

# Drafting First Year

## Module 1 Pick Your Tool ...

### *Drafting Tools, Instruments and Equipment*



#### *What this module is about*

In any kind of work, certain tools and equipment are needed to help you work easily and fast. In this module, you will know what drafting tools, instruments and equipment are and how these can help you in the field of drawing.

Drafting is a subject that develops both your manipulative and intellectual abilities. Manipulative, because you will be trained how to hone your skills in handling the tools and instruments in drawing. Intellectual, because the subject will develop your creativity in interpreting the illustrations that you will draw later on.

So, pick your tool. Learn how to use it and I will be with you as you journey through the pages of this module.



#### *What you are expected to learn*

This module will enable you to:

1. identify the common drafting tools, instruments and equipment;
2. explain the uses, proper care of tools, instruments and equipment in drafting; and
3. use the basic drafting tools and instruments correctly.



#### *How to learn from this module*

1. Read and understand the module very well.
2. Follow directions accurately.
3. Perform every activity exercises in each lesson.
4. Answer the self-check exercises as honestly as you can.
5. Use appropriate vocabulary to understand the lessons in this module.

Terms	Meaning
1. tool	: an implement for manual use
2. instruments	: devices for drawing, like the compass and divider
3. equipment	: large tools for drawing
4. drafting	: a subject in TLE that dwells on lines and its uses in industry
5. drawing	: sketching, freehand or mechanical
6. fasten	: attach

6. Answer the pretest and posttest before proceeding to the first lesson.



### PRETEST

I. Multiple Choice: Choose the letter corresponding to the best answer. Write the letter of your answer on the space before each number.

\_\_\_\_\_ 1. Which among these tools is used for drawing horizontal lines?

- a. triangle
- b. protractor
- c. ruler
- d. t-square

\_\_\_\_\_ 2. If drawing inclined lines, what tool is best used?

- a. protractor
- b. divider
- c. triangle
- d. ruler

\_\_\_\_\_ 3. What grade of pencil is used for mechanical drawing?

- a. B
- b. F
- c. H
- d. HB

\_\_\_\_\_ 4. What should you do before starting to draw?

- a. prepare all tools
- b. clean the drawing table
- c. sharpen the pencil
- d. fasten the drawing paper

\_\_\_\_\_ 5. Which of the following is used for drawing circles and arcs?

- a. protractor
- b. French curve
- c. compass
- d. divider

\_\_\_\_\_ 6. Which is used for inking straight lines?

- a. ruling pen
- b. guill pen
- c. speedball pen
- d. fountain pen

\_\_\_\_\_ 7. If you want to get the accurate angle measurement which of the following should be used?

- a. compass
- b. triangles
- c. protractor
- d. ruler

\_\_\_\_\_ 8. Which of the following is considered a smooth, flat surface where you fasten the drawing pages?

- a. drawing table
- b. dining table
- c. study table
- d. center table


\_\_\_\_\_ 9. Which part of the compass is where you place your thumb and forefinger for turning?

- a. nib
- b. legs
- c. head
- d. handle


\_\_\_\_\_ 10. A tool used to draw irregular curve lines is

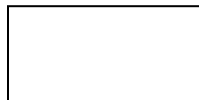
- a. triangle
- b. divider
- c. compass
- d. French curve

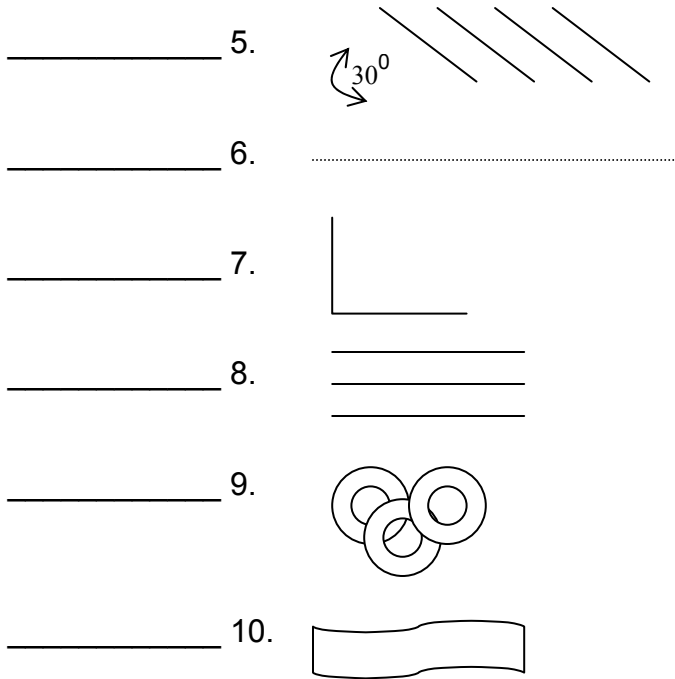
II. Identify the tools used in drawing each of the following lines and figures:

