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## DRAWING GUIDELINES

### Types of drawings

#### Freehand drawings, paintings or sketches

These are good for recording the general visual effect of a building or for making personal statements about how you feel about a place. They can be of any size and in any medium you like.

#### Scale drawings on graph paper

These are useful for preliminary drawings, for recording measurements as you carry out a survey, or for planning furniture layouts in rooms or buildings which have straight lines. Curves or complicated shapes are difficult to manage. Drawings on graph paper are not suitable for display purposes because the squares make it difficult to “see” the actual drawing.

#### Scale drawings on plain paper

If you want to make an accurate drawing, show interesting details or the colours or textures of materials on a scale drawing, use plain paper. In this case, you will have to use drawing equipment (below) to make your drawing.

#### Computer drawings

If your school has a CAD package, use a computer to make scale drawings based on your survey measurements.

#### Drawing equipment

To make scale drawings on plain paper, you will need:

- **Drawing board** Choose a material which lets you fix your drawing in place with drawing pins or masking tape. It must be smooth and have straight edges which are exactly parallel.
- **T-square** This is used for drawing horizontal lines which are absolutely level.
- **15 cm size 45° and 30-60° set-squares** These are used for drawing vertical and inclined lines. You could use a protractor to do this, but it is slower and much more fiddly. Adjustable set-squares let you choose any angle you want, but they are expensive. The small set-squares found in most sets of mathematical instruments are too small for architectural drawings.
- **Scale** This looks like a ruler, but the divisions marked on it are in various standard proportions to actual distances - 1:10, 1:20, 1:50, 1:100 etc.
- **Well-sharpened pencils** 2H lead pencils are good for scale drawings. They make a clean, sharp line and don't smear easily.

- A **compass** is sometimes useful, but most drawings can be made without one.
- **Drawing pins or masking tape** Use these to hold your drawing in place while you work.

If the equipment listed above is unavailable in the school, you can still make scale drawings which are suitable for display by using tracing paper overlaid on graph paper. Tape the tracing paper to the graph paper and tape the two to the table-top to prevent them from slipping about. If the drawing has to be moved before it is complete, do not detach the tracing paper from the graph paper - it will be almost impossible to re-position it accurately.

### Types of paper

The kind of paper you need depends on the purpose of the drawing.

Preparing a set of scale drawings from the measurements taken on a survey is not always easy, particularly if it is a large or complicated building. It may take several tries to get it right. If you use **cartridge paper**, you will have to do a lot of rubbing out and re-drawing, so you can end up with a messy looking sheet. **Tracing paper** makes it easier. Lay a clean sheet of tracing paper over your first drawing. Trace the bits you think are correct, then work on the next piece of the puzzle. Repeat this process until you are satisfied that the whole building is correctly drawn. For this kind of rough work, it may be cheaper to buy a roll of **detail paper**. A 25-metre roll of A1 size costs about £12.00.

If you want to display a drawing made on tracing paper, pin it up with a sheet of white paper behind it. You can colour tracing paper with pastels or coloured pencils, but put the colour on the back of the sheet. It will show through gently on the front and can be applied or removed without messing up the lines drawn on the right side.

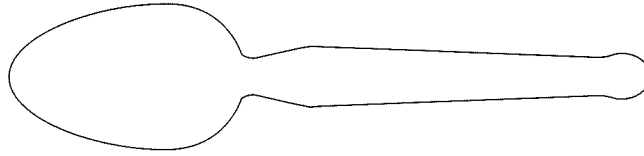
Don't paint on tracing paper; it goes bubbly. For painting, use a sheet of suitable **cartridge paper** - one that hasn't had too much rubbing out and re-drawing done on it. If your drawing is complicated, do all your preparatory work on tracing or detail paper. Then, when you are sure that you have it all worked out, make a fresh drawing on the cartridge paper.

### Drawing to scale

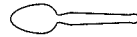
Except when showing very small details, architectural drawings do not represent objects at their full size. Buildings are drawn much smaller than their true size, but with all the parts in the correct proportion to each other, just as in the real building. This is called **drawing to scale**.

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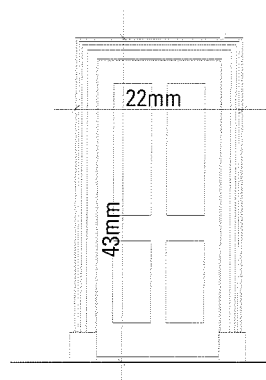
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This drawing of a teaspoon shows its actual size. Its scale is 1:1. This means that 1 unit of the drawing = 1 unit of the actual teaspoon.



