

AGE 223 – TECHNICAL DRAWING I

**DEPARTMENT OF AGRICULTURAL ENGINEERING,
UNIVERSITY OF AGRICULTURE, ABEOKUTA**

**LECTURERS: Dr. A. Adisa; Dr. A.A. Aderinlewo;
Engr. O.J.Adeosun and Engr. A. Sobowale**

- **COURSE CODE:** AGE 223
- **COURSE TITLE:** TECHNICAL DRAWING I
- **CREDIT UNITS:** 2 UNITS
- **DURATION:** 2 HOURS PRACTICAL LECTURES

▶ **COURSE DETAILS:**

- ▶ **Course Coordinator:** Dr. A.F. Adisa B. Eng, MSc. PhD
- ▶ **Email:**
- ▶ **Office Address:** Room 4, COLENG Building
- ▶ **Other Lecturers:** Dr. A. A. Aderinlewo, Eng. O.J. Adeosun,
Engr. A. Sobowale

COURSE CONTENT:

- **COURSE REQUIREMENT:**
- This is a compulsory course for 200 level non Agricultural Engineering students. Students are required to participate in lectures and practicals and obtain a minimum of 75 % attendance to be able to write the final examination.

- **READING LIST:**

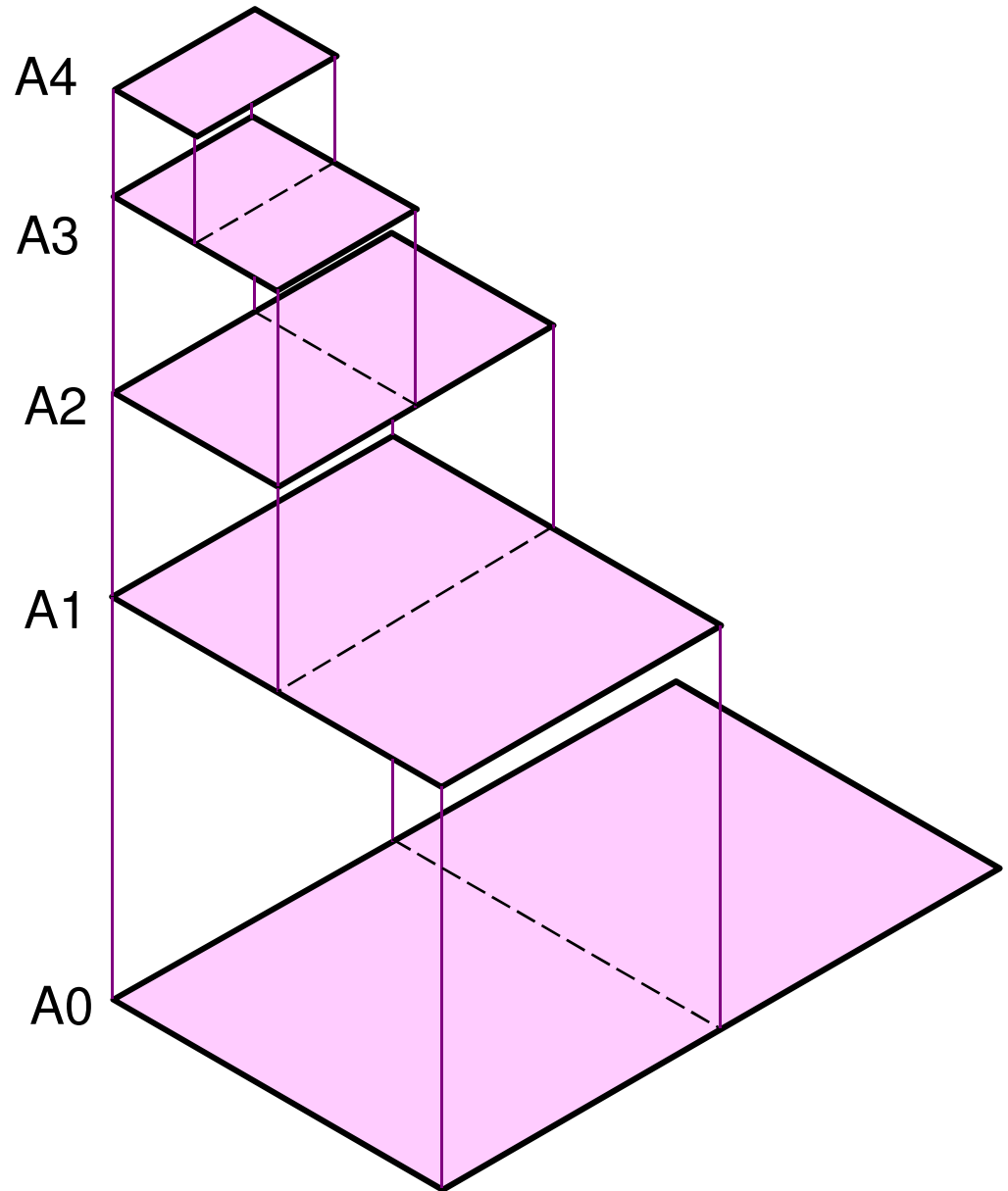
1. Parker M.A. and Pickup F. (1976). Engineering Drawing with worked examples. Hutchison Publishing Group, Australia. 226pp

Drawing Sheet

- Trimmed paper of a size A0 ~ A4.
- Standard sheet size (**JIS**)

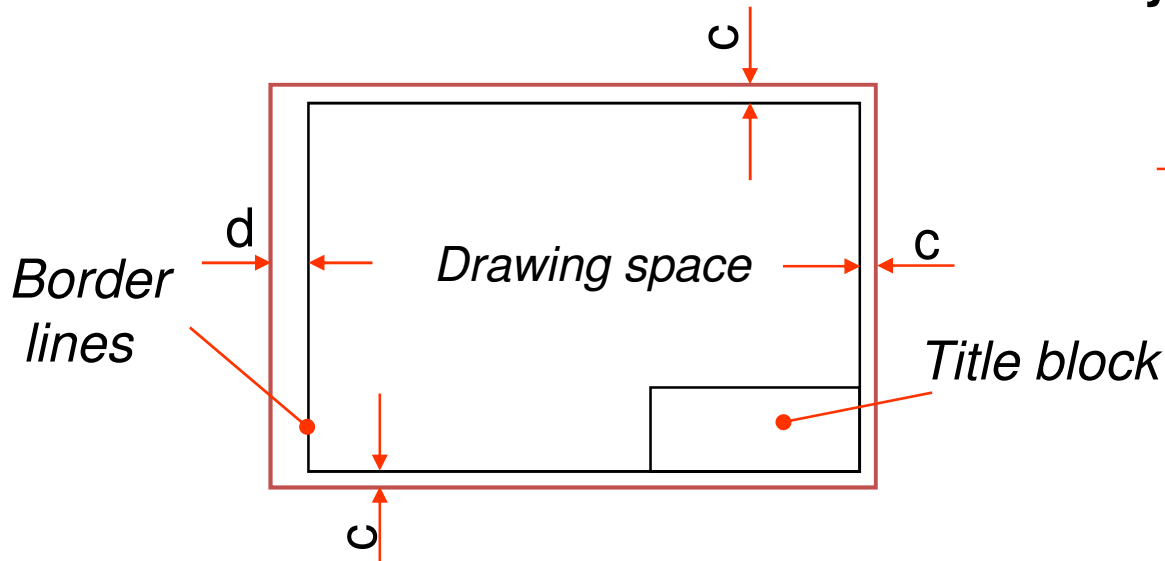
A4	210 x 297
A3	297 x 420
A2	420 x 594
A1	594 x 841
A0	841 x 1189

(Dimensions in millimeters)