\_\_\_\_\_ 1. 

\_\_\_\_\_ 2. 

\_\_\_\_\_ 3. 

\_\_\_\_\_ 4. 



## Lesson 1

### Common Drafting Tools, Instruments and Equipment

You are about to start learning the most common tools in drafting. These tools will make you draw easier and faster. Try your best to know these tools by heart because you will use them in your activities after this lesson.

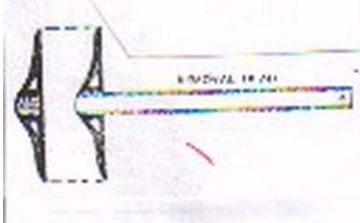


1. The pencil is considered the most important tool of a draftsman. A draftsman is person who draws plans for architect or engineers. You cannot start your drawing without a pencil. There are three (3) grades of pencils as shown in the table below:

Grade	Symbol	Uses
1. Hard	H	Mechanical Drawing like plans of building & house
2. Medium		Lettering
3. Soft		Freehand sketching like charcoal rendering

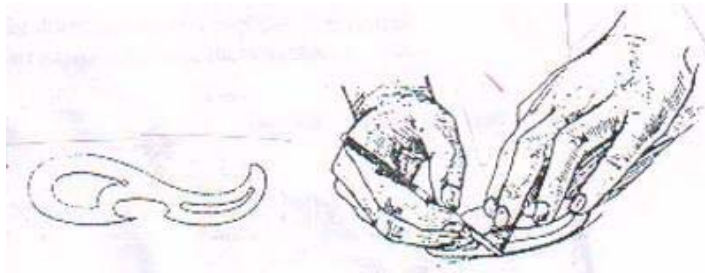
**Trivia:**

Mechanical Drawing – a type of drawing which uses drawing tools and instruments  
 Freehand Drawing – a type of drawing which does not use any tool or equipment

2. Triangles are used for drawing vertical and inclined lines with the aid of a t-square. There are two kinds of triangles 30 x 60 and 45 x 45.
3. T-square is a drawing tool that is used for drawing horizontal lines only. The head of the T-square is always anchored at the left side of the drawing table.

Removable Head	Fixed Head	Adjustable Head
		

4. French curve is a tool used for drawing irregular curve lines. It is made of celluloid material and can be bought in art supplies shops just like the triangles.



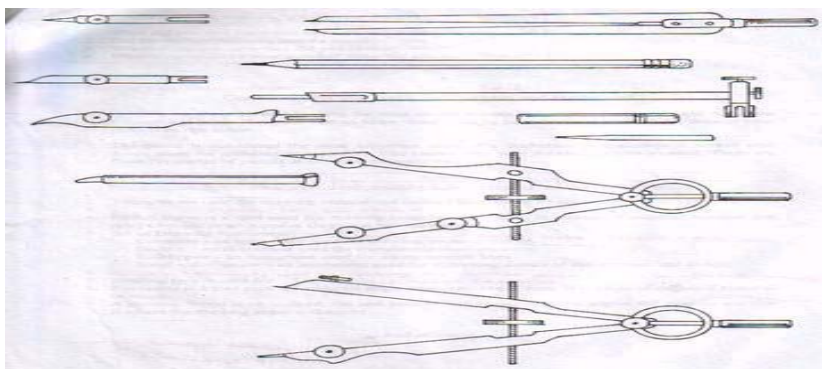
5. Set of Drawing Instruments

Compass – an instrument used for drawing circles and arcs.

Divider – an instrument used for transferring measurements.

Ruling pen – an instrument used for inking straight lines.

Small screwdriver – an instrument used for tightening screws of the compass and divider.



