

BSI Dimensions and protocols

The British Standards Institution (BSI) is a body which is responsible for a range of standards controlling quality over many different areas of industry and elsewhere. Within graphics, there are several you must be aware of and understand. They are mostly concerned with **Production Drawings**, such as building plans and engineering layouts. Their purpose is to ensure **uniformity and consistency** across all material, and allow everyone concerned to understand the drawings and their intentions.

BSI symbols for construction

These are symbols used within the construction industry to represent a range of features which are relevant within this field. They are adopted so all architects, planners, engineers and tradesmen involved understand how the plans are laid out and what is required from them.

hatching 	prohibition sign 	safe condition sign 	warning sign 	mandatory sign 	BSI kitemark
sink 	sinktop 	wash basin 	bath 	shower tray 	WC (toilet)
window 	door 	radiator 	lamp 	switch 	socket
north symbol 	sawn timber 	concrete 	insulation 	brickwork 	3rd angle projection symbol



Mandatory Signs
Blue circular background with white symbol e.g eye protection must be



Safe Condition Signs
Green rectangular / square background with white text or symbol. E.g first aid, indication of direction.



Warning Signs
Yellow triangular background with black band e.g risk of electric



Prohibition Signs
white circular background with red band and cross bar e.g



Firefighting Signs
Red square background with white symbol or text e.g fire alarm



Danger Identification
Used to identify the perimeter of a hazard. The stripes are black and luminous orange or yellow.

BSI line types

It is important you are aware of the various BSI line types used within graphics; both to accurately produce your own drawings and to interpret others.

You will need to understand these line types for your final exam.

Line types and dimensions in practice

A thick continuous line shows **visible outlines** and **visible edges**.

A thin continuous line is used for **projection lines** and **construction lines**.

A thin, broken line shows **hidden outlines** and **hidden edges**.

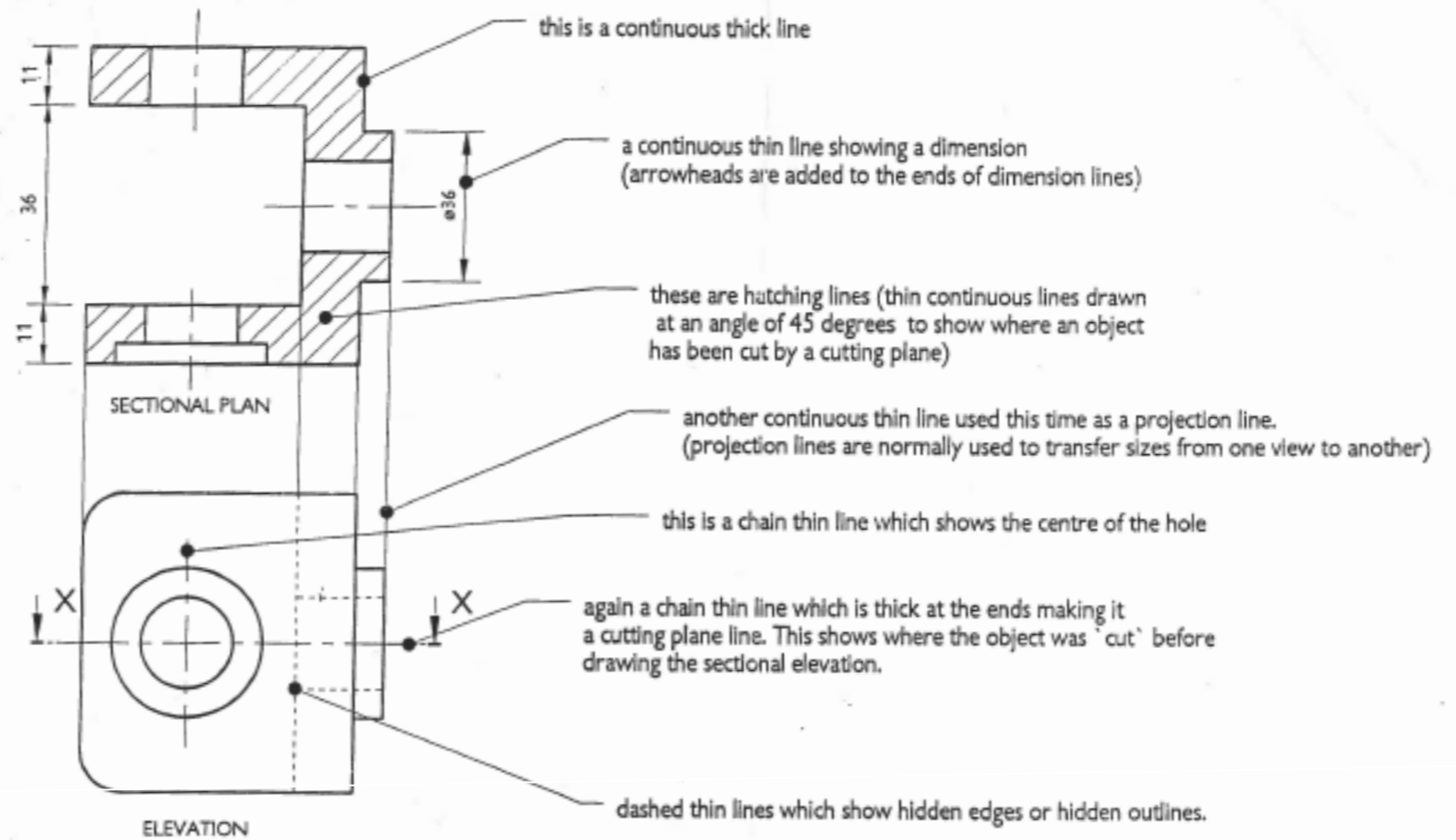
A thin chain line shows a **centre line**, e.g. the centres of circles, cylinders and cones.

A thin chain line with thick ends shows where an object is cut through or sectioned.

A thin double dash chain line is used as a **fold line** to indicate where a surface development should be folded.

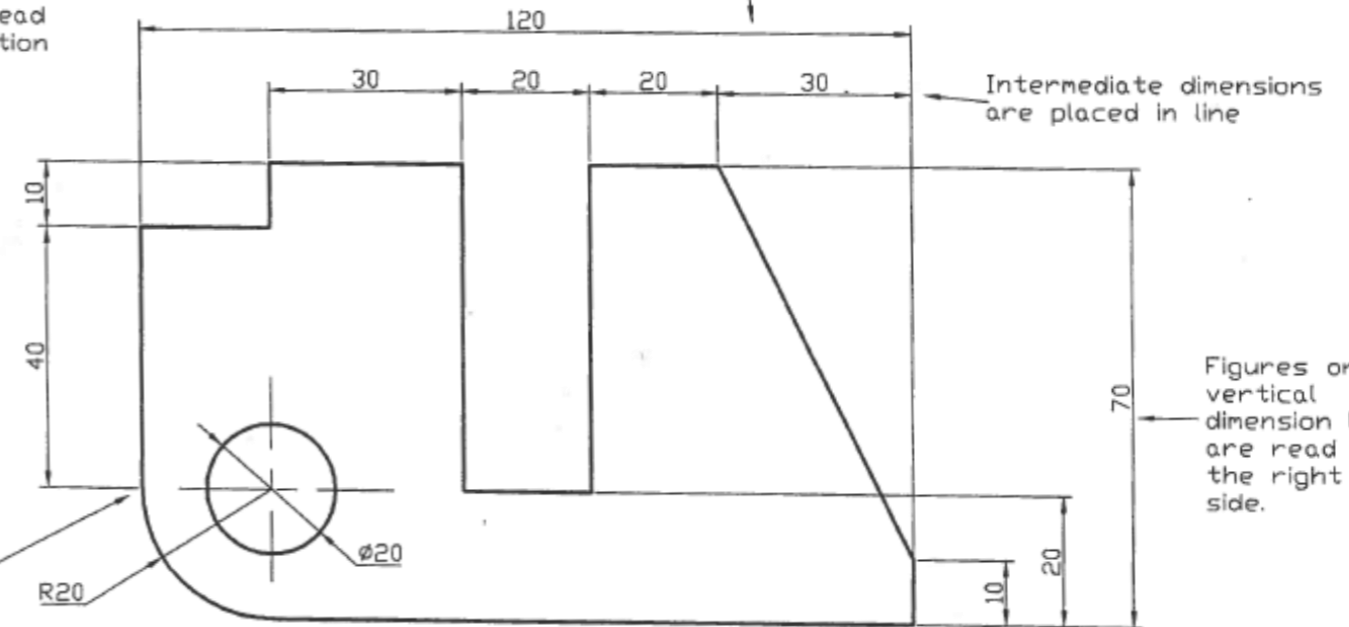
These symbols are used for dimensioning:

