personal computer is definitely an important tool for achieving professional results in design projects. It helps you draw more accurately, more quickly and more neatly and allows for easy experimentation.

Multimedia equipment and the use of computers are explored in the following section.

# Multimedia equipment

It is important to know about traditional equipment and methods so you can physically understand the mechanics of graphics procedures and processes. However, with the advent of new technologies we now have more options to explore, quick and effective ways to visually communicate our ideas, using a computer.

You will need a computer that has peripherals that support the input and output for graphical images. It should have: a clear and large monitor to display visual material, a hard drive with RAM and gigabytes to store and process your images, data and files. The keyboard and mouse should be in good working order. The hard drive should have ample sockets and ports to attach your peripheral equipment. This would include a printer so you can develop your work into a hard copy. Other ports will link your digital camera, scanner and drawing tablet to your programs for more developed work, and perhaps a plotter for advanced drafting applications.

Your computer should be connected to a server so that you may access the internet (Figure 1.22). Your school will be connected to a server. Home computers may be linked to a plan with a major telecommunications company. The internet will assist you in obtaining information and images with the help of several search engines such as Google, Ask Jeeves etc. Once you are connected online you may also send your work to people via electronic mail (email).



Figure 1.22

Computers can store programs with specialist features to obtain particular results. For example, Microsoft Windows has a program designed to help you write formal letters, via a template. It has various types of applications that change the size and fonts of letters, set out the spacing for you, correct spelling mistakes and so on. Other programs specifically for engineering drawings give you the most accurate methods to sketch a house plan, a machine part or other product. There are many programs available that can assist you, from learning to speak Italian, touch-type or even design a boat!

## Programs

There are many computer programs available for designers.

**Microsoft Word.** This is a great application to assist you in writing documents and letters. It is a general program that you can use to obtain a variety of lettering styles, fonts and lettering options. You can also use it to apply borders around written work and manipulate clip art and other imported graphics. The use of tabs, columns and tables also gives good layout options (Figure 1.23).

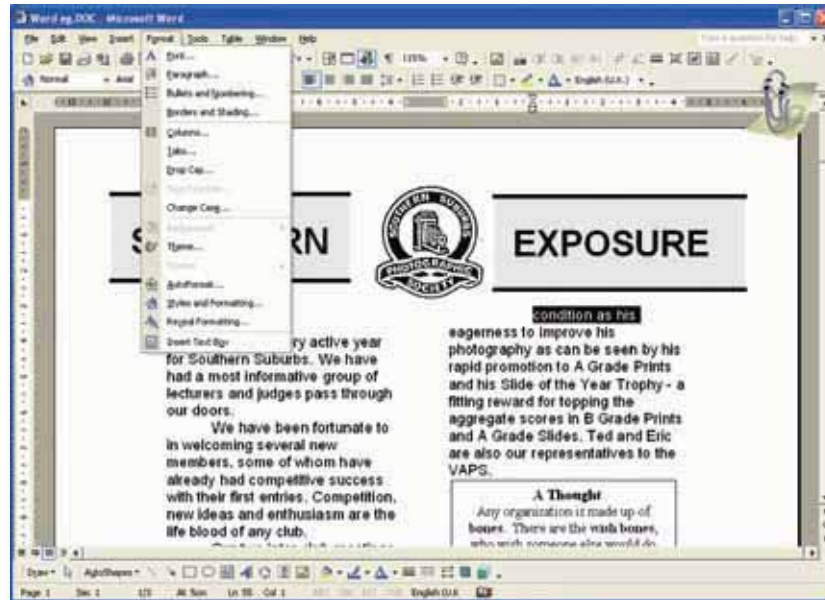


Figure 1.23 Microsoft Word.

**Microsoft Publisher.** This program will assist you in making visual presentations: pamphlets, flyers, menus, newsletters, business cards, invitations and more (Figure 1.24). Do not underestimate the effects you can achieve using this program. It is user friendly and provides features such as: decorative borders, clip art and artistic lettering options. The program also has templates which will guide you to achieve effective results very quickly.



Figure 1.24 Microsoft Publisher.



**Microsoft Excel.** Microsoft Excel is a versatile program. It is widely used to present numerical information in the form of a spreadsheet, with equations or a calculator function, built into the program (Figure 1.25). It also converts statistical information into a variety of statistical diagrams and graphs; it allows you to change from one style to another with the click of the mouse so you can quickly and easily visually assess which one is most suitable for your presentation.