6. Eraser – instrument used for rubbing off mistakes drawn.
7. Drafting tape is used for fastening the drawing paper on the drawing board. The most commonly used tape is the masking tape for it does not destroy the surface of the paper.
8. Protractor is a tool used for accurate angle measurement of lines. It is made of celluloid material or metal.
9. A drawing board is an inclined, flat and smooth surface. Its sides are angled 90° degrees and this is where the drawing paper is fastened.

### Activity 1

Go to the nearest art or engineering supply store. Ask the saleslady to help you identify the different tools, instruments and equipment used in drafting or drawing. List the current price of each instrument and equipment.

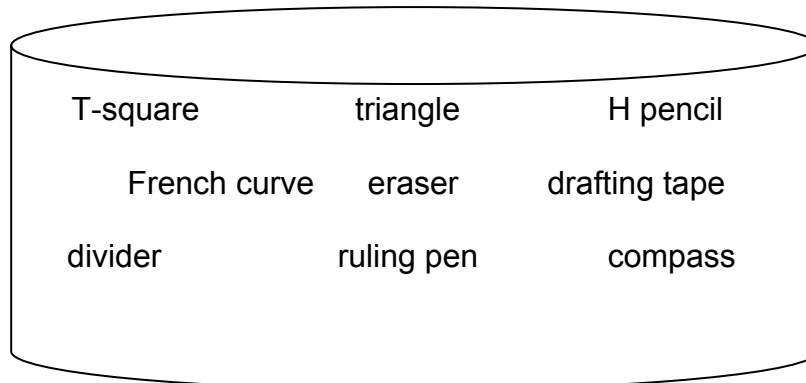
### Activity 2

Visit an architectural or engineering student in your neighborhood. Interview him/her about the different tools, instruments and equipment he uses. Ask him/her to show you how each tool is used.



Self-check:

Choose the correct answer from the word pool below:



- \_\_\_\_\_ 1. The instrument used for drawing circles and arcs.
- \_\_\_\_\_ 2. The instrument used for transferring measurements.
- \_\_\_\_\_ 3. The tool used in drawing horizontal lines.
- \_\_\_\_\_ 4. The tool used in drawing vertical lines.
- \_\_\_\_\_ 5. The best tape for fastening the drawing paper on the drawing board.

## Lesson 2

### Proper Care of Drafting Tools and Equipment

As a drafting student, you should know how to take good care of your tools, instruments and equipment to utilize them for a long time and to serve you better. You must be responsible in handling them properly. Below is the list of do's and don'ts on the proper care of drafting tools, instruments and equipment.

DO'S	WHY
1. Wipe the top of your drawing board before starting to work.	1. A clean table serves a clean drawing paper.
2. Check and clean your tools before and after using them.	2. A clean tool does not smear your drawing.
3. Keep your pencil points sharp at all times.	3. A sharp pencil produces sharp and neat lines.
4. Use tools only for the purpose they are made.	4. Every tool has its purpose.
5. Store your tools in a dry, clean and safe place.	5. A dry, clean and safe place extends the life and service of your hand tools.

DON'TS	Why
1. Do not use the edge of the T-square and triangles as guide in cutting paper.	1. It will break the edge of these tools and they will not help produce straight lines.
2. Do not sharpen your pencil on top of your workplace.	2. The granite might contaminate the drawing paper. It will make the surface dirty.
3. Do not bite the lead of your pencils.	3. Lead is poisonous. It retards the brain.
4. Do not drop the compass and ruling pen and divider.	4. It might cause a nick on the ribs of the instruments.
5. Do not erase on surfaces and spaces without mistakes.	5. A surface rubbed by an eraser tends to ink bleed and smear.

### Activity 3

On a short bond paper follow the format below and make your stand on what to do and not to do with your drafting tools and instruments by listing the DO's and DON'Ts on its proper corner.