- ∅ diameter
- R radius
- square
- CL centre line
- AF across flats (Hexagons)
- AC across corners (Hexagons)



Dimension Lines
where possible, place the dimension lines outside the outline. Arrowheads should be small and slim, with the point of the arrowhead touching the projection lines.

Overall dimensions are placed further away from the drawing.



Always show the diameter of a circle, never its radius.

Building construction drawings

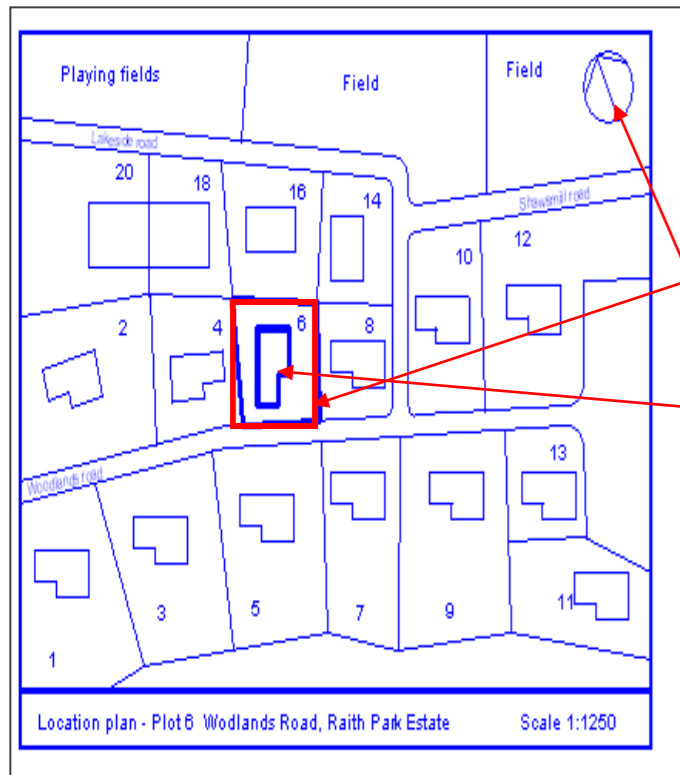
The construction industry is one of the most important in the country; millions of people are employed as architects, tradesmen, suppliers service staff and in many other disciplines. To ensure all people involved can work together effectively, it is essential projects are effectively planned and developed. A set of building drawings are called **project sets** and take several forms, depending on the requirements of those involved.

These are sets of drawings used by **architects, property developers, building control departments, designers and tradesmen** in the various areas of construction and property development. They are important to maintain standards across different areas of interest; these are the most important ones used:



Location plans

This drawing is the first drawing of the building set. It helps the builder plan the layout of the new building scheme, and is required by the local government planning department to help them decide whether to approve a new project or not.



Neighbouring buildings and their boundaries are shown, along with roads, street names and fields.

In the example shown, the new building is on **PLOT 6** which is highlighted.

The new building and plot are outlined with a thick black line and may also be hatched as well.

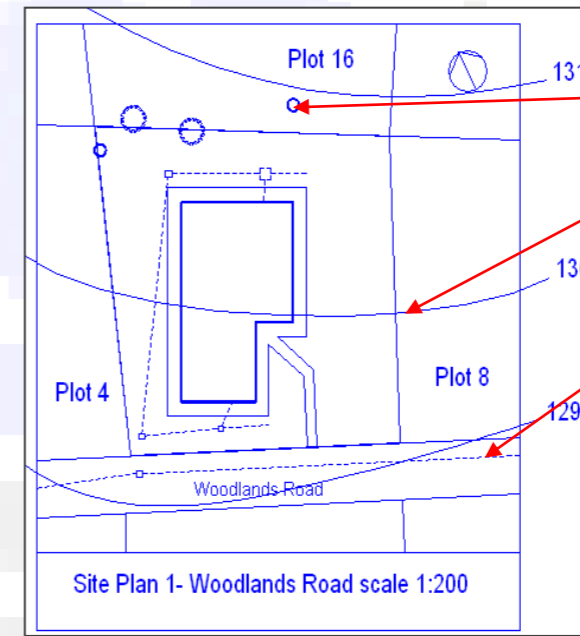
The direction arrow at the top right hand side always indicates the direction **NORTH**.

Typical scales used

1:1250
1:2500

Site Plans 1

A **site plan (also known as a block plan)** shows the site boundary and the outline of the new building which are highlighted in the location plan. Paths, roads and neighbouring plots are also shown. Site plans allow builders to mark out the site, lay drainage pipes and build manholes. Two site plans for **PLOT 6** are shown below:



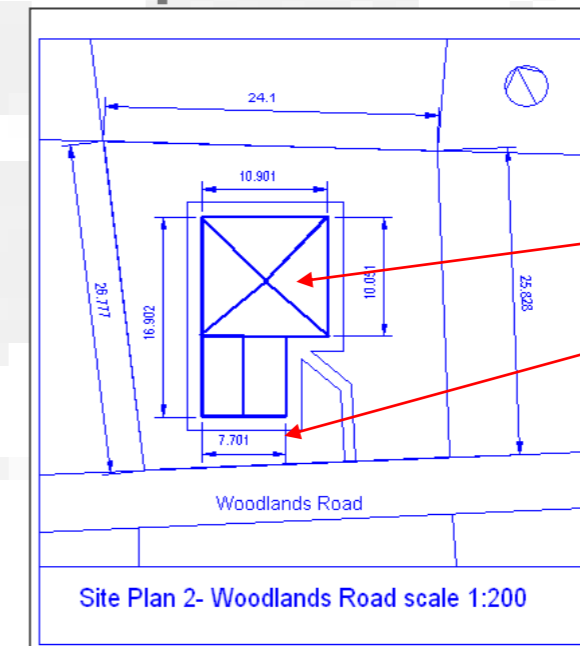
Site Plan 1 shows:

- Existing trees
- Contour lines which show the ground sloping towards the road
- Drainage pipes and manholes which run from the bathroom and kitchen.

