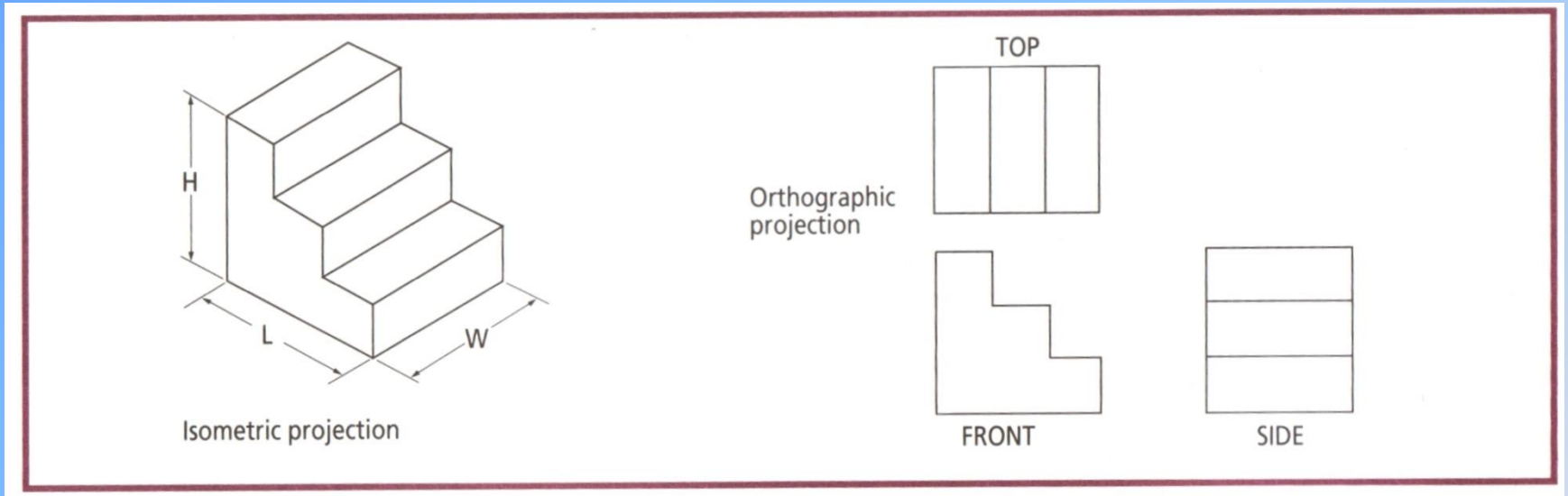


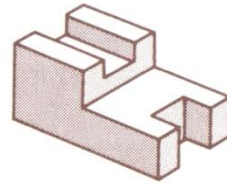
# Orthographic Projection

# Orthographic Projection

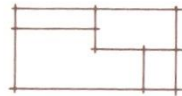


Orthographic Projection shows the front, top and side view of an object as separate drawings. Always make the view with the most detail the front view.

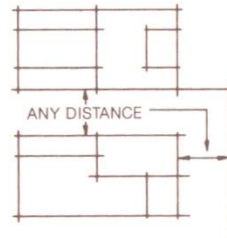
# Drawing in Orthographic



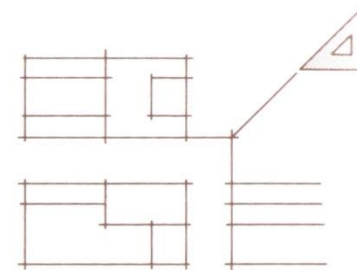
STEP BLOCK



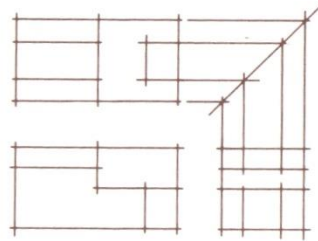
1. LIGHTLY CONSTRUCT THE FRONT VIEW.



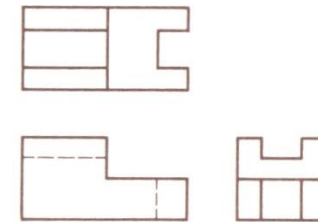
2. LIGHTLY CONSTRUCT THE TOP VIEW DIRECTLY OVER THE FRONT VIEW. EXTEND THE LOWER SIDE OF THE TOP VIEW TO INTERSECT A VERTICAL LINE DRAWN TO THE RIGHT OF THE FRONT VIEW.



3. PROJECT THE FEATURES OF THE FRONT VIEW TO THE RIGHT OF THE VERTICAL LINE. DRAW A LINE AT  $45^\circ$  FROM THE POINT OF INTERSECTION, AS SHOWN.