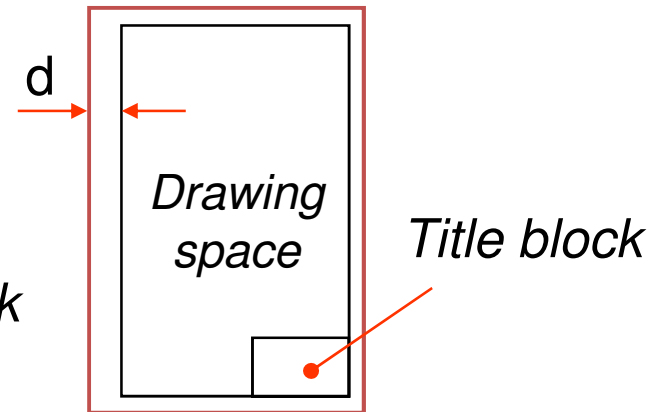


■ Orientation of drawing sheet

1. Type X (A0~A4)



2. Type Y (A4 only)



Sheet size	c (min)	d (min)
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A4	10	25
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A3	10	25
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A2	10	25
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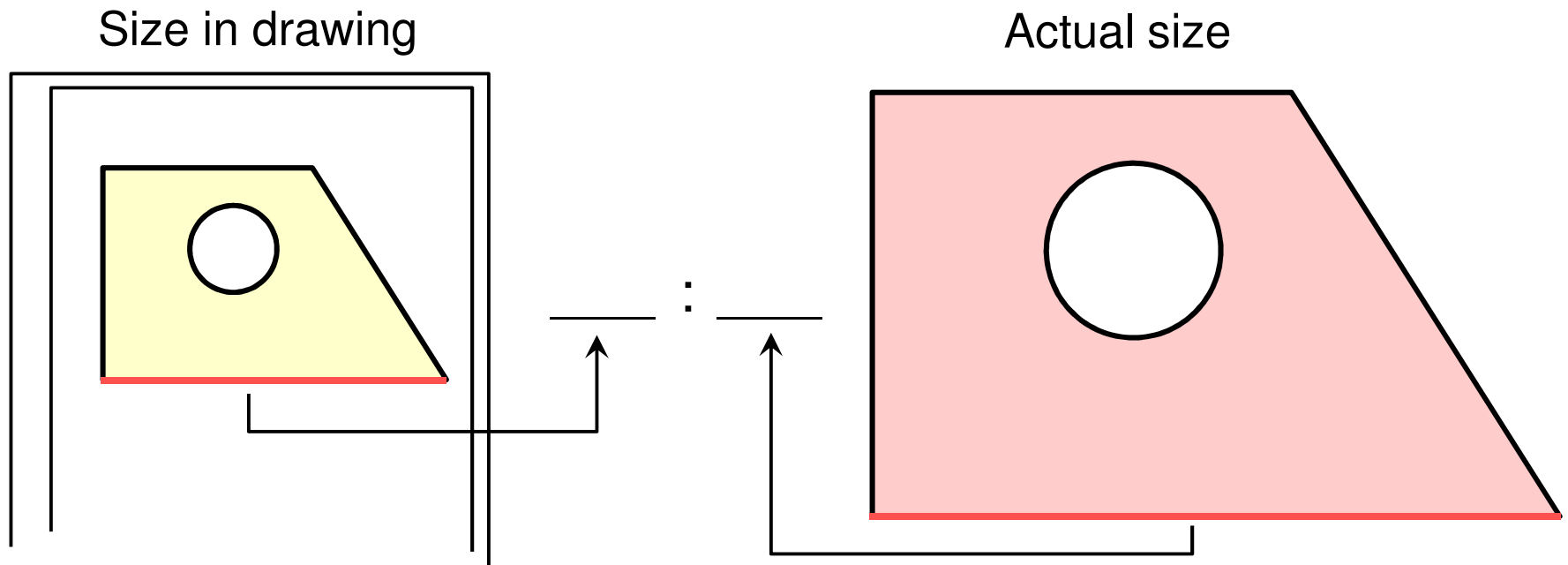
A1	20	25
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A0	20	25
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Drawing Scales

Length, size

Scale is the ratio of the linear dimension of an element of an object shown in the drawing to the real linear dimension of the same element of the object.



Drawing Scales

- Designation of a scale consists of the word “SCALE” followed by the indication of its **ratio**, as follow





SCALE 1:1 for full size

SCALE **X**:1 for **enlargement** scales ($X > 1$)

SCALE 1:**X** for **reduction** scales ($X > 1$)

- Dimension numbers shown in the drawing are correspond to “**true size**” of the object and they are **independent** of the scale used in creating that drawing.

Basic Line Types

Types of Lines	Appearance	Name according to application
Continuous thick line		Visible line
Continuous thin line		Dimension line Extension line Leader line
Dash thick line		Hidden line
Chain thin line		Center line

NOTE : We will learn other types of line in later chapters.

Meaning of Lines

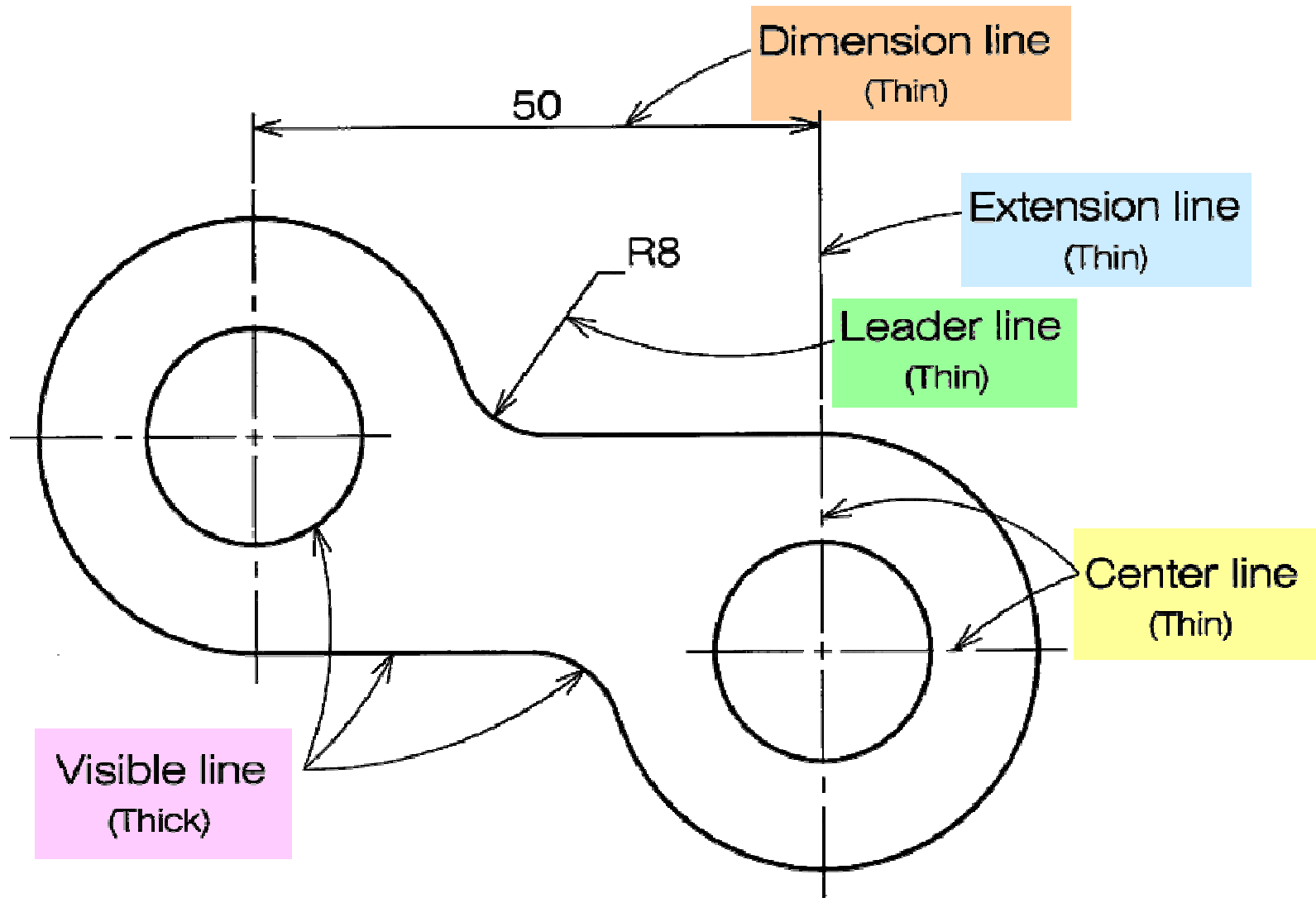
Visible lines represent features that can be seen in the current view

Hidden lines represent features that can not be seen in the current view

Center line represents symmetry, path of motion, centers of circles, axis of axisymmetrical parts

Dimension and Extension lines indicate the sizes and location of features on a drawing

Example : Line conventions in engineering drawing



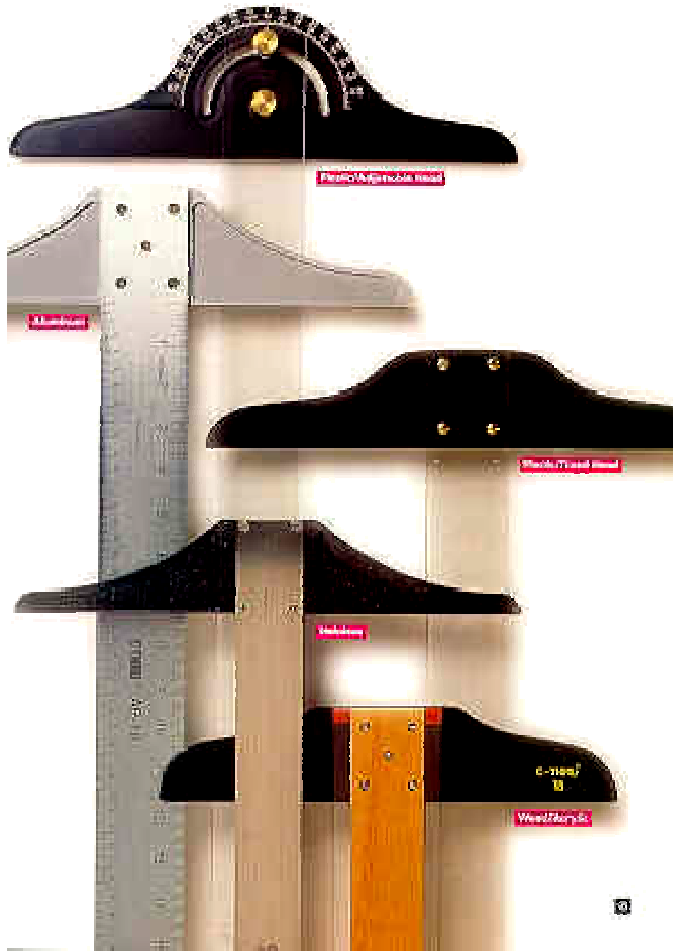
A collection of traditional architectural drawing tools, including a T-square, a set square, and a compass, are arranged on a background of a faded architectural blueprint. The blueprint features various room labels such as 'COURTYARD', 'HALLWAY', 'LARGE CLASSROOM', 'OFFICE', and 'NEEDS'. The tools are rendered in a dark, semi-transparent style, creating a layered effect over the blueprint. The T-square is positioned vertically on the left, the set square is in the center, and the compass is at the top right.