This drawing shows the teaspoon at a scale of 1:5. This means that 1 unit of the drawing = 5 units of the actual spoon.



Drawing of door at scale 1:50.  
The real width of the door and architrave is 1100mm, which is represented by 22mm (one fiftieth) on the scaled drawing.

Similarly, the real height of 2150mm, is represented by 43mm.

This door is shown at a scale of 1:50. So 1 unit on the drawing = 50 units on the real door. Measure the drawing of the door. It is 43 mm high, or one-fiftieth the size of the real door.

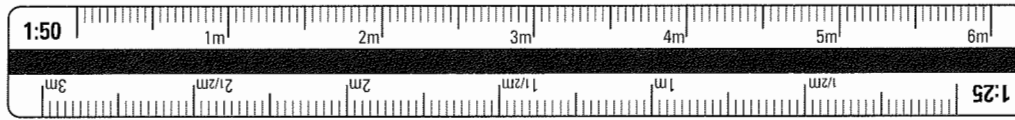
The bigger the object or area really is, the smaller the scale of the drawing has to be. Otherwise, it would not fit on one sheet of paper. For example, the drawing of a single house might be at a scale of 1:50. This means that 1 unit on the drawing equals 50 units on the real building. If you want to draw a plan showing all of the houses in an estate, you might choose a scale of 1:200. The plan of an entire neighbourhood might be at the even smaller scale of 1:1000.

If you wanted to show how certain pieces of the building were constructed, you might make a detail drawing of that part at 1:10 or even 1:5.

To make a drawing to scale, you need the actual measurements of the object and a scale rule (see Drawing equipment, above) or graph paper which you have marked off to the scale you want.

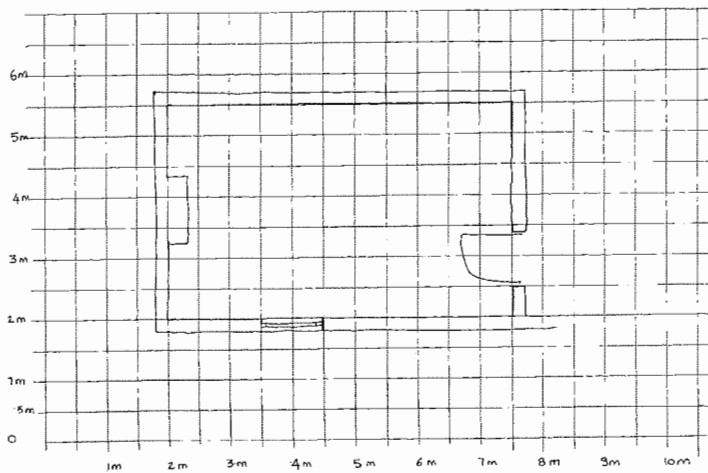
### Using a scale rule

Suppose you want to draw a 1:50 plan of a room that is 5 metres long by 3.5 metres wide. Take your scale rule and select the side marked 1:50. Then, use the numbers on the scale to measure out a rectangle 5 by 3.5.



**Using graph paper**

With graph paper, you make your own scale. Choose the scale you think is suitable for your drawing. Then mark out the “metres” on your paper. If the scale is 1:50, then 20 mm on the graph paper will represent 1 metre (or 1000 mm) on the building.

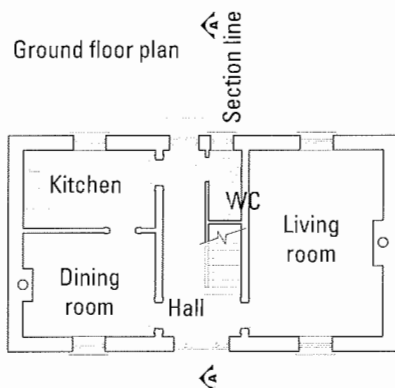


**Using graph paper for a plan**

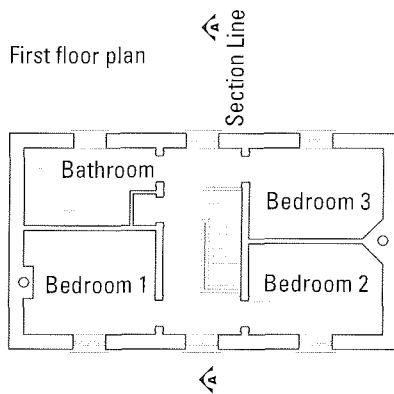
If you want your drawing to be at a scale of 1:100, then 10 mm on the graph paper will represent 1000 mm on the building, and so on.