## Make a Stand!

What to Do
How to take care of my tools and instruments
What Not to Do



### Self-check

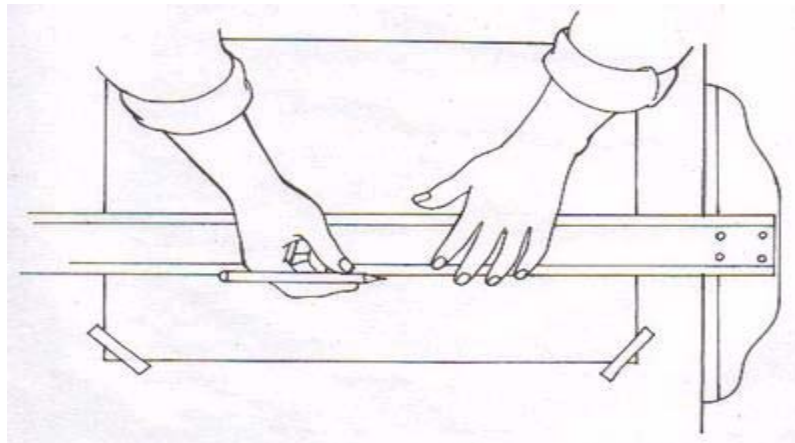
Write **C** if the statement is correct, and **W** if wrong.

- \_\_\_\_\_ 1. Keep your pencil points sharp at all times.
- \_\_\_\_\_ 2. Always store tools in dry, clean and safe place.
- \_\_\_\_\_ 3. You can use the t-square as guide in cutting paper.
- \_\_\_\_\_ 4. Sharpen your pencil on top of your workplace.
- \_\_\_\_\_ 5. Wipe the top of your drawing board before starting to work.

## Lesson 3

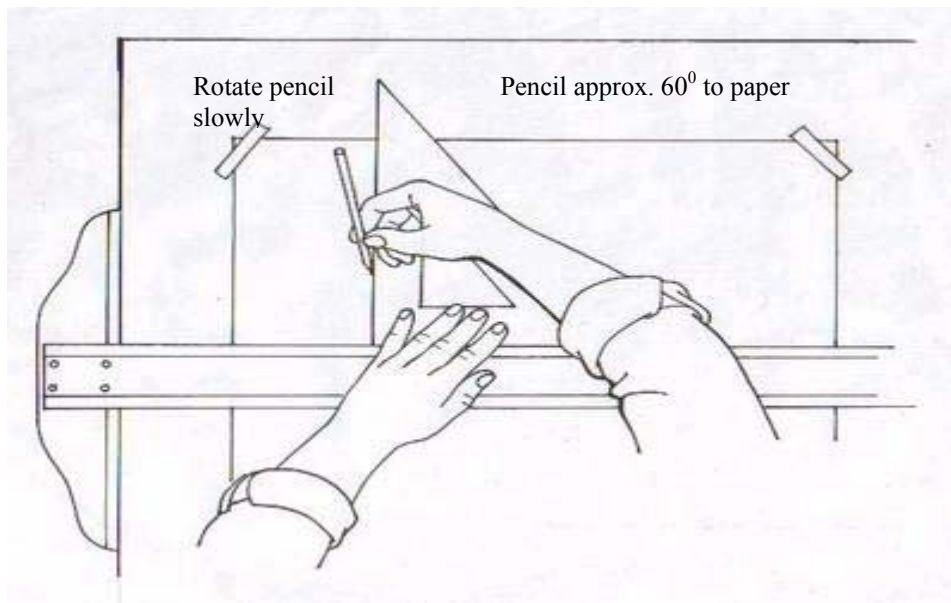
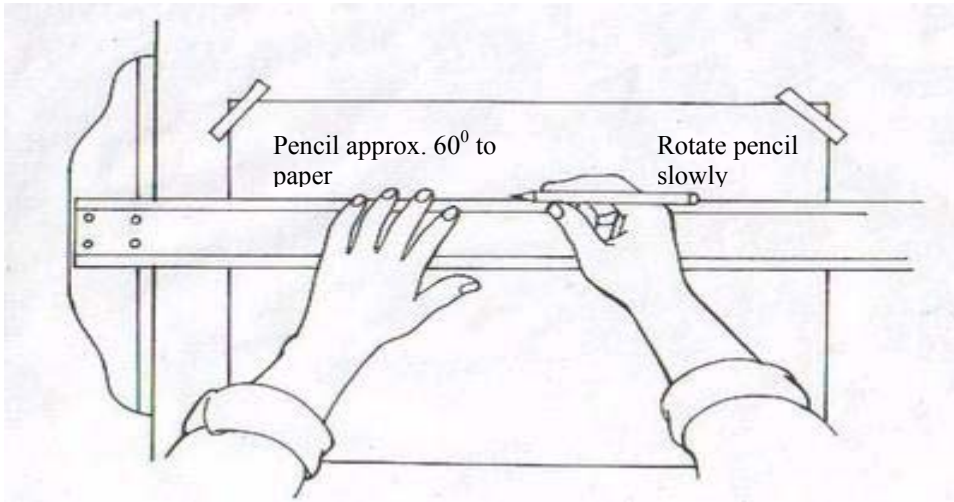
### How to Use Drafting Tools, Instruments and Equipment Correctly