Traditional Drawing Tools

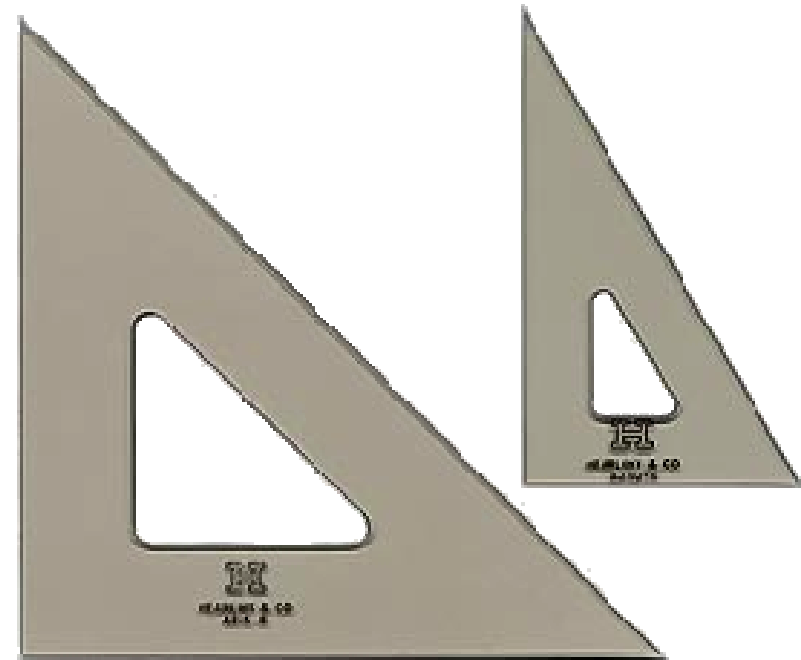
DRAWING TOOLS



DRAWING TOOLS



1. T-Square



2. Triangles

DRAWING TOOLS



3. Adhesive Tape



2H or HB for thick line
4H for thin line



4. Pencils

DRAWING TOOLS



5. Sandpaper

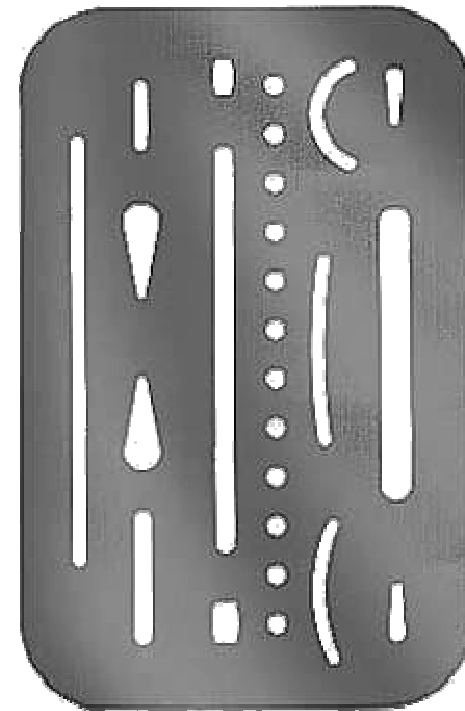


6. Compass

DRAWING TOOLS

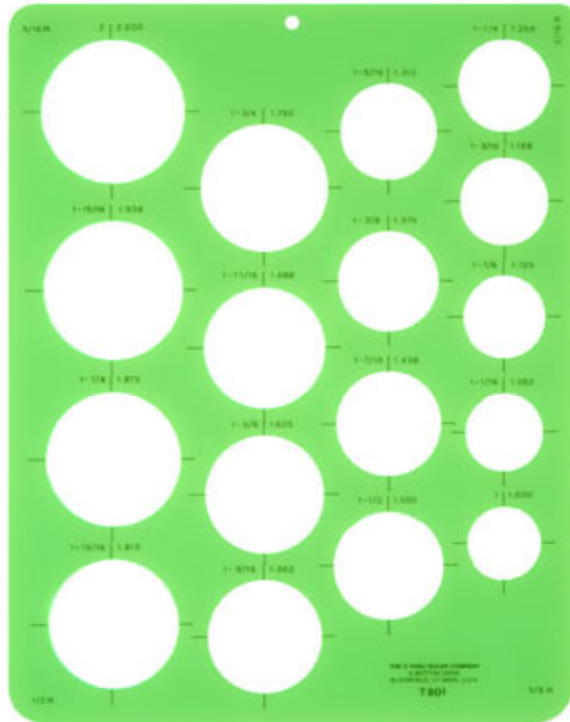


7. Pencil Eraser



8. Erasing Shield

DRAWING TOOLS



9. Circle Template

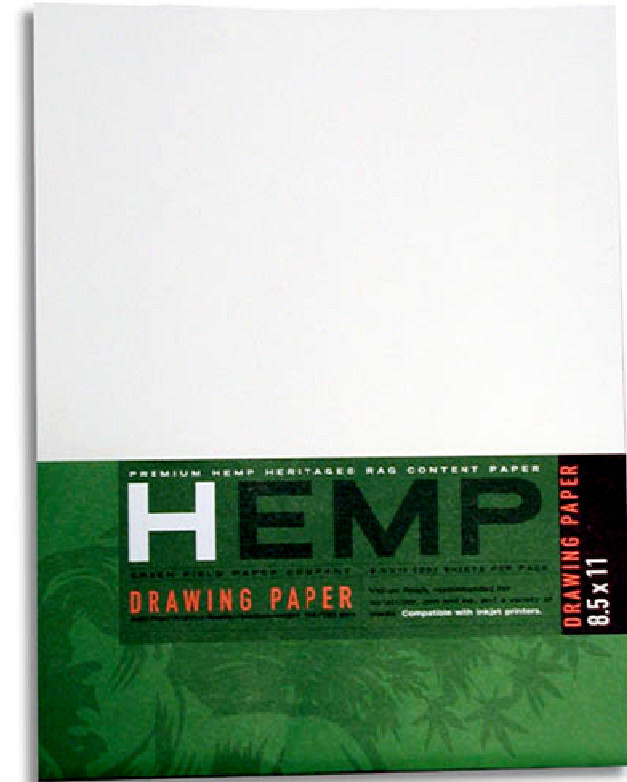


10. Tissue paper

DRAWING TOOLS



11. Sharpener



12. Clean paper

Text on Drawings

Text on engineering drawing is used :

- To communicate nongraphic information.
- As a substitute for graphic information, in those instance where text can communicate the needed information more clearly and quickly.

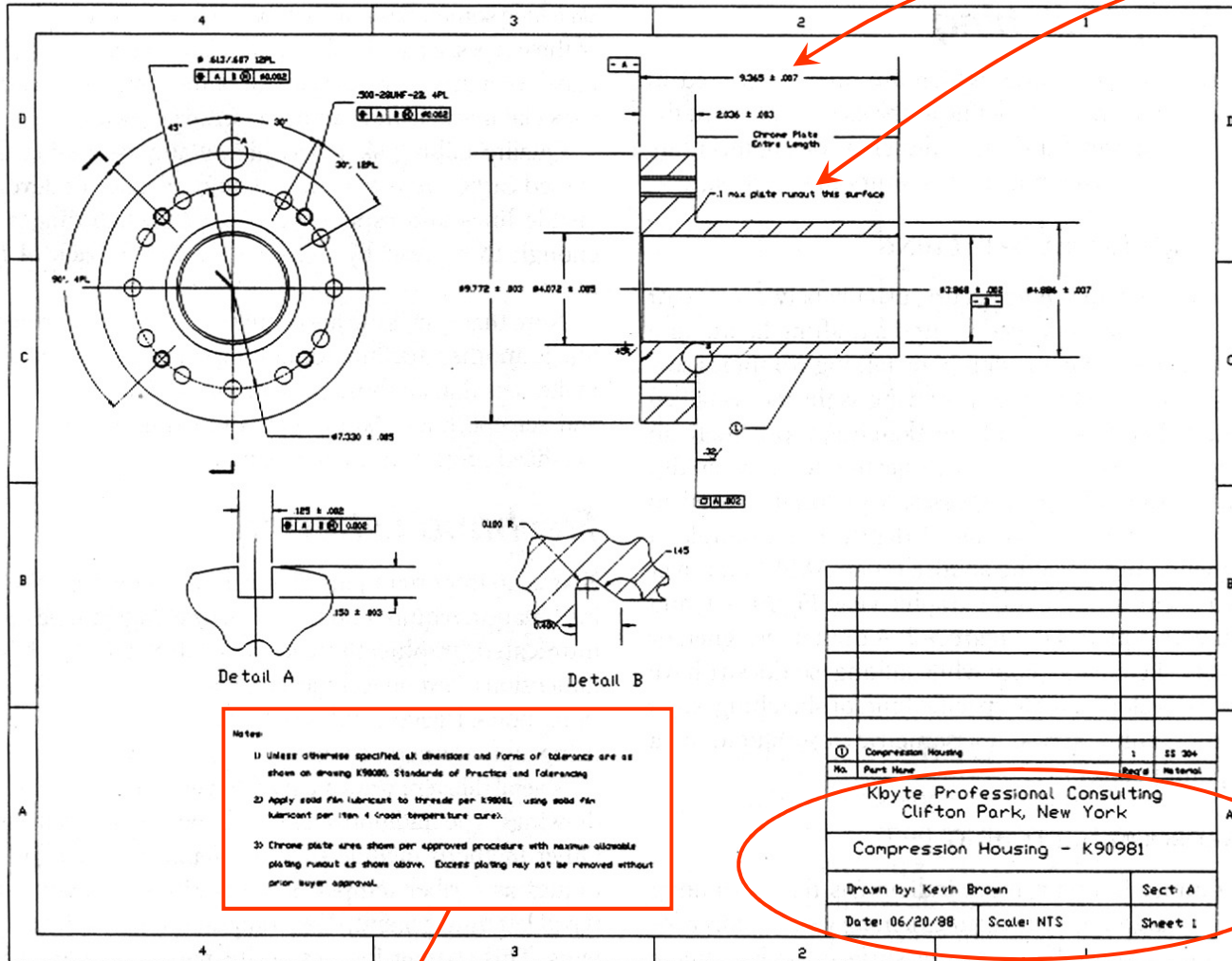
Thus, it must be written with

Legibility - shape
- space between letters and words

Uniformity - size
- line thickness

Example *Placement of the text on drawing*

Dimension & Notes



Notes

- Notes
- 1) Unless otherwise specified, all dimensions and forms of tolerance are as shown on drawing K90981, Standards of Practice and Tolerancing
 - 2) Apply gold film lubricant to threads per K90981, using gold film lubricant per item 4 (room temperature cure).
 - 3) Chrome plate area shown per approved procedure with maximum allowable plating runout as shown above. Excess plating may not be removed without prior buyer approval.