**Plans, Sections and Elevations**

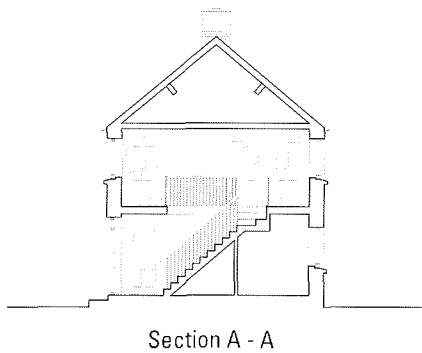
Three kinds of drawings are commonly used to illustrate buildings. They are **plans**, **sections** and **elevations**. All of these are drawn directly from measurements of the building, so they are more straightforward to do than perspective drawings. (See Information Sheet 25 “One-point Perspective” and Information Sheet 27 “Two-point Perspective”.)



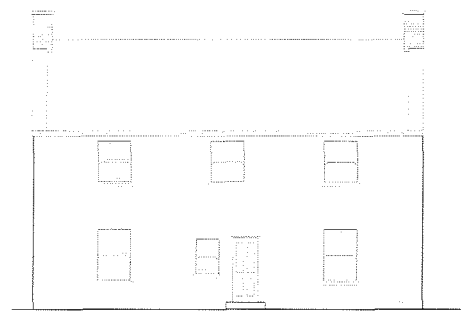
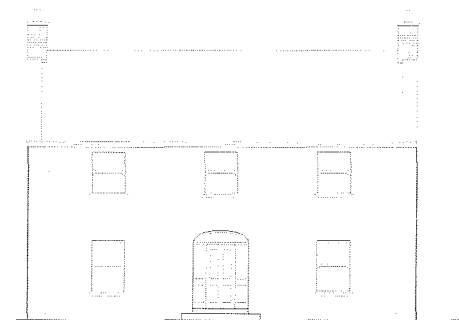
## DRAWING GUIDELINES



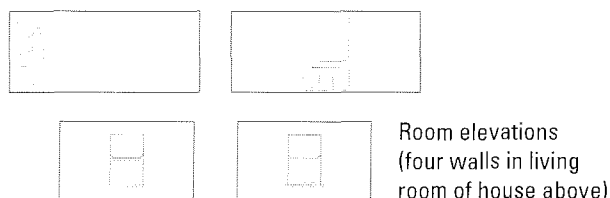
A **plan** drawing shows what you would see if you sliced through the building horizontally, lifted off the top part and looked down. The “cut” is usually made just above the level of the window sills. A separate plan is usually made for each storey of the building. Any solid part of the building which is cut through can be coloured in with shading or hatching. This is shown on the walls in the drawing.



A **section** drawing shows what you would see if you made a vertical cut through the building, took one half away, and looked into the other half. You can make as many section drawings as you need to explain the building, but one or two should be enough for most ordinary houses. To show where you have made your cuts, draw “section lines” on your plans with arrows on the ends to show which way the section is looking. Any solid parts which are cut (such as walls, floors or roofs) can be shaded or hatched.



An **elevation** shows what you would see if you looked straight at the building from the outside. A **detached house** needs 4 elevations. A **semi-detached house** has 3 elevations. A **terraced house** has 2 elevations.



Most elevations show the outside of buildings, but you can draw elevations of the walls

in individual rooms. You might want do this if you were working on a new interior design for your bedroom, for example.

### **Colour and texture on scale drawings**

When you do a scale drawing, it is as though you were looking at the building from a distance. This makes the building look smaller than it really is. This imaginary distance also affects colours and textures. If you look at a building from a distance, you may not be able to make out the joints between the brickwork, or where one roof-tile ends and the next begins. The door handle and the letter box may just be dark shapes on the front door. Something similar happens to colours. The farther away you move, the more misty or greyish they become, like mountains viewed from a distance, or houses and fields seen from a plane.

The amount and sharpness of detail you show, and the brightness of colours on the drawings, depend on the scale of the drawing. You cannot show a lot of detail on small-scale drawings. Bright colours which might look fine on a 1:50 elevation of a house may look garish if they are used for the same house shown at a scale of 1:200.