Typical scales used

1:200
1:500

Site plans 2

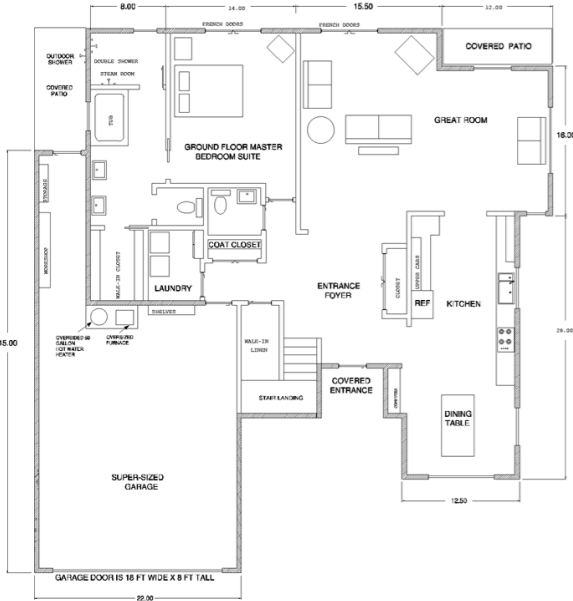


Site Plan 2 shows:

- The building outline, including the roof
- The main dimensions of the house and site in metres
- The position of the house on the site

Building construction drawings (2)

Floor plans



This is a type of sectional view. It represents a plan view of the building with the roof and a few layers of bricks removed. This shows detail of the building which otherwise could not be seen, such as:

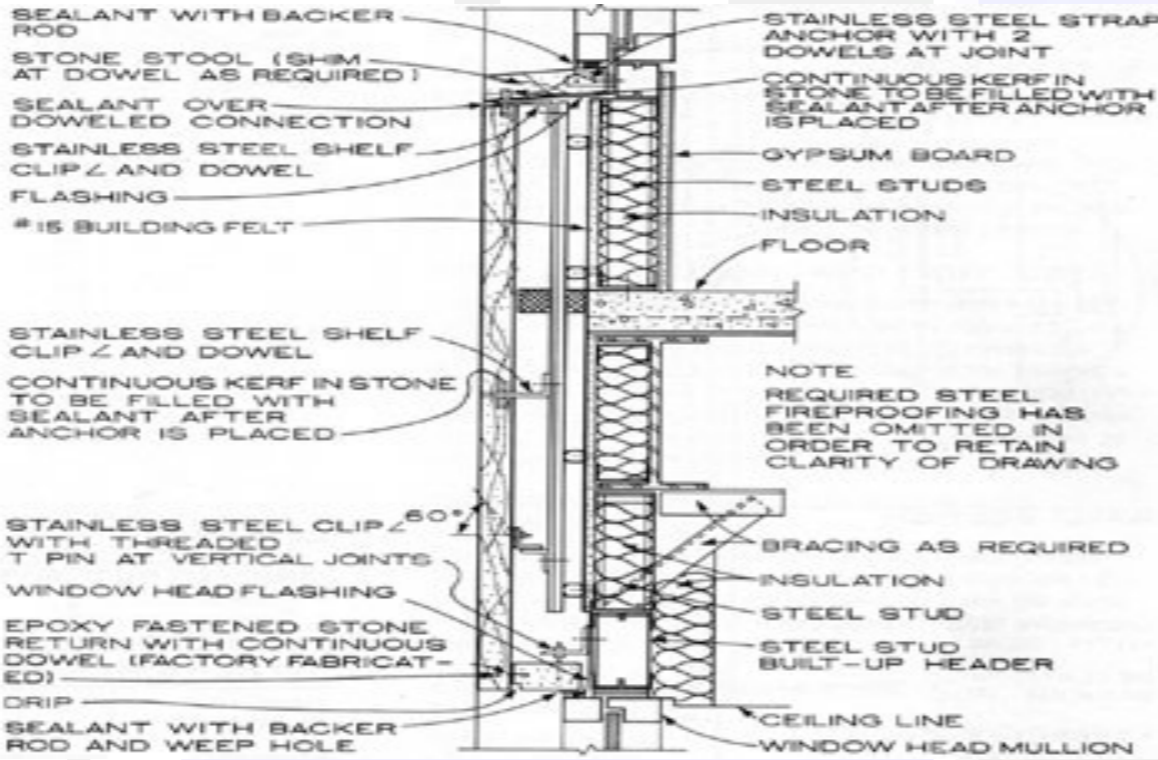
- The arrangements of rooms
- The positions of windows and doors
- The types of internal and external walls.

The BSI symbols you are familiar with are usually included in these views.

Typical scales used

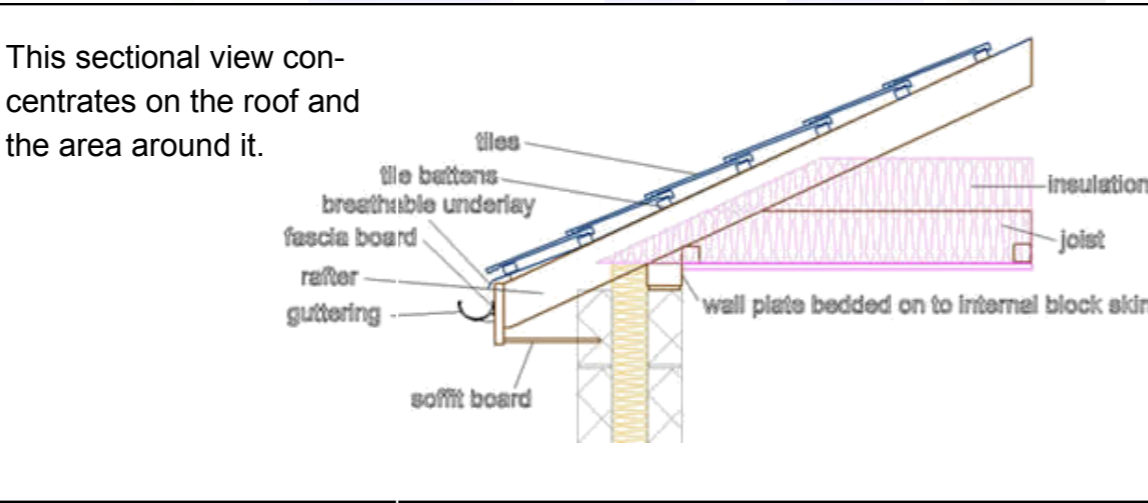
1:50 1:100

Sectional views



These are sectional views showing the cross-section of a building on the elevation. They show the tradesmen concerned how the house should be built and the material to be used. This example shows:

- The construction of the cavity wall
- The window, and how it is fitted and sealed
- The insulation required for the cavity



Typical scales used 1:20

Elevations



BUILDING TYPE ONE - REAR ELEVATION

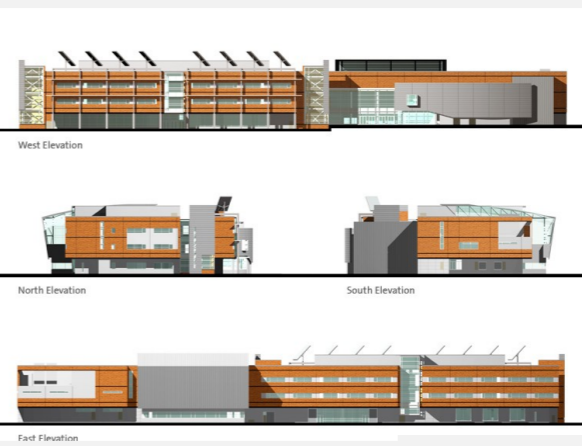


BUILDING TYPE ONE - FRONT ELEVATION

Elevations are orthographic projections of a building produced by its architect or designer. They show:

- The style of the building, e.g. bungalow or villa
- The external appearance of the building
- The style of roof
- The position of doors, chimneys and windows.