4. PROJECT THE CONTOURS OF THE TOP VIEW TO THE  $45^\circ$  LINE. THEN PROJECT THE CONTOURS VERTICALLY TO CONSTRUCT THE RIGHT SIDE VIEW.



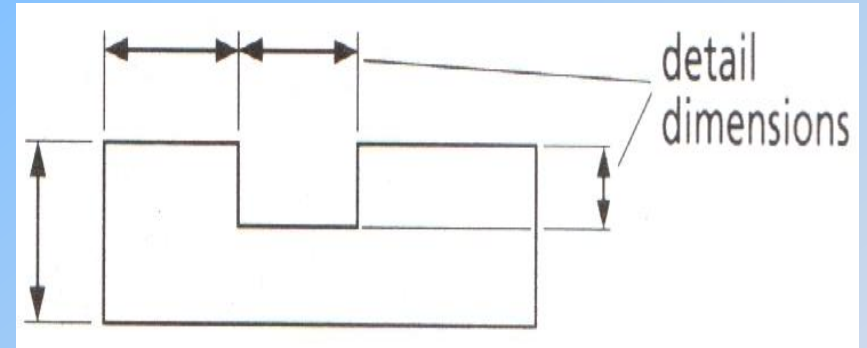
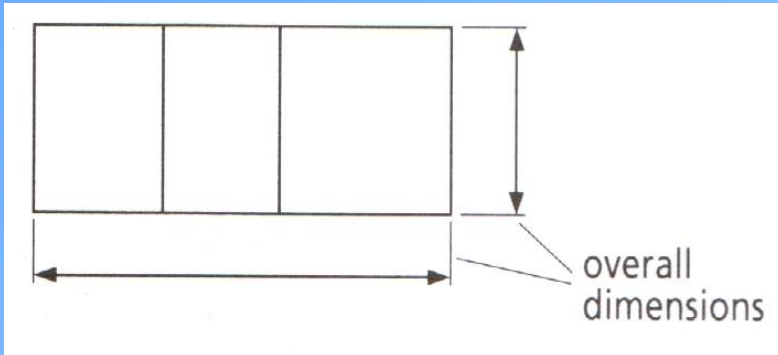
5. ERASE ALL UNNECESSARY LINES. COMPLETE THE FINISHED LINEWORK TO OBTAIN THE REQUIRED ORTHOGRAPHIC VIEWS.

# Hidden Lines



- Hidden lines are lines that are used to show hidden features of an object. Hidden lines are thin dark lines that are 3mm – 4mm long with 1mm – 2mm spacing.
- A general rule is that the ends of hidden lines should touch an object line or another hidden line

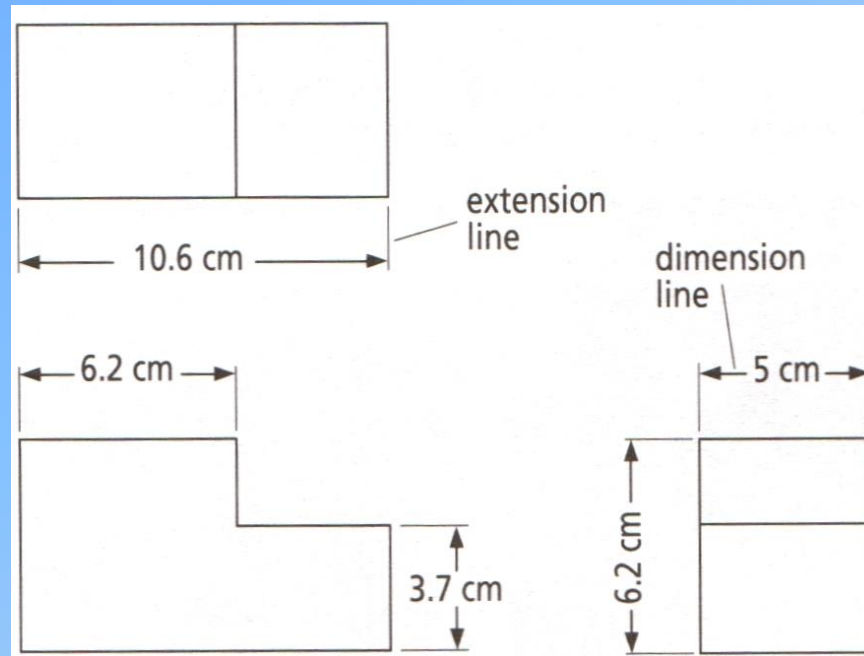
# Dimensioning



- There are a few rules to dimensioning.
  - Every object has overall dimensions of width, length and height.
  - Detailed dimension where the shape is shown.
  - Try to dimension between the views (this makes for easier reading)

# Dimensioning

## Extension and Dimension Lines



**Extension Lines** – project from the object to a convenient location for dimensioning purposes. They start 2mm off the object and project 2mm past the dimension line.