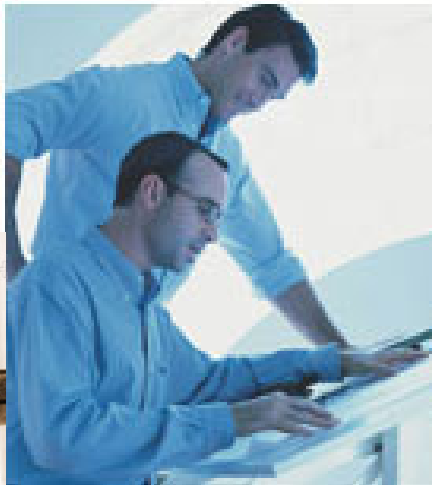
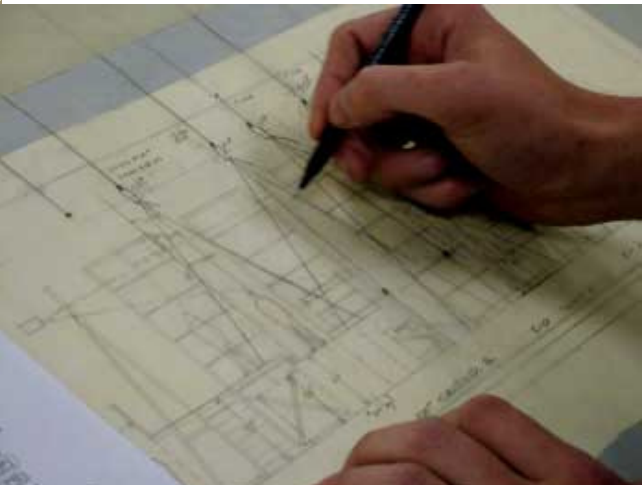
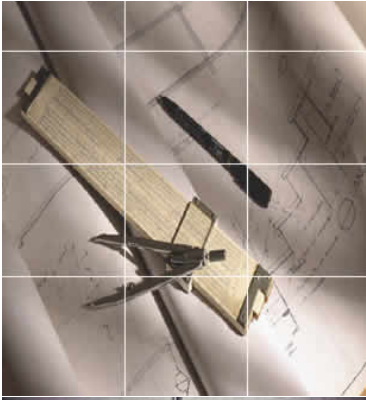
Title Block

① Compression Housing		1	SS 304
No.	Part Name	QTY	Material
Kbyte Professional Consulting Clifton Park, New York			
Compression Housing - K90981			
Drawn by: Kevin Brown		Sect: A	
Date: 06/20/88	Scale: NTS	Sheet 1	

Using Drawing Tools

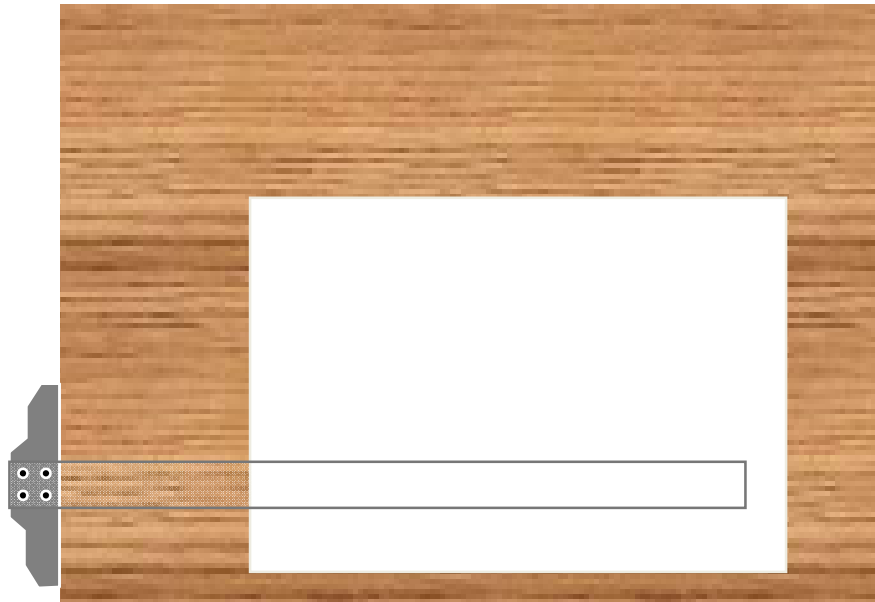


Preparation of Tools



Fastening Paper to Drafting Board

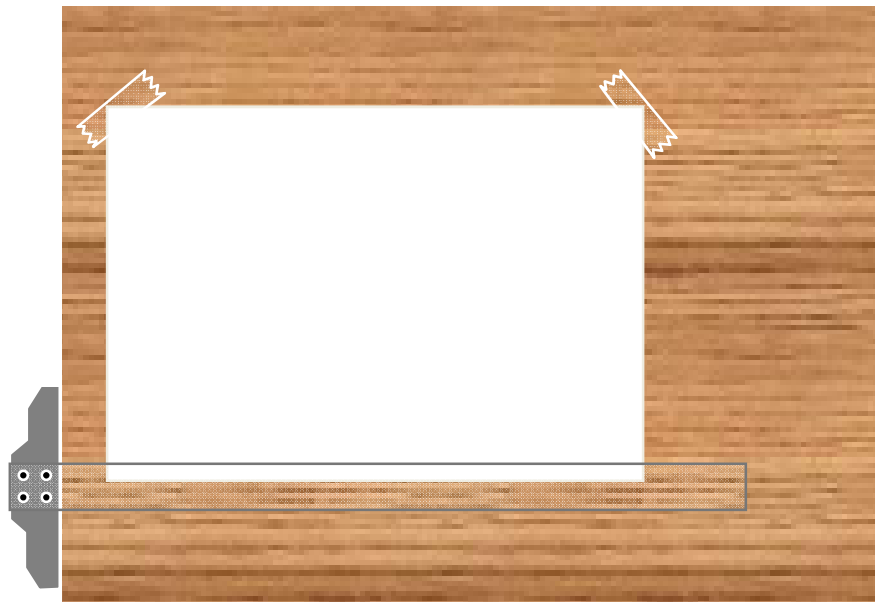
1. Place the paper close to the table's left edge.
2. Move the paper until its lower edge place about the top edge of T-square.



Fastening Paper to Drafting Board

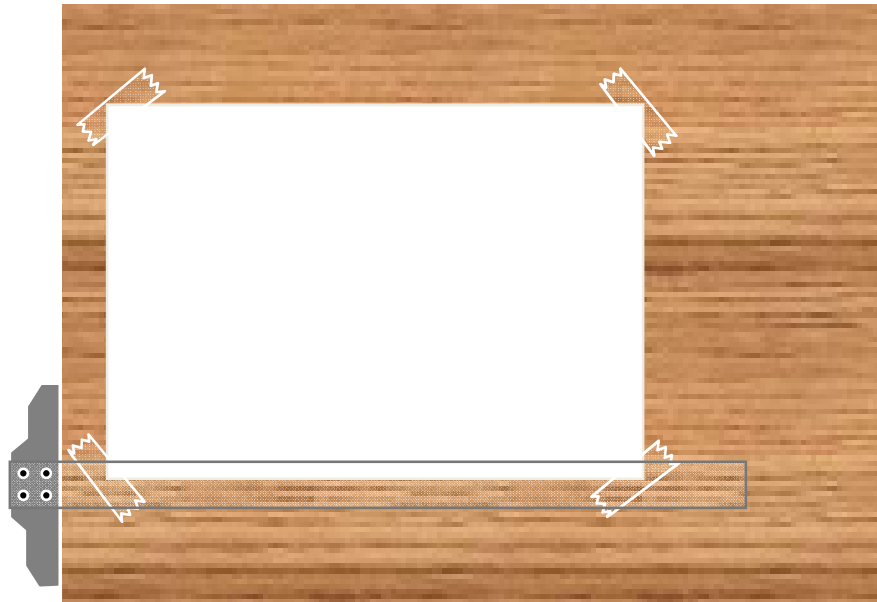
3. Align the top edge of the paper with T-square blade.