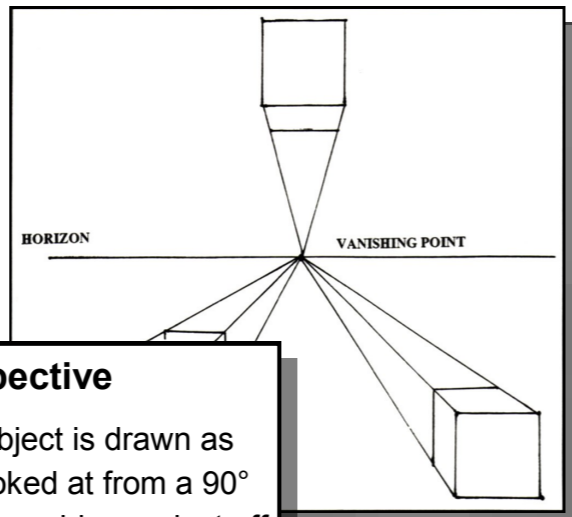
Elevations are required by the local planning department to decide whether the style and proportions of the proposed building are appropriate for the location. Builders also need a picture of what the house will look like from the outside.



Drawing views

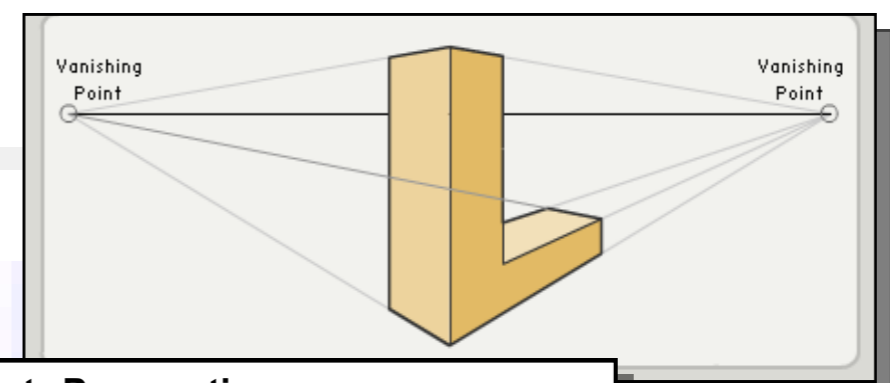
Pictorial views

These views allow all three dimensions of an object, etc. to be seen. They are not known as **3D views**, however as they cannot be turned around or manipulated as they are still 'flat' views. Instead, they can be described as **2½ D**. They are used in many different situations to give a more realistic and easy to understand view of the item, in a way which orthographic views may not. This is also beneficial to communicate information to individuals who are not technically-minded or experienced in reading orthographic views.



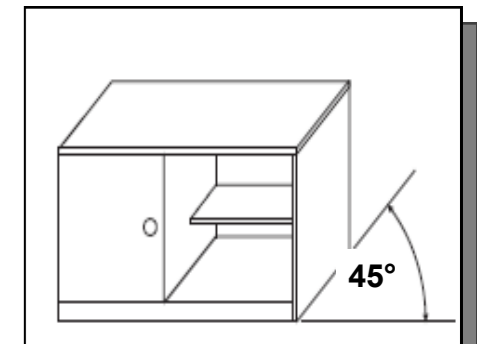
1 Point Perspective

The front of the object is drawn as its true shape (looked at from a 90° angle), and its other sides project off to a 'vanishing point' on a horizon line. These sides are subject to **foreshortening**—the effect that things become smaller as they are further away. This gives the description of **perspective**.



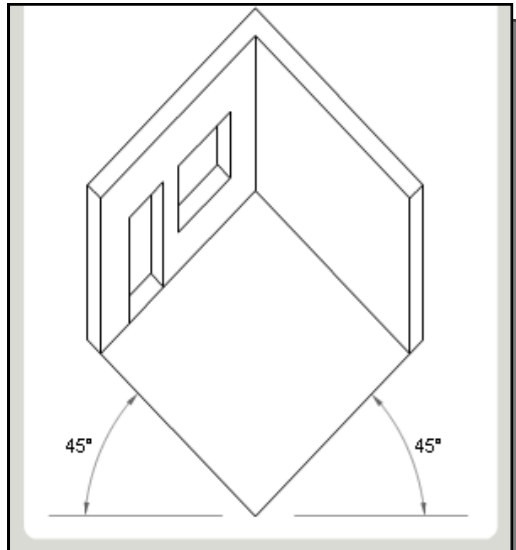
2 Point Perspective

A more realistic perspective view, this time with two vanishing points. The drawing is usually started with a vertical **leading edge** at the centre, and the 'horizontal' lines of the object going to either of the vanishing points. This form of pictorial view is often used in promotional graphics for houses, etc.



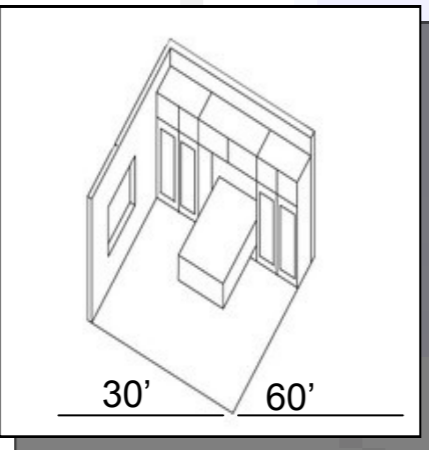
Oblique views

These views show the true shape of the elevation, with the breadths being projected back at 45° and divided by 2. They are often used to show circular based objects as the circle remains true, unlike isometrics where it becomes an ellipse.



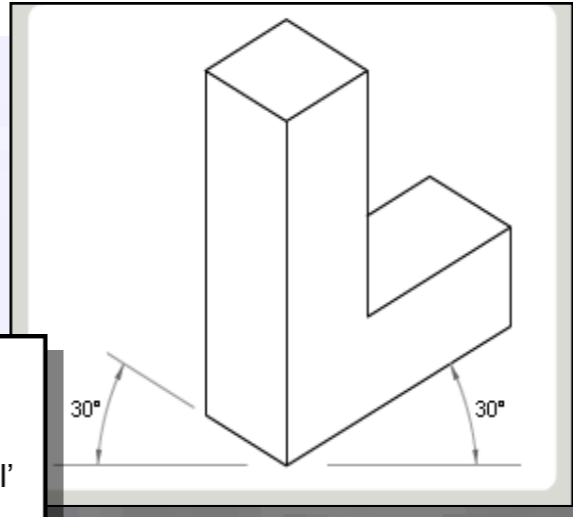
Planometric views

These views always have a 90° corner at their centre, and the other two angles add up to 90° also. They can either be 45°/45° or 30°/60°. They are frequently used to show the inside of rooms, but often outside features too such as gardens, etc.