**Dimension lines** – used to indicate the dimensions of the object. They have arrows at the ends and the dimension is centred between the extension lines. There is at minimum 10mm spacing from the object to the dimension line.

# Orthographic Projection

## Assignment #1 (Full Size Block)

1. Get a piece of blank 11" x 17" paper from the teacher.
2. Setup the paper on a drafting board in landscape. Using a T-square, line up the top edge of the paper so it is parallel to the T-square. Tape the 4 corners down to secure it in place.
3. Using the T-square and set square draw a 10mm boarder all the way around the outside. Use LIGHT CONSTRUCTION LINES. They will be darkened later.
4. In the bottom right corner, draw a title box for your name that is 45mm high and 100mm long. Divide it into 3 horizontally. Divide the middle and lower boxes in half vertically
5. In the top block of the title block, lightly draw 2 parallel lines 10mm apart that are centred in the block. Neatly print the Title – Orthographic #1. In the middle block, draw 2 parallel lines 5mm apart that are centred in the block. Neatly PRINT your name in the left one and the date in the right one. Finally ,in the lower left one, put in the scale 1:2
6. Quickly sketch the object on a piece of 8 ½" x 11" paper to get the proportions right. You have to consider spacing and dimensions. When the good drawing is finished the three views **WILL BE CENTRED** on the paper.
7. Start your good copy by drawing the front view. Use light construction lines to draw the object, but also to extend past the object to create parts of the top view and side view.
8. Measure the spacing up from the front view (including dimensions) and draw the top view of the object again with construction lines extending the lower line to the right of the page
9. Measure the spacing between the front view and the side view, (remember to include dimensions). Draw a vertical line until it intersects with the line drawn from the lower right of the top drawing. Where the lines from the two meet, draw a 45 degree line up to the right.
10. Using the lines from the top drawing, project them across to the 45 degree angle and then down to finish forming the objects side view.
11. Erase all unnecessary lines.
12. Dimension the object – You need the overall dimensions and the detailed dimensions. There should be only 5 dimensions needed.
13. Darken in ALL lines
14. Submit for marking

**15 marks**

# Orthographic Projection

## Assignment #7 (End Table)

1. Get a piece of blank 11" x 17" paper from underneath the printer by the office.
2. Setup the paper on a drafting board in landscape. Using a T-square, line up the top edge of the paper so it is parallel to the T-square. Tape the 4 corners down to secure it in place.
3. Using the T-square and set square draw a 10mm boarder all the way around the outside. Use LIGHT CONSTRUCTION LINES. They will be darkened later.
4. In the top right corner, draw a title box for your name that is about 35mm high and 70mm long. Divide into 3. Top (title) is 15mm, middle (scale and date) is 10mm and bottom (Name) is 10mm. Divide the middle vertically in half.
5. In the top block of the title block, draw 2 parallel horizontal lines 10mm apart that are centred in the block. Neatly print the Title – Endtable. In the middle block, draw 2 parallel horizontal lines 5mm apart that are centred in the block. Neatly PRINT your Scale 1:5 is the left one and Todays Date in the other. In the bottom block your name.
6. Quickly sketch the object on a piece of 8 ½" x 11" paper to get the proportions right. You have to consider spacing and dimensions. When the good drawing is finished the three views WILL BE CENTRED on the paper. Make sure you take the title block into consideration.
7. Start your good copy by drawing the front view. Use light construction lines to draw the object, but also to extend past the object to create parts of the top view and side view.
8. Measure the spacing up from the front view (including dimensions) and draw the top view of the object again with construction lines extending the lower line to the right of the page
9. Measure the spacing between the front view and the side view, (remember to include dimensions). Draw a vertical line until it intersects with the line drawn from the lower right of the top drawing. Where the lines from the two meet, draw a 45 degree line up to the right.
10. Using the lines from the top drawing, project them across to the 45 degree angle and then down to finish forming the objects side view.
11. Erase all unnecessary lines.
12. Dimension the object – You need the overall dimensions and the detailed dimensions. There should be only 5 dimensions needed.
13. Darken in ALL lines. Remember there are A LOT of hidden lines in this project
14. Submit for marking

**20 marks**