4. Attach the paper's corners with tape.



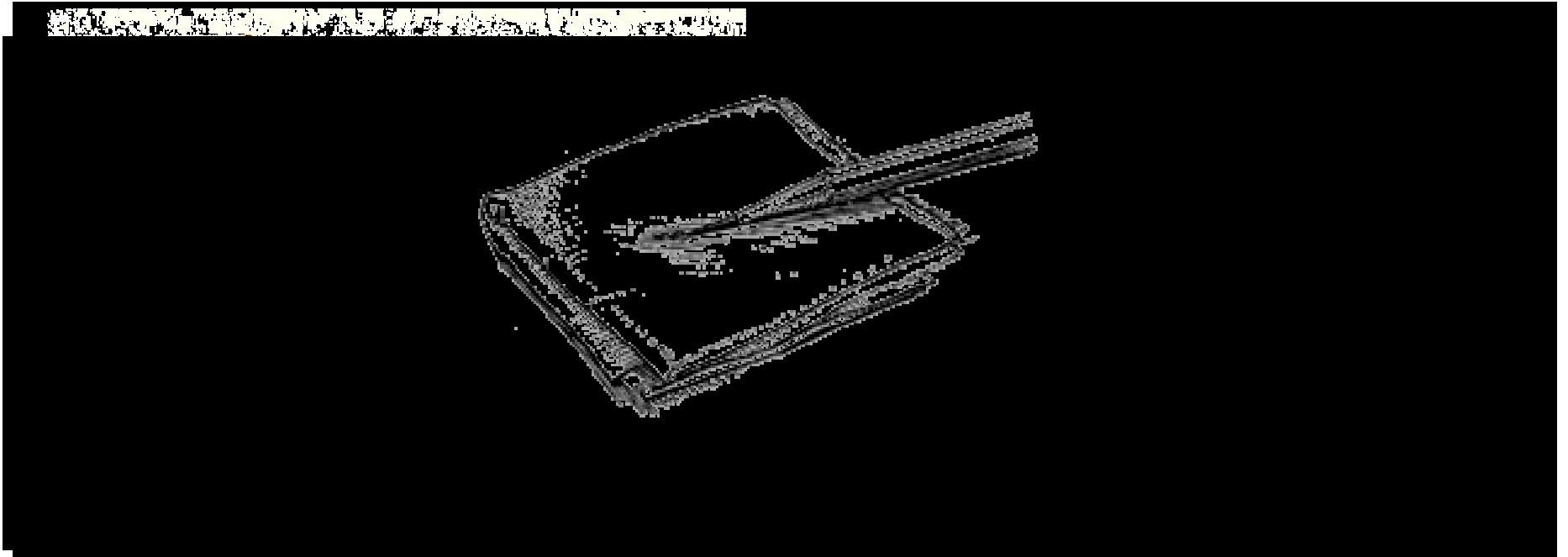
Fastening Paper to Drafting Board

5. Move T-square down to smooth the paper.
6. Attach the remaining paper's corners with tape.



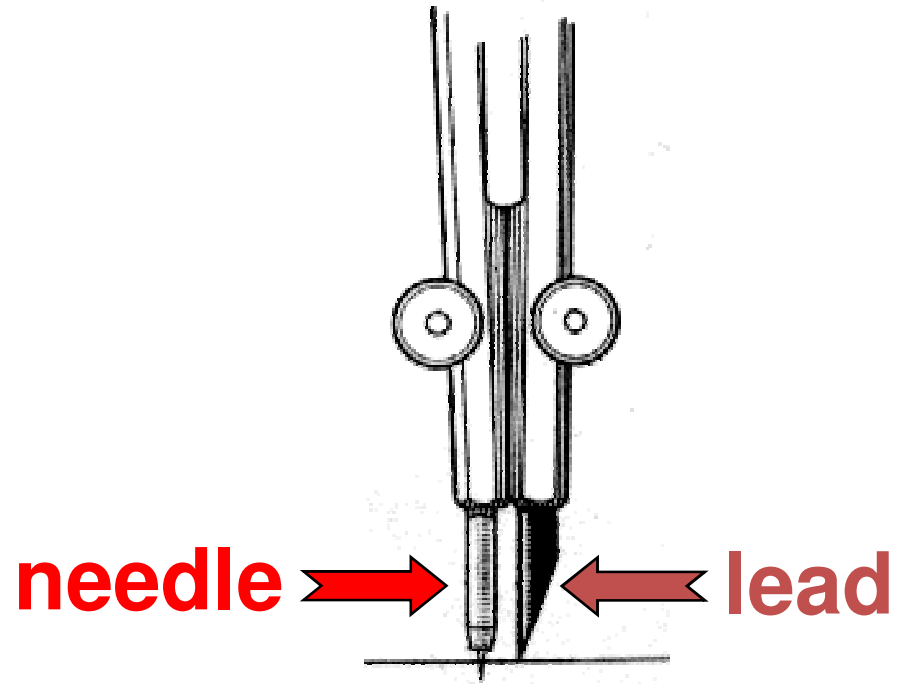
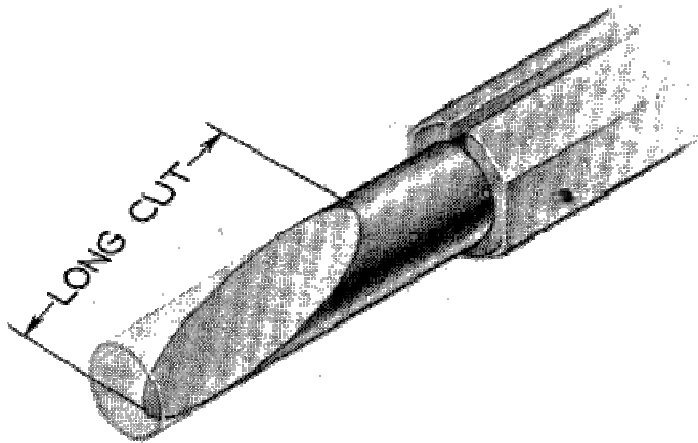
Sharpening the Pencil

1. Remove the wood with penknife while expose a lead about 8-10 mm.
2. Polish the lead into a conical shape with a sandpaper.
3. Clean the lead with tissue paper.



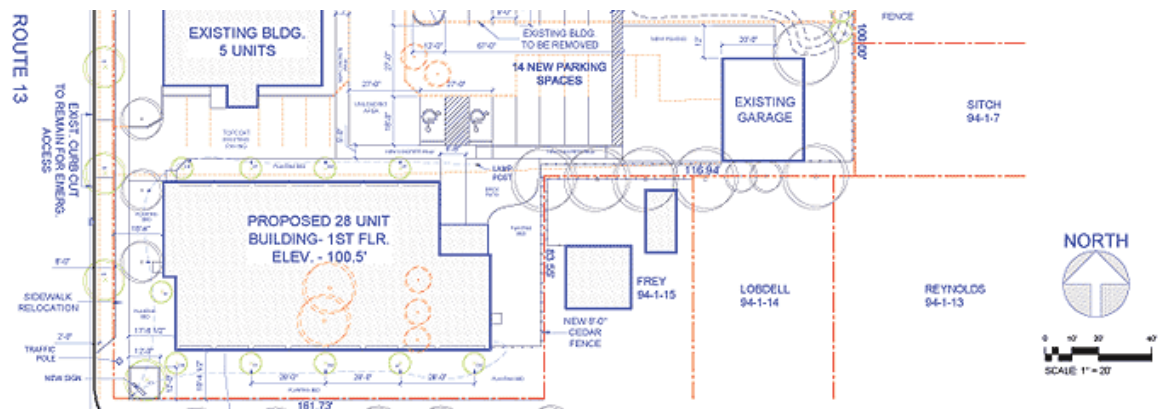
Preparing the Compass

1. Sharpen the lead with a sandpaper.
2. Adjust the **needle** and the **lead** so that the tip of the needle extends slightly more than the lead.