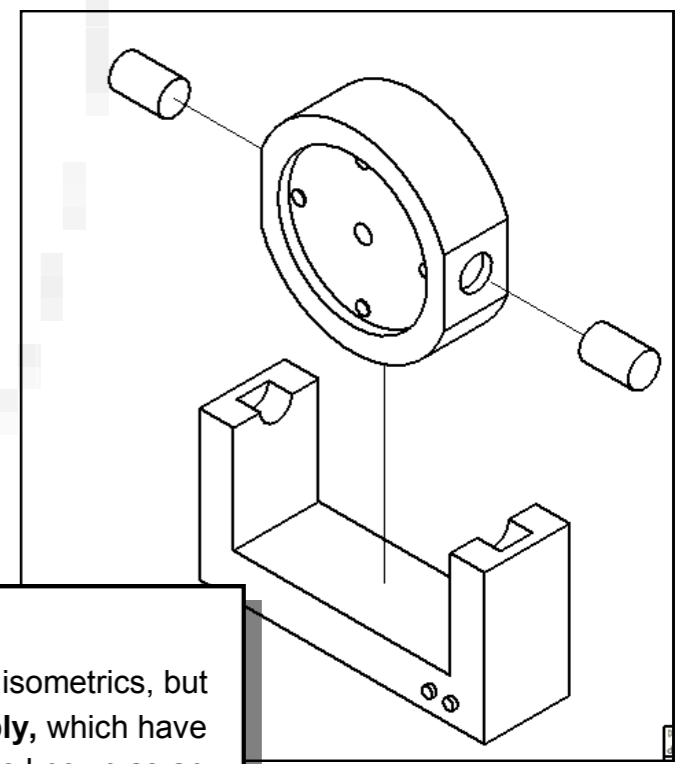
Isometric views

These views have vertical heights and the two 'horizontal' dimensions are angled at 30°. All the sizes of the object being drawn remain the same from the orthographic view it is based on—ie the height is still the same as are the length and breadth. Isometric views are frequently used to represent everyday objects and engineering/technical parts to make them easier to visualise.



Exploded Isometric

These views follow the same rules as isometrics, but involve 2 or more parts of an **Assembly**, which have been separated in a **linear** way. This is known as an **exploded view** and can be considered to be the opposite of an assembly. They are used to illustrate the relationship between separate parts within an assembly, and are often used in instruction manuals for furniture, toys, etc.

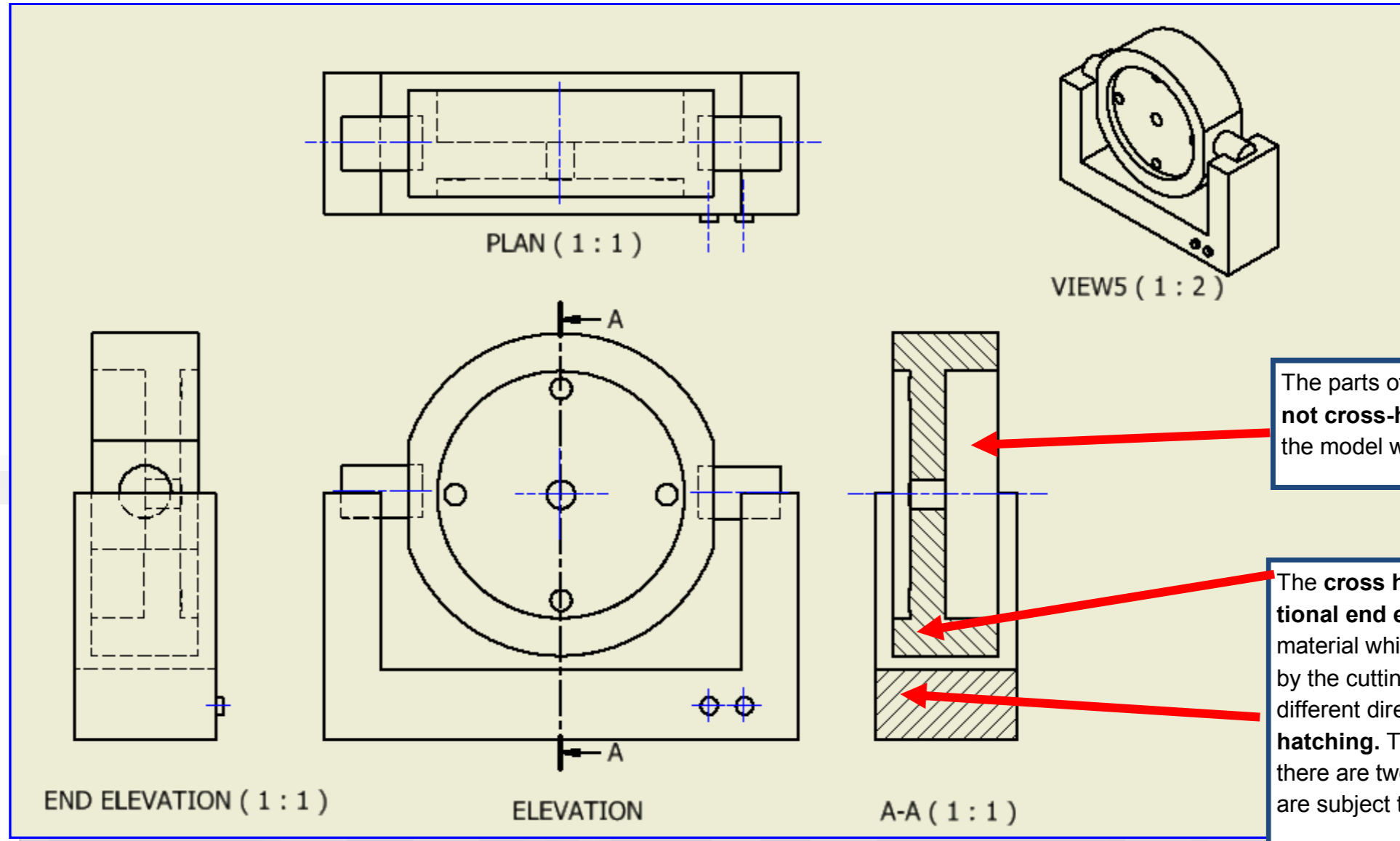


Drawing views

Assemblies and sections

Sectional views

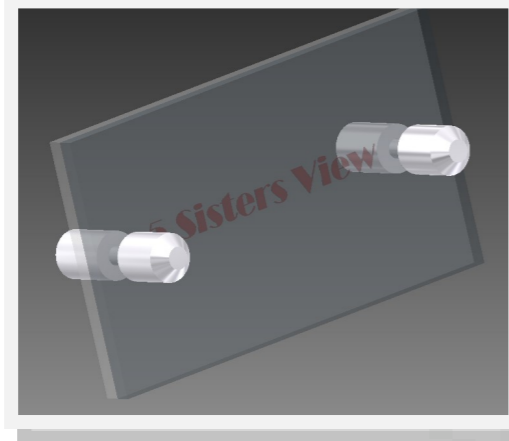
These are used to show **hidden features** within the view—often an assembly. They allow various parts and edges to be seen as if the object has been ‘cut open’. They can either be **sectional elevations** or **sectional plans** depending on the view required and are labelled with the letters used by the **cutting plane**.