There are certain ways of using drawing tools and instruments properly. As drafting student, you should be able to master these techniques. Proper use and care of each tool, instrument and equipment are vital to your work.

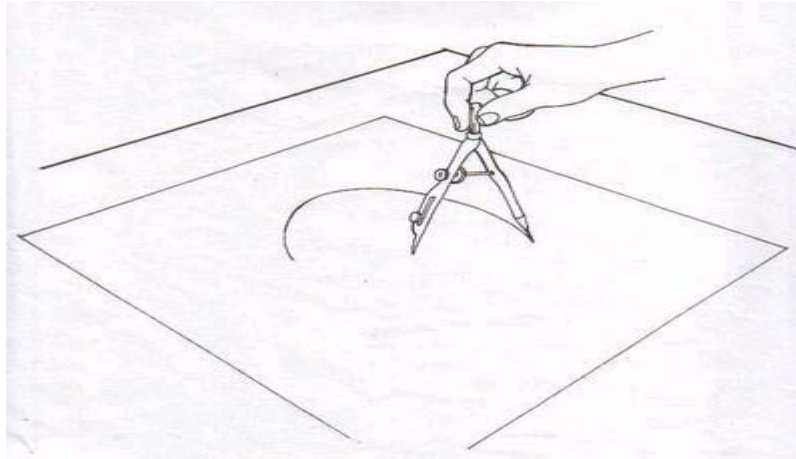




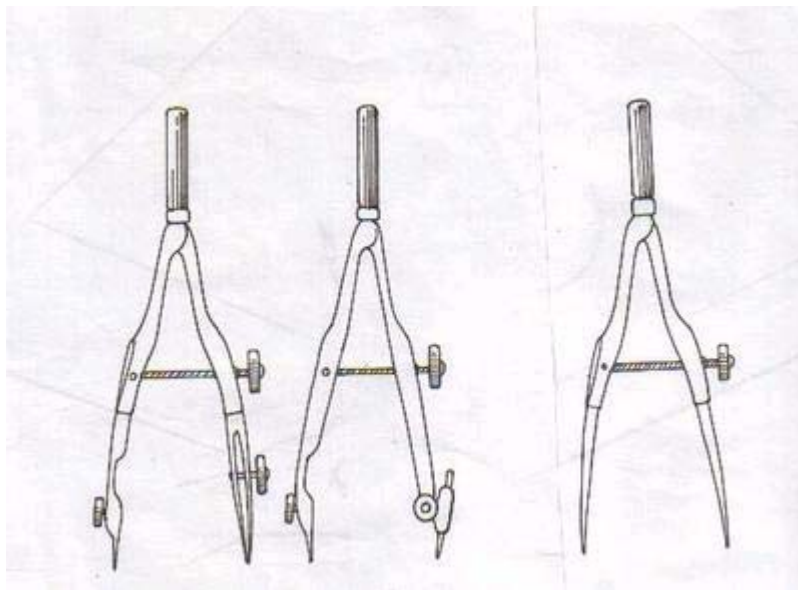
The t-square is used only for drawing horizontal lines. The head of the t-square should hang-out at the outer left side of the drawing board. The position of the body of the t-square should always be  $90^{\circ}$  from the left and right edge of the drawing board. The left hand should always be over the body of the t-square to keep it in place.



The compass is an instrument used for drawing circles and arcs. The correct way of handling it is to hold its head by the forefinger and thumb to turn it when inscribing. Locate the centerpoint of a circle or arc before drawing the desired diameter or radius of a circle.



The divider is similar to a compass but they differ in use. A divider is used only for transferring distance by holding its head with your forefinger and thumb.



**Activity 4**

Practice line exercises by following the steps below.