Using the Tools



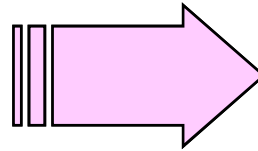
Function of the Tools

Tools

Shape to be drawn

1. T-square

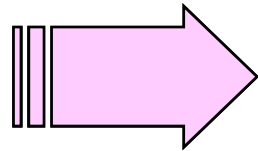
2. Triangles



Straight line

3. Compass

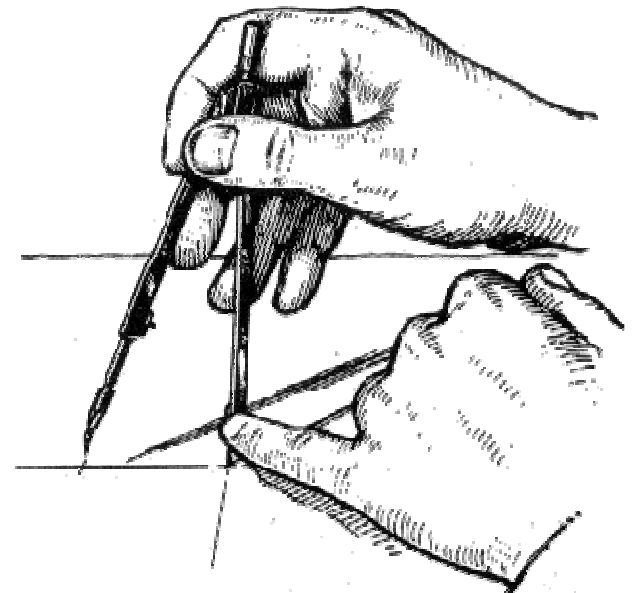
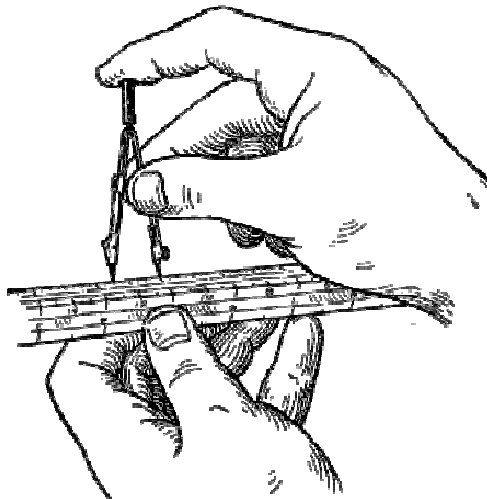
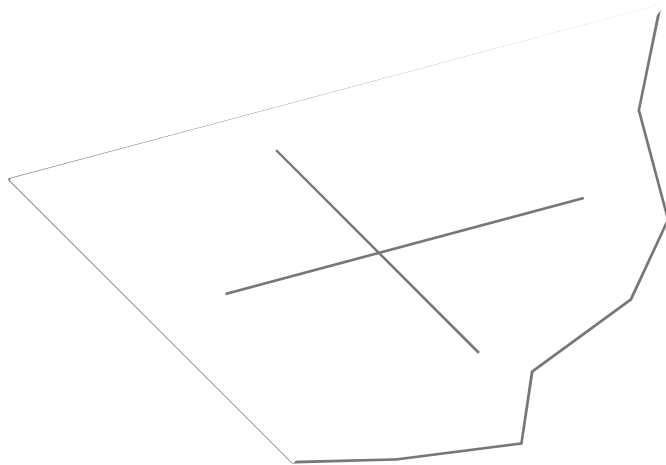
4. Circle template



Arc, Circle

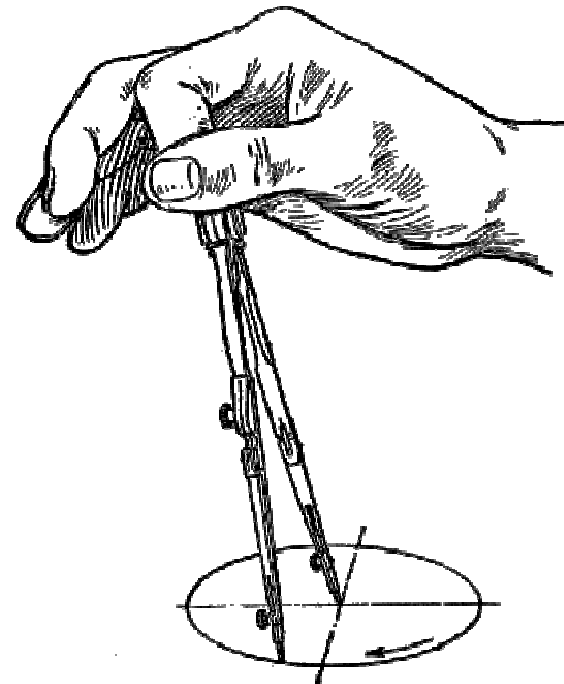
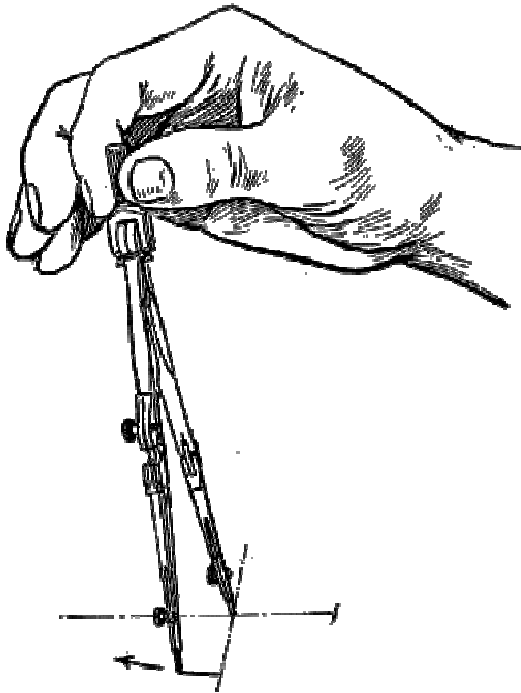
Using the Compass

1. **Locate the center** of the circle by two intersecting lines.
2. Adjust the distance between needle and lead to a distance equal to radius of the circle.
3. Set the needle point at center.



Using the Compass

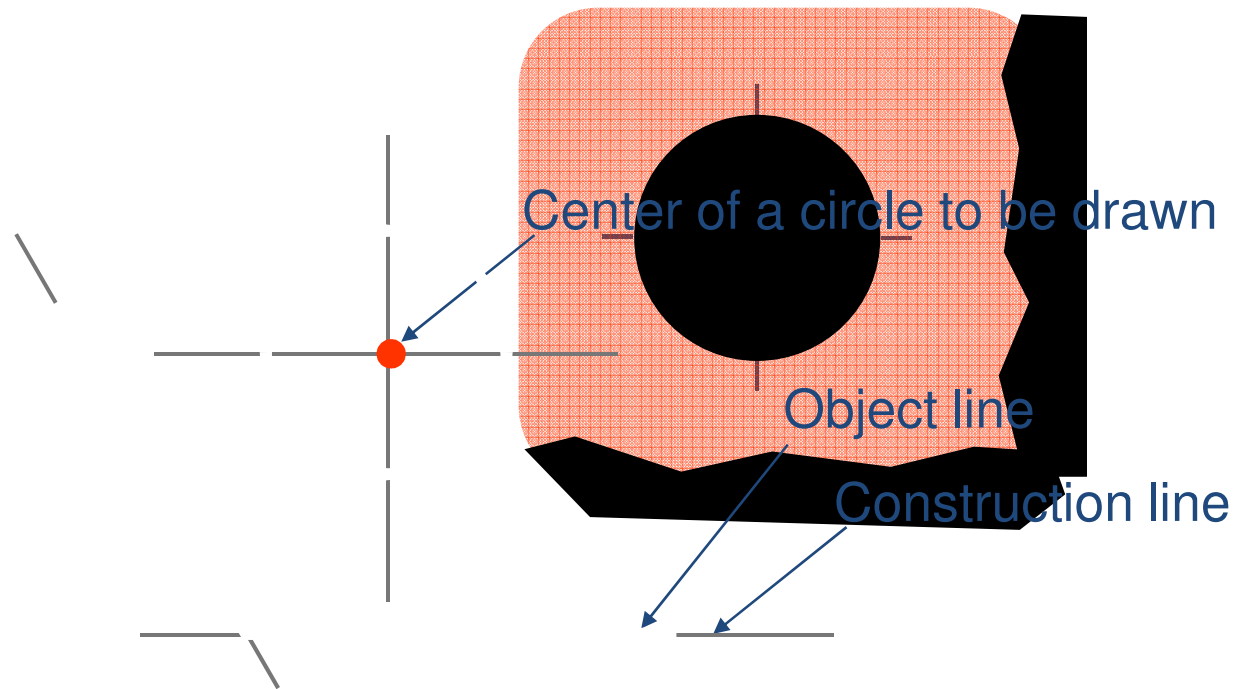
4. **Start circle.** Apply enough pressure to the needle, holding compass handle between thumb and index fingers.
5. **Complete circle.** Revolve handle clockwise.



Using a Circle Template

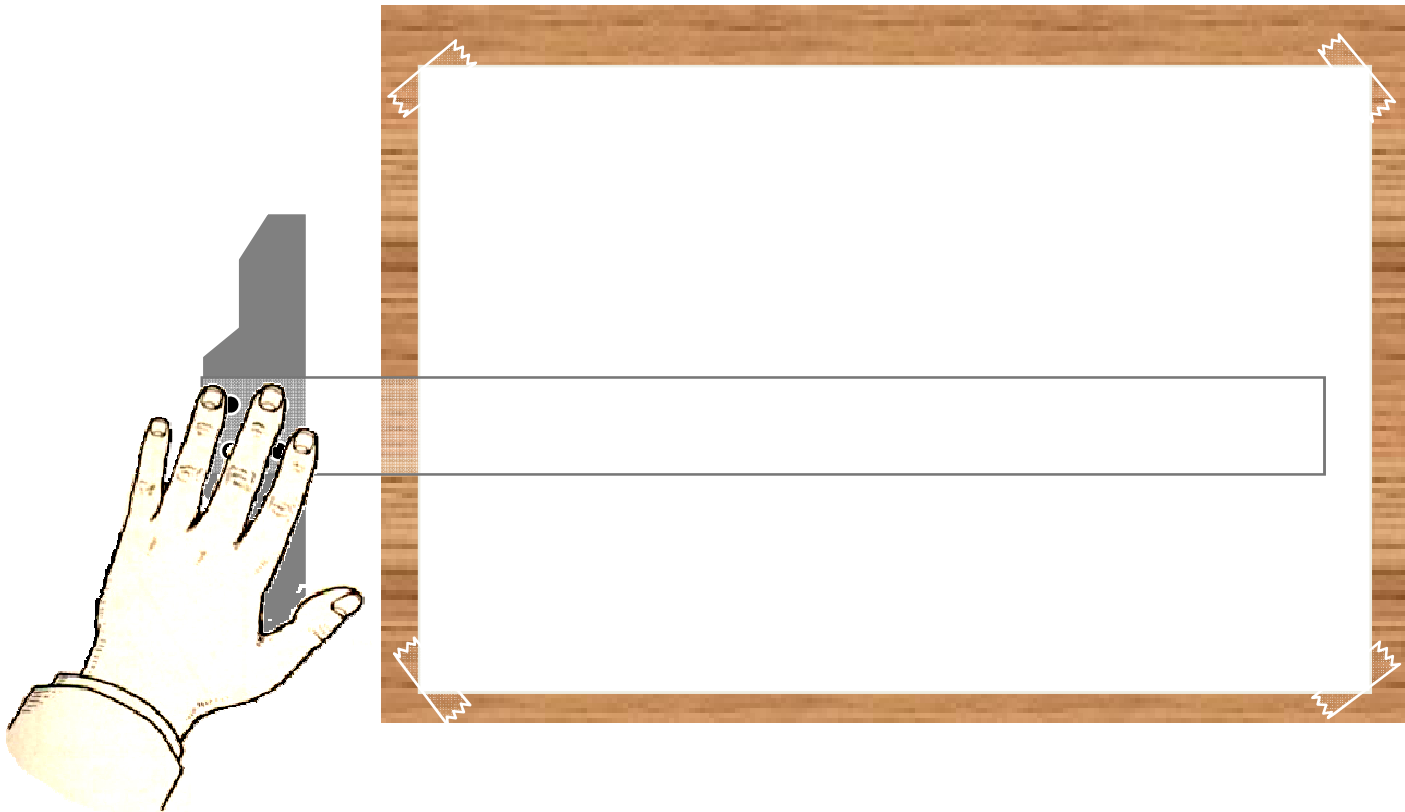
1. Draw two perpendicular lines that pass through center of a circle to be drawn.
2. Place the template till all marking coincide with center lines.
3. Tracing the circle. (Hold the pencil normal to the paper.)