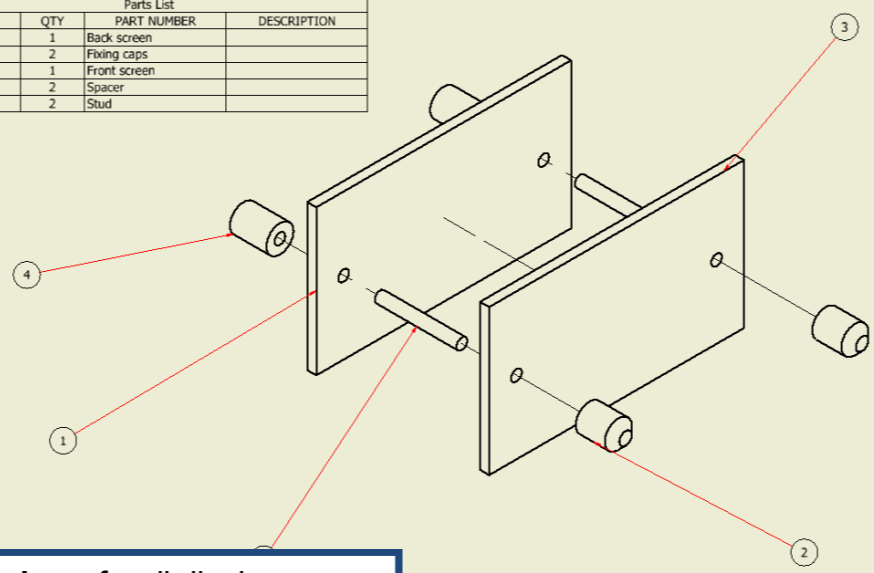
Assembly drawings

These drawings represent more than one part which have been joined or connected to each other. They are widely used for many purposes—basically whenever different parts are assembled!

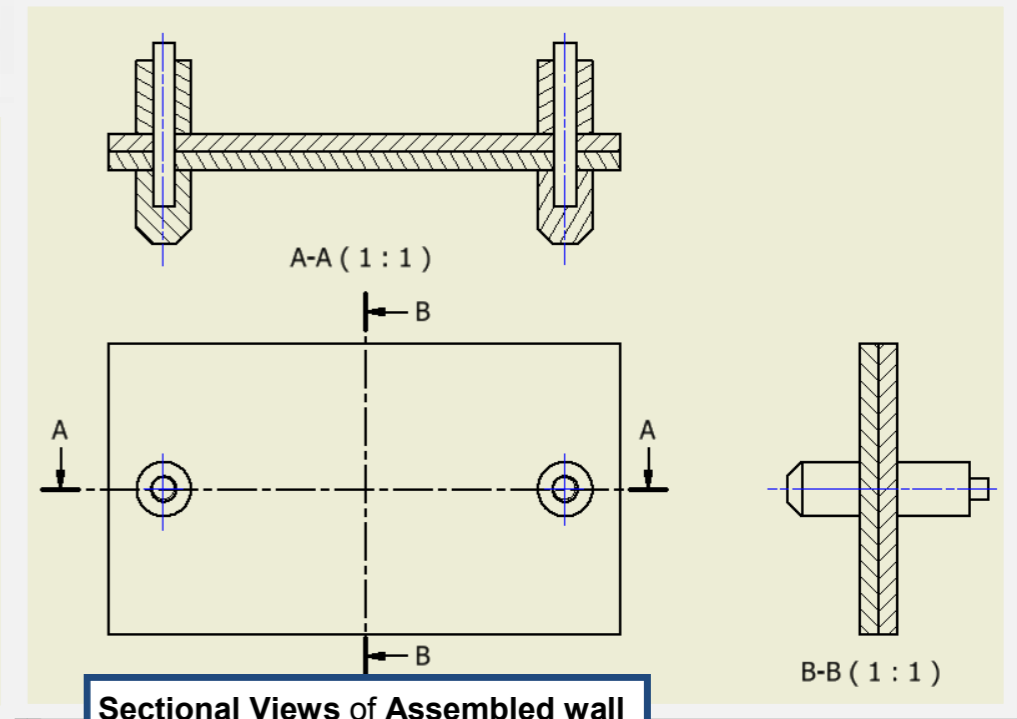
Often, an **exploded view** is provided to make the assembled view easier to understand. An **assembled view** can be thought of as being the opposite to an **exploded view**—and vice versa!



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1		Back screen
2	2		Fixing caps
3	1		Front screen
4	2		Spacer
5	2		Stud



Exploded view of wall display



Sectional Views of Assembled wall display

Preliminary, Production and Promotional graphics

The 3 Ps

All graphic forms can be classified by the following terms: **Preliminary, Production** and **Promotional** graphics. It is important you are familiar with each term and how they are applied across all features of the graphics industry. You shall have used many within several aspects of your school work to date, including within other subjects.

Preliminary graphics

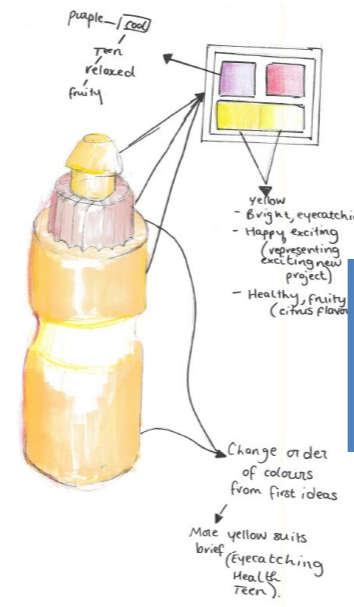
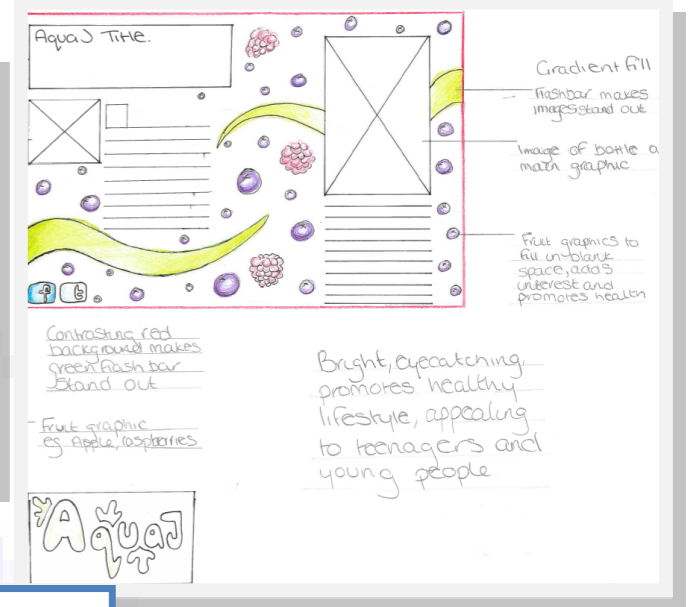
This is the first category of graphic, and as the name suggests these are used to **plan** how graphic design briefs shall be answered. Their form varies depending on the area of graphics concerned, but always takes the form of **quick, freehand sketches**. Here are three examples from 3D modelling, 2D CAD and DTP:

Benefits of using **preliminary graphics**—thumbnails, rough sketches and illustrations:

- They can be easily and quickly annotated to convey ideas
- They are a good way of recording ideas
- They are quick to produce
- Sketches are excellent ways to communicate ideas to a client.
- They are produced cheaply—no expense is required for materials.