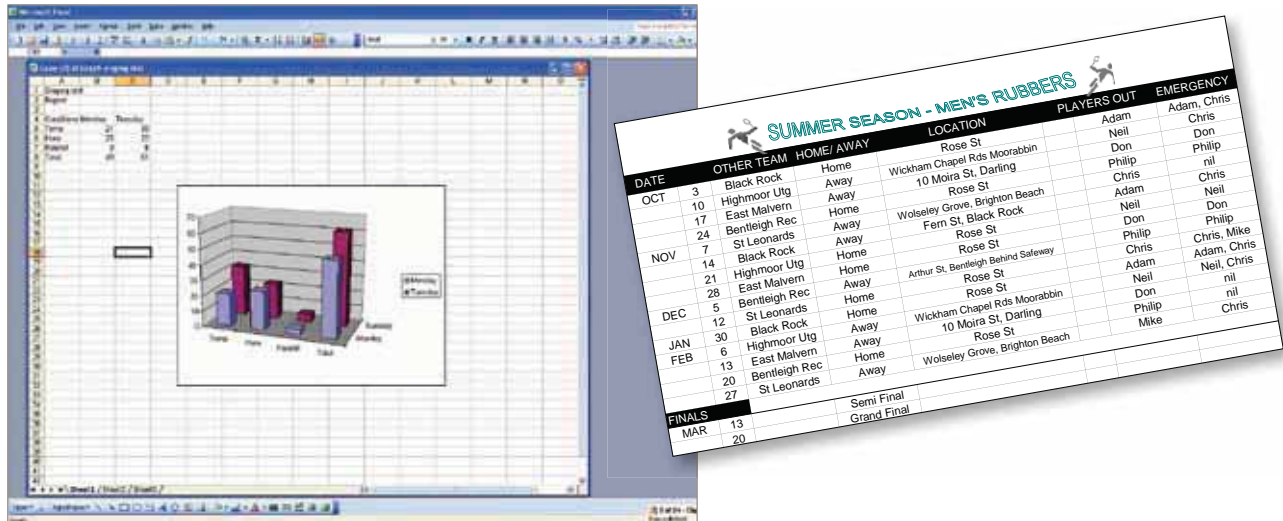


Figure 1.25 Microsoft Excel.

**Microsoft PowerPoint.** Microsoft PowerPoint is a presentation program, part of the Microsoft Office suite of programs. This software enables presentations from basic slide shows to complex productions, including sound and animation (Figure 1.26).

PowerPoint presentations consist of a series of pages, called slides, which are shown in sequence on a computer screen, or, for larger audiences, projected onto a large screen via a video projector.

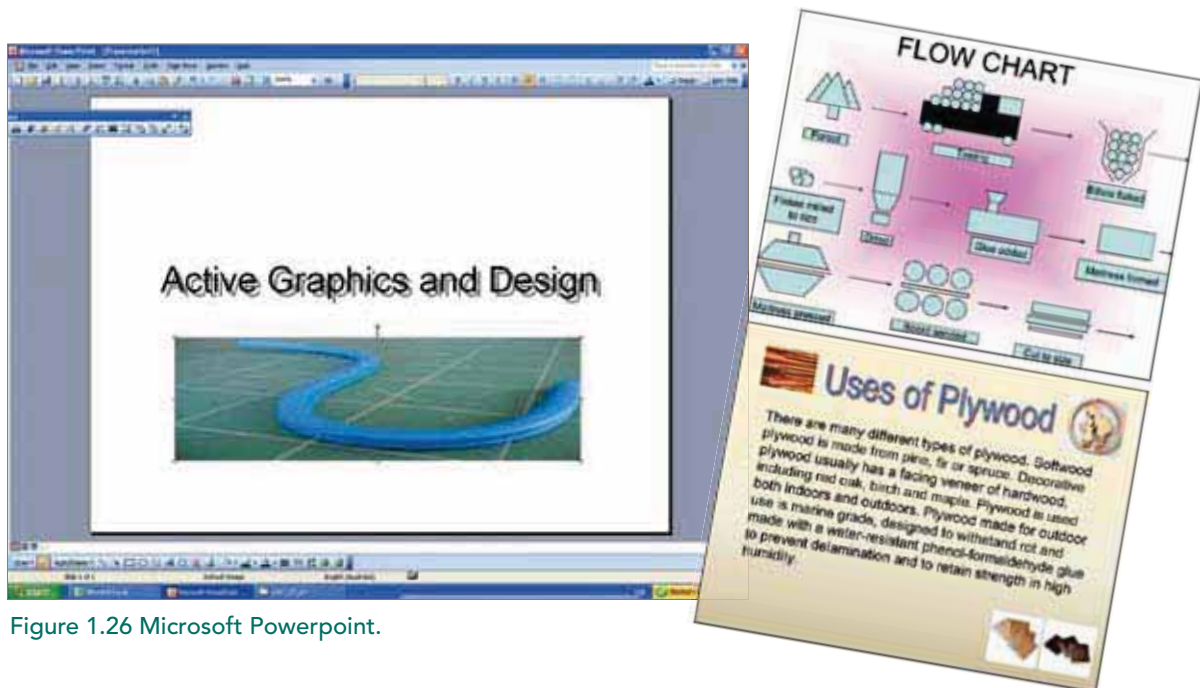


Figure 1.26 Microsoft Powerpoint.

PowerPoint is widely used for presenting information during speeches, training classes and seminars in education and business. It is also popular in the home, e.g. for viewing and emailing sets of photographs. Presentation slides can be printed, saved as webpages and used over the intranet and in teleconferencing.