Given



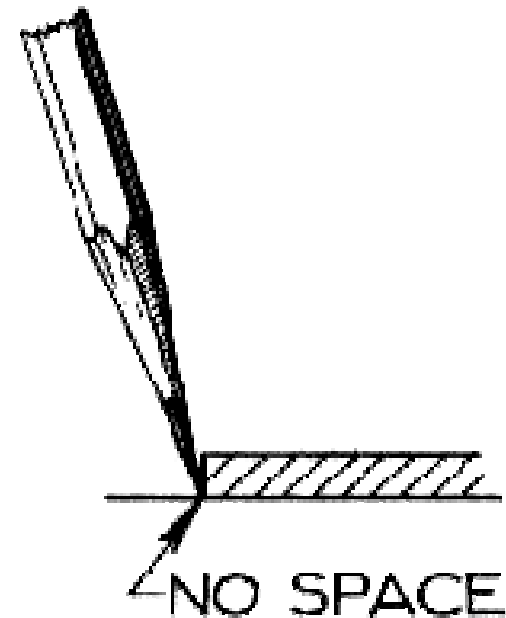
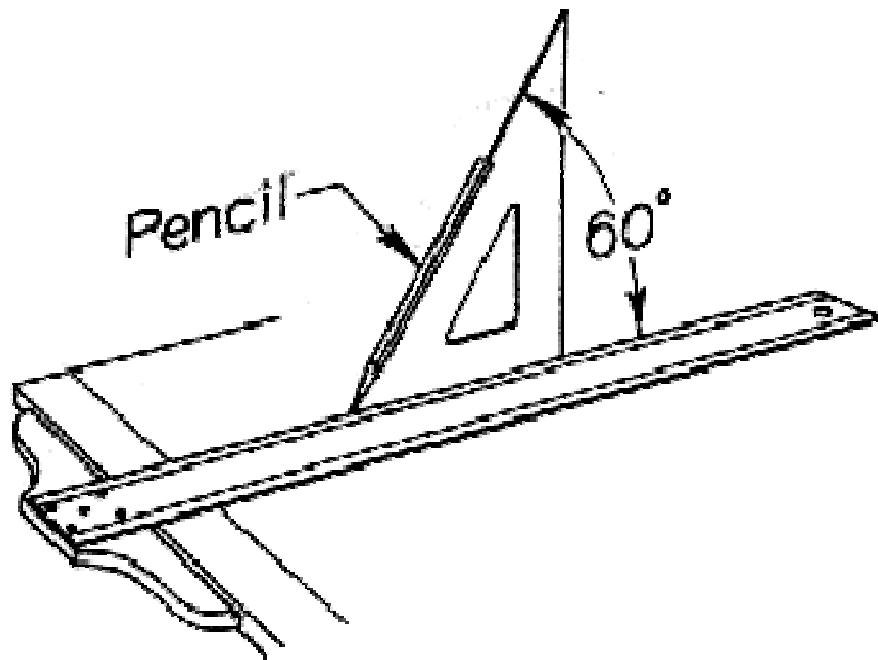
Draw a Horizontal Line

1. Press the T-square head against the left edge of the table.
2. Smooth the blade to the right.



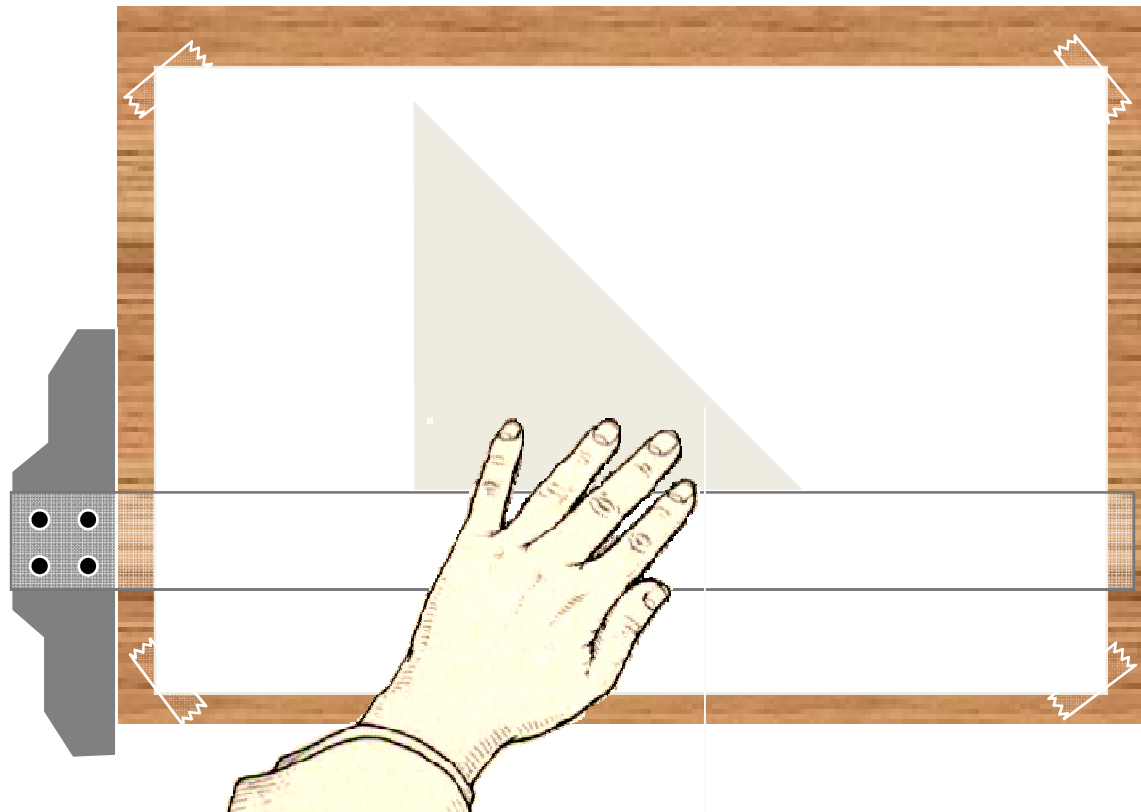
Draw a Horizontal Line

3. Lean the pencil at an angle about 60° with the paper in the direction of the line and slightly “toed in”.
4. Draw the line from left to right while **rotating the pencil slowly**.



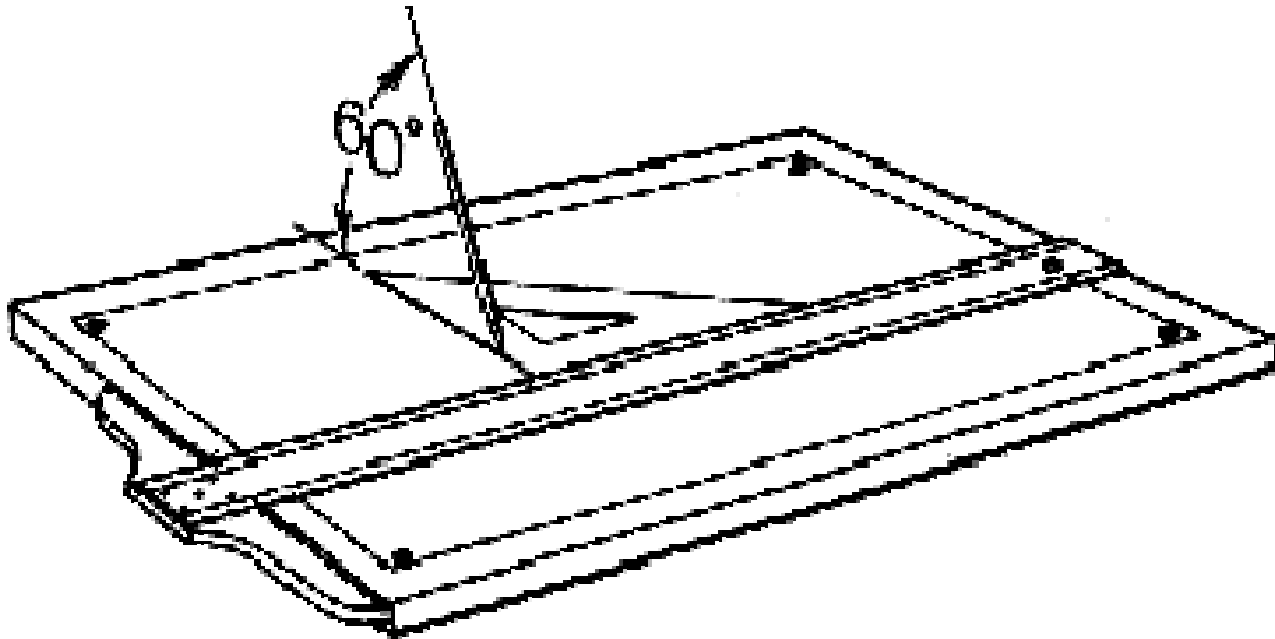
Draw a Vertical Line

1. Set T-square as before. Place any triangle on T-square edge.
2. Slide your left hand to hold both T-square and triangle in position.