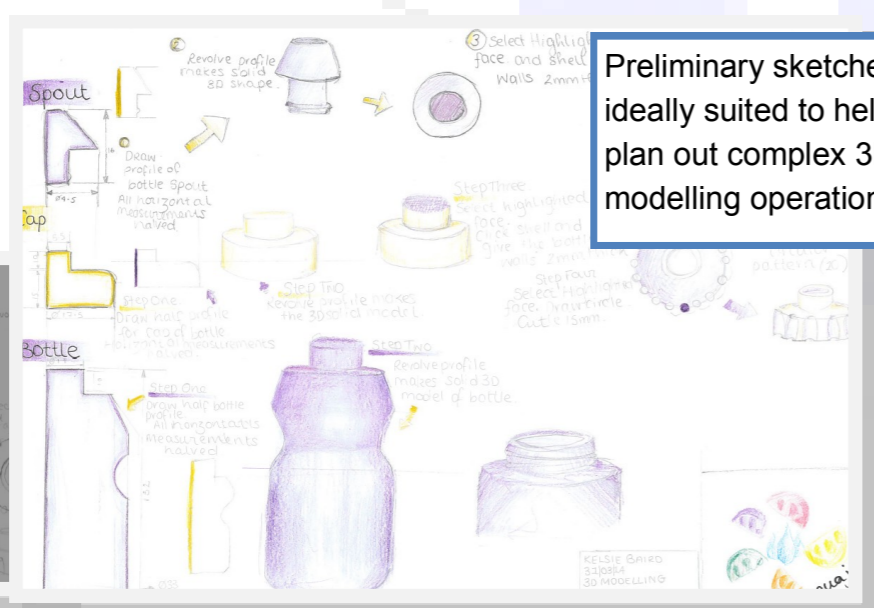
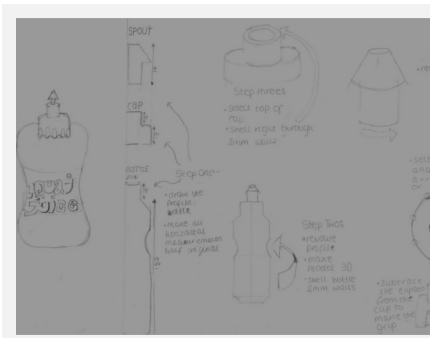
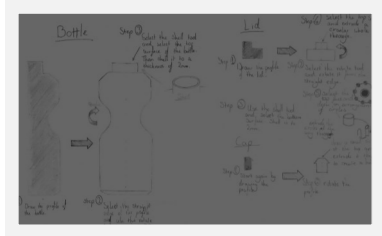
DTP

AquaJ



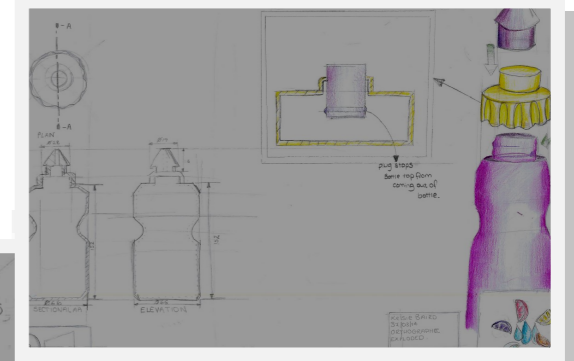
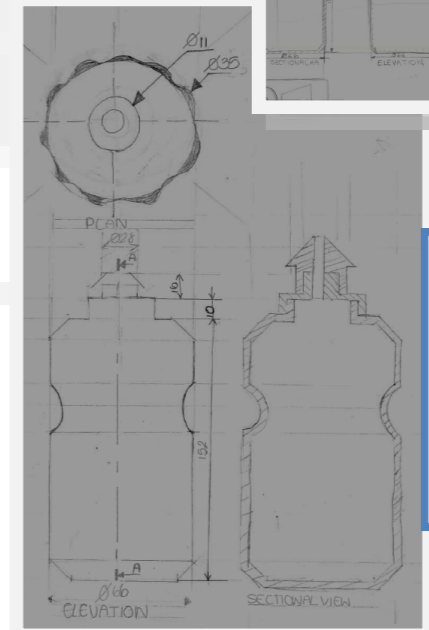
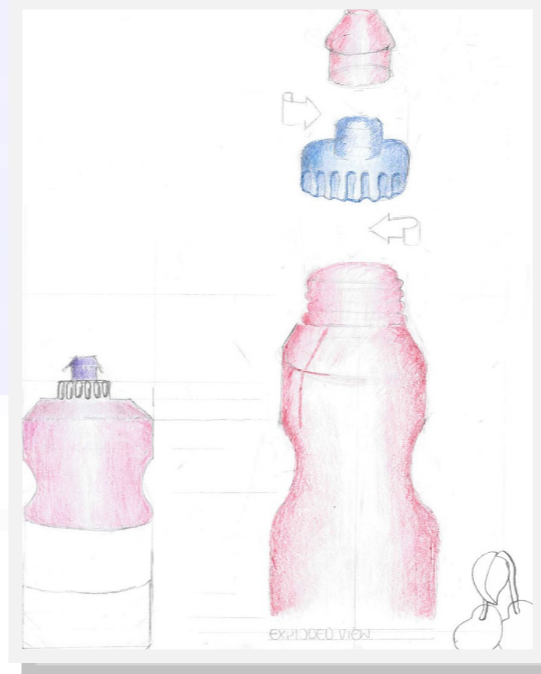
These thumbnails allow the designer to quickly jot down ideas for layouts.

3D Modelling



Preliminary sketches are ideally suited to helping plan out complex 3D modelling operations.

Engineering/ development



The sketches here show **technical features** such as dimensions and how the products fit together.

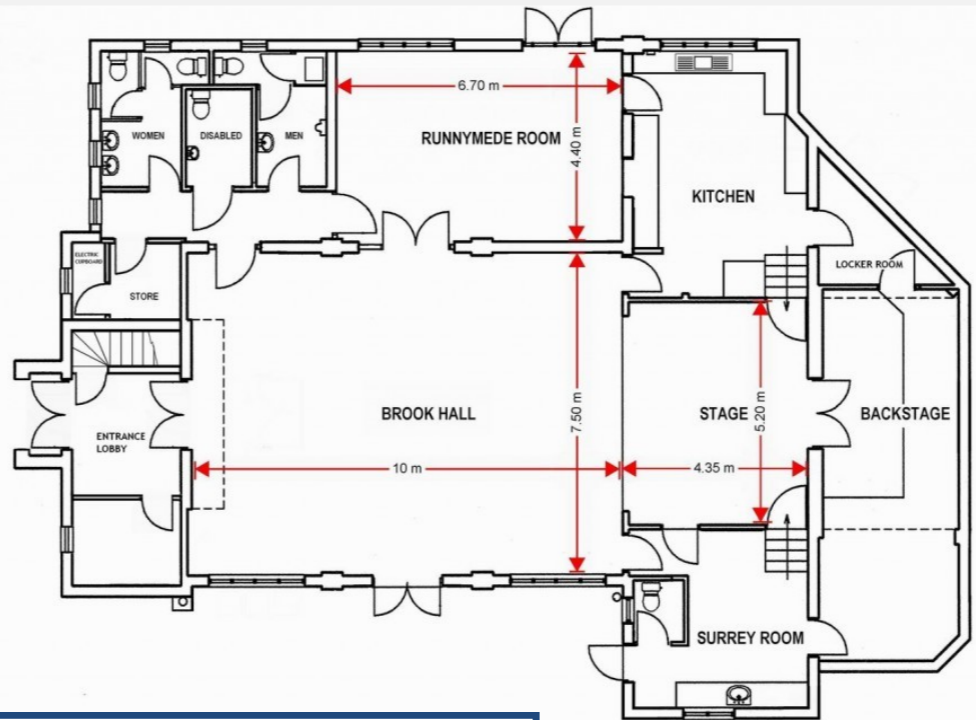
Preliminary, Production and Promotional graphics