1. On your oslo paper, draw the borderline using your pencil by measuring 1 cm from the edge of the paper.
2. Draw four squares measuring 10 cm x 10 cm. Use your t-square and triangle.
3. Arrange the squares on the central part of the paper.
4. On the first square, draw vertical lines measuring 1 cm apart. Label it box A.
5. On the second square, draw horizontal lines measuring 1 cm apart. Label it box B.
6. On the third square, draw inclined liens at  $30^{\circ}$  at a distance of 1 cm apart from each other. Label the third square box C.
7. In the fourth square, draw inclined lines at  $45^{\circ}$  distances of lines from one another. Label the last square box D.

Evaluate your work using the criteria below.

Criteria	5 – Excellent	4 – Very Good	3 – Good	1 – Poor
1. The lines in Box A and B are spaced at 1 cm equally from each other.				
2. The lines in Box C are angled at $30^{\circ}$ .				
3. The lines in Box D are angled at $45^{\circ}$ .				
4. The borderline is drawn in straight heavy lines and corners are angled at $90^{\circ}$ .				
5. The borderline is 1 cm away from the edge of the paper.				

- 20 – 25 – Excellent
- 16 – 19 – Very Good
- 10 – 15 – Good
- 5 – 9 – Poor



**LET'S SUMMARIZE**

- Pencil is a tool used by a draftsman. It comes in 3 grades: H, HB or F &B
- Triangles are tools used for drawing vertical and inclined lines.
- T-square is a tool used for horizontal lines only.
- Compass is a drawing instrument used for inscribing circles and arcs.
- Divider is a drawing instrument used for transferring measurements .

- Eraser is a tool for erasing unwanted lines.
- Drafting tape is used for fastening the drawing paper on the drawing board.
- Drawing board is an inclined flat and smooth surface where the drawing paper is placed



## POSTTEST

I. Identify the following:

- \_\_\_\_\_ 1. A tool for drawing horizontal lines.
- \_\_\_\_\_ 2. A tool for drawing diagonal and vertical lines.
- \_\_\_\_\_ 3. A tool for dividing accurate angle measurements.
- \_\_\_\_\_ 4. An instrument for drawing circles and arcs.
- \_\_\_\_\_ 5. An instrument for transferring distances and measurements.
- \_\_\_\_\_ 6. An instrument for inking straight lines.
- \_\_\_\_\_ 7. A tool for drawing irregular curve lines.
- \_\_\_\_\_ 8. The pencil grade used for mechanical drawing.
- \_\_\_\_\_ 9. A tool for rubbing out unwanted lines.
- \_\_\_\_\_ 10. An instrument used for tightening the screws of compasses and dividers.

II. Choose only the letter of the correct answer.

- \_\_\_\_\_ 1. A type of drawing that does not use any drawing instrument and equipment
  - a. mechanical
  - b. freehand
  - c. architectural
  - d. technical
  
- \_\_\_\_\_ 2. The first step before starting to draw.
  - a. prepare all the tools
  - b. clean the drawing table
  - c. fasten the drawing table
  - d. sharpen your pencil
  
- \_\_\_\_\_ 3. A tool commonly used in drafting.
  - a. pencil
  - b. triangle
  - c. protractor
  - d. t-square
  
- \_\_\_\_\_ 4. A smooth, inclined surface where you fasten your drawing paper.
  - a. dining table
  - b. teacher's table
  - c. working table
  - d. drawing table

\_\_\_\_\_ 5. The pencil grade used for lettering.

- a. H
- b. HB
- c. 9H
- d. B



ANSWER KEY

Pretest

- 1. d
- 2. c
- 3. c
- 4. b
- 5. c
- 6. a
- 7. c
- 8. a
- 9. c
- 10. d

II.

- 1. t-square
- 2. triangle
- 3. French curve
- 4. t-square
- 5. compass

Lesson 1: Self-check

- 1. compass
- 2. divider
- 3. t-square
- 4. triangle
- 5. drafting tape

Lesson: Self-check

- 1. C
- 2. C
- 3. W
- 4. W
- 5. C

Posttest

- I.
  - 1. t-square
  - 2. triangle

3. protractor
4. compass
5. divider
6. ruling pen
7. French curve
8. H
9. eraser
10. small screwdriver

II.

1. b
2. b
3. a
4. d
5. HB/F