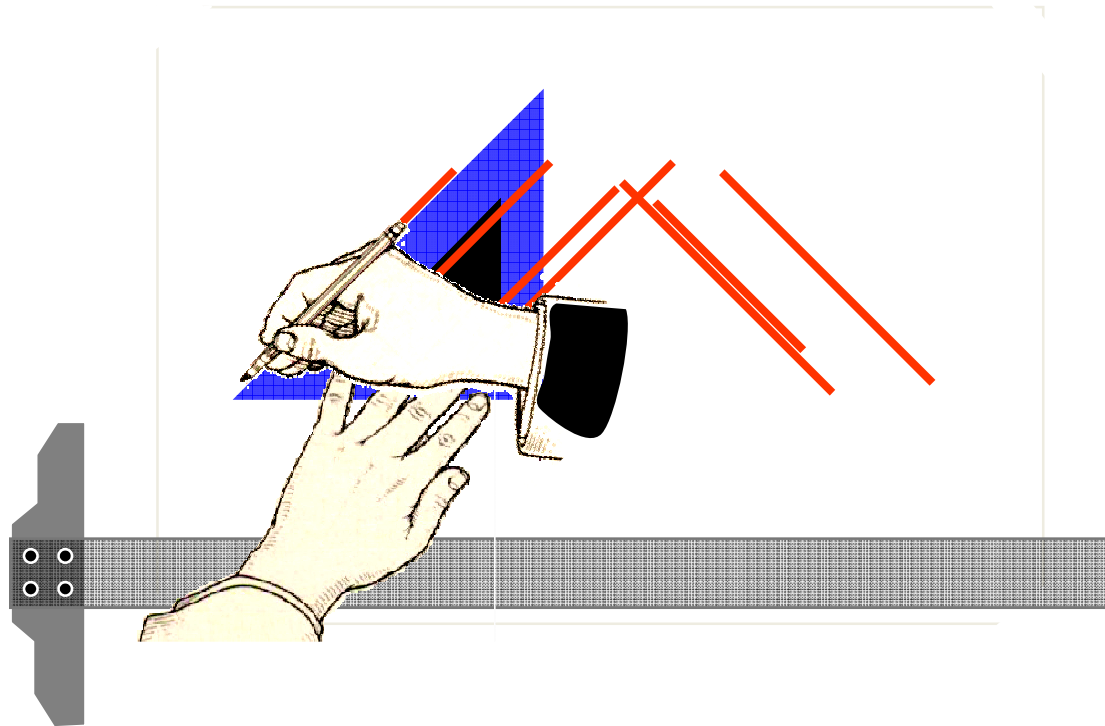
Draw a Vertical Line

3. Lean the pencil to the triangle.
4. Draw the line upward while **rotating the pencil slowly**.



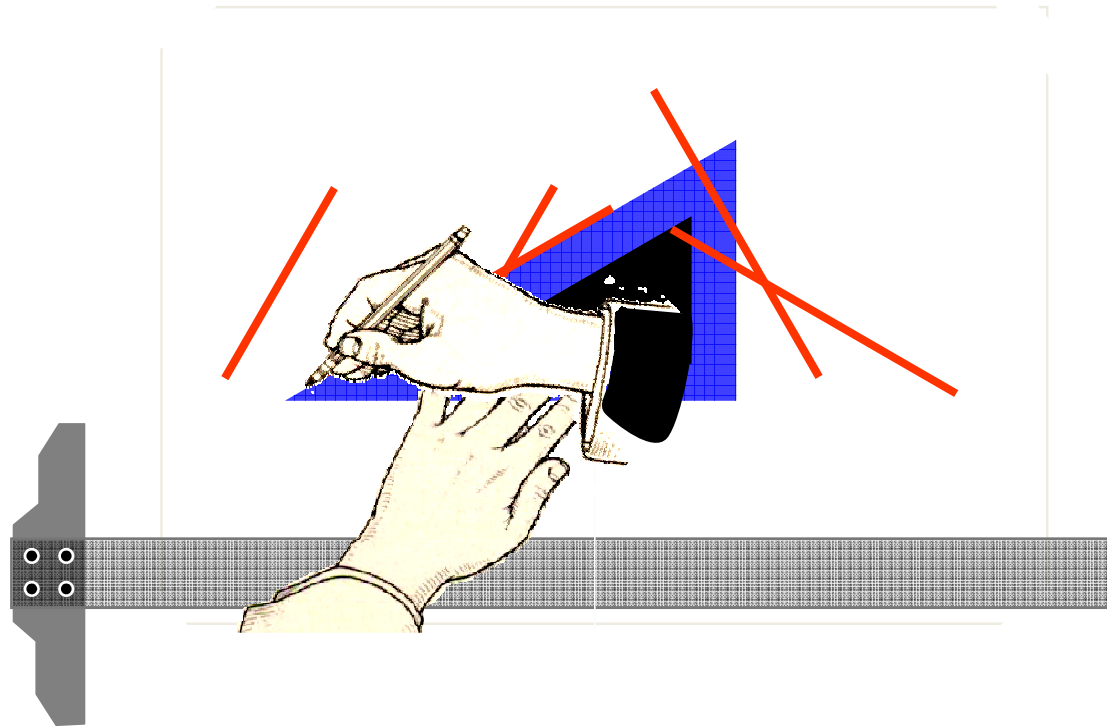
Draw a line at 45° with horizontal

1. Place 45° triangle on the T-square edge and press them firmly against the paper.
2. Draw the line in the direction as shown below.



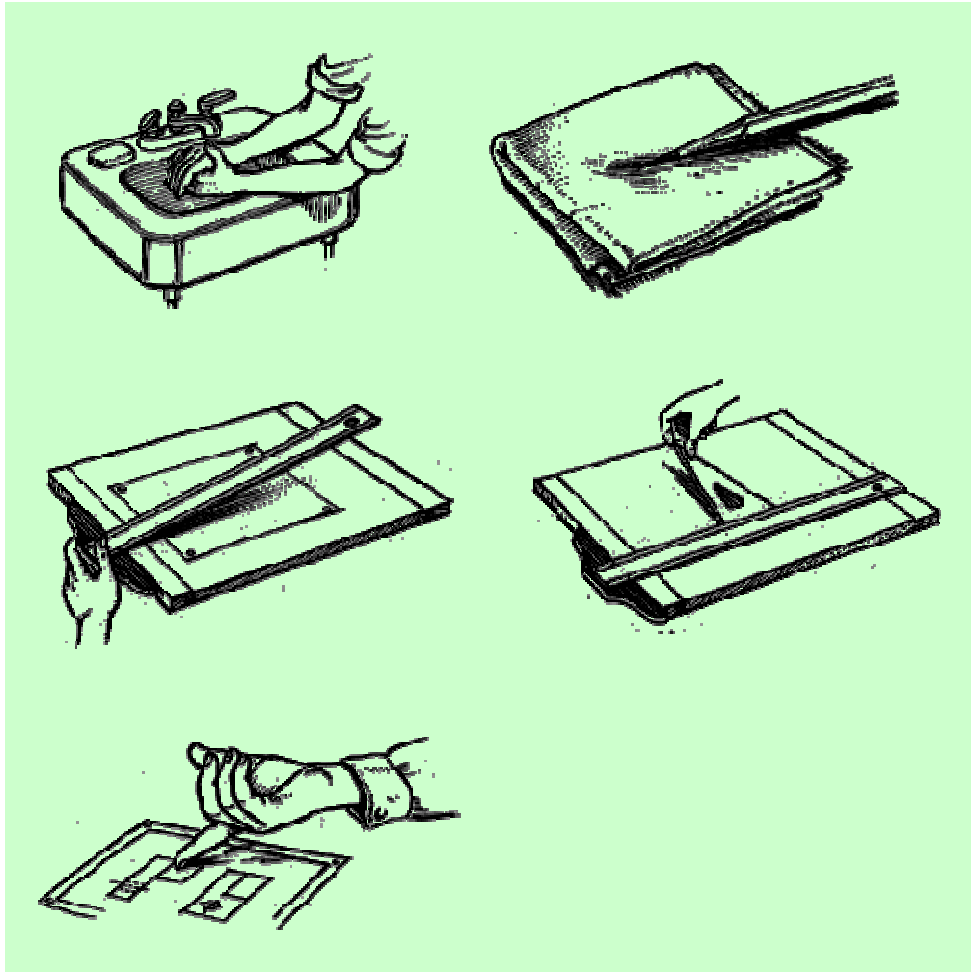
Draw a line at angle 30° and 60°

1. Place 30°-60° triangle on the T-square edge and press them firmly against the paper.
2. Draw the line in the direction as shown below.



How to Keep Your Drawing Clean

Do



Don't