Production Graphics

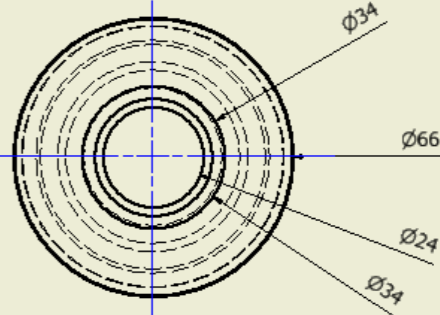
These graphics—as the name suggests—are used to produce the article in question. They must therefore be accurately **dimensioned** and in proportion.

Benefits of using **production drawings**; dimensioned orthographic views, exploded drawings, surface developments and sectional views

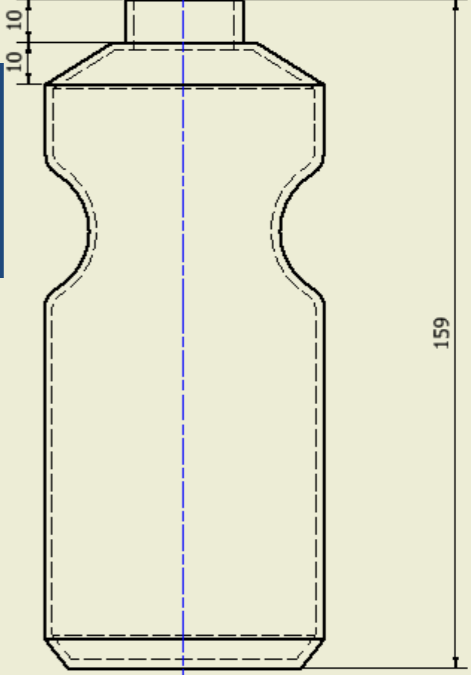
- They are accurate and drawn to scale
- They can be easily dimensioned
- Technical details can be shown using a variety of drawing types
- Commonly required parts can be added to a library to be easily accessed and re-used.
- Because of the international standards applied, they can be understood and used by anyone in the world.
- They can be used in promotional material to illustrate how products are assembled.



This **floor plan** is a production drawing; it has specific dimensions and various items of detail and information are included.



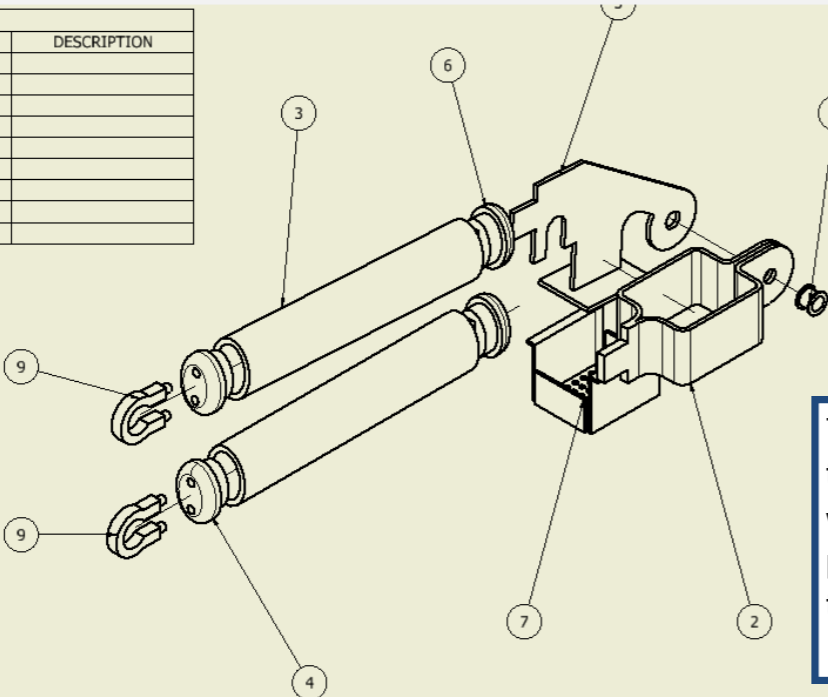
PLAN (1 : 1)



ELEVATION (1 : 1)

This **dimensioned orthographic drawing** is a production drawing; it has specific dimensions of the bottle which would allow it to be produced.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PUSHERHANDLETOP	
2	1	INVTOP	
3	2	HANDLE	
4	2	INVBASEENDS	
5	1	INVPUSHER	
6	1	TOPEND	
7	1	INVMESH	
8	1	RIVET	
9	2	INVHOOK	



This **exploded isometric** is a production drawing; the parts list corresponds with the **balloon numbers** on the exploded views. This provides details of the model's assembly.

Preliminary, Production and Promotional graphics

Promotional graphics

The purpose of these graphics is to make the product attractive to the consumer—in short, *to sell* the product. Various graphic techniques—both manual and computer based—are applied to achieve this.

Construction and property businesses



NEW LAND WORKSHOPARCHITECTS THE BAY

Benefits of using *promotional graphics*—posters, leaflets, web pages, graphs, animations, billboards, etc.

- They can be easily understood by people with no technical training
- They can show a customer what the finished product would look like
- Images can be enhanced to make them more attractive to the customer
- They can be made to look more realistic than production drawings
- The same product can be styled to appear to a particular market.

Consumer industry



Selling or renting the property is an important part of any building project. This often begins before the building work starts. In fact, it is now common to buy a new house before a brick has been laid – think of all the new build houses in Livingston which are sold before they are finished.

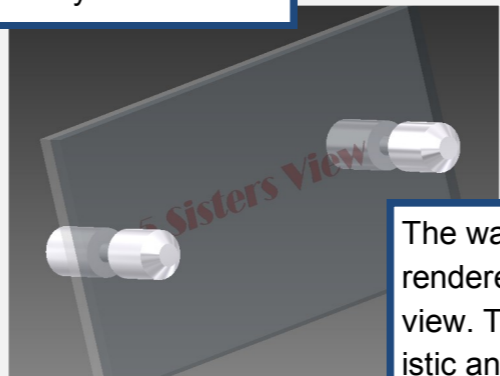
The process of selling a new building is known as **marketing the property**. This requires a special type of graphic known as an illustration.

Illustrations are usually pictorial graphics and they are vital to the marketing plan because:

- They promote the property on the market
- They are easily understood by the public because they are not technical graphics
- They can be included in sales brochures for customers
- They can represent the property in pleasant, mature surroundings – like trees, plants etc. which are unlikely to be there at the building site when the property is being built.

- They can be drawn in perspective and rendered in colour to make them realistic and attractive to cus-

Manufacturing/ engineering industry



The wall display has been rendered from a pictorial view. This allows a more realistic and easy to understand image of it to be produced for a consumer.

