SUBJECT: BASIC TECHNOLOGY

TOPIC: DRAWING INSTRUMEMTS AND

MATERIALS

CLASS: JSS1

LESSON OBJECTIVES

At the end of this lesson, you should be able to:

- Define and state properties of technical drawing
- Identify drawing instruments and materials
- State uses of drawing instruments and materials
- Correctly handle drawing instruments and materials
- Take care of drawing instruments and materials
- List types of pencils

Drawing instruments and materials are used for undergoing technical drawings. A lot of instruments will be known in this lesson as well as how they can be used efficiently to produce technical drawings.

Also, precautions in the use of the drawing instruments, how the drawing instruments can be cared for and how they can be properly stored after use will also be learnt in this lesson.

What is Technical Drawing

Technical drawing can be defined as a technical language for describing things with the aid of drawing. The language is good for describing things by drawing, either things that are manufactured or things that we have in mind to design and manufacture.

The knowledge of technical drawing is a good one to have as it will be helpful in every stage of life when need arises for one to quickly sketch and draw.

For example, you want to build a house and you need to give description on how you want the house to look to a friend, the best description one can offer at this time is diagrammatic description. This has to do with knowledge of technical drawing.

PROPERTIES OF TECHNICAL DRAWING

1. Technical drawings must be neat.
2. Technical drawings must be accurate.
3. Technical drawings must legibly obey standard signs.

DRAWING MATERIALS

The following are drawing materials that will be used in the practice:

1. Drawing paper
2. Drawing paper clips or gummy tape
3. Drawing pencils

4. Eraser

5. Tissue paper or dusting brush or white handkerchief

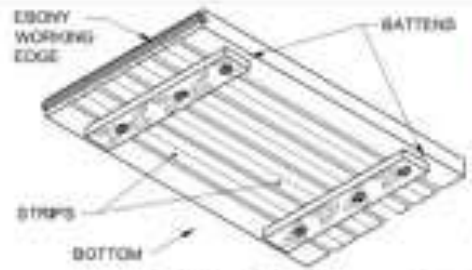
6. Drawing paper file e.t.c.

DRAWING INSTRUMENTS

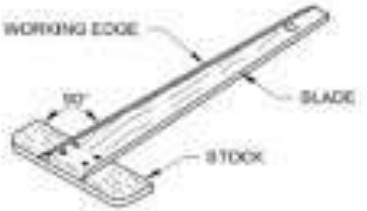
Below is a list of instruments for drawing:

1. Drawing board
2. Tee square
3. Set square
4. Scale rules
5. Protractor
6. French curves
7. Compass
8. Dividers

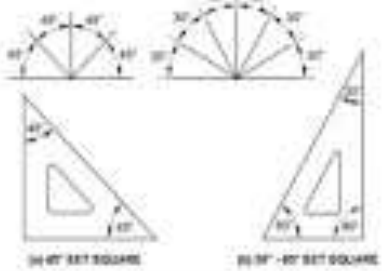
DRAWING INSTRUMENTS

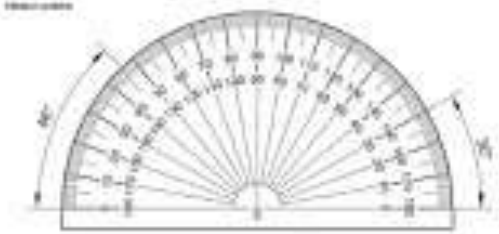


DRAWING BOARD



T-SQUARE



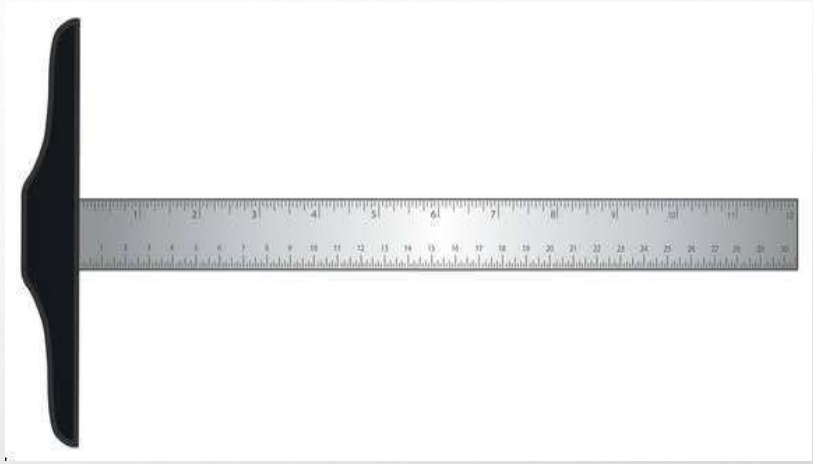


USES OF DRAWING INSTRUMENTS AND MATERIALS

Drawing board: The drawing paper is placed on the drawing board. The drawing board is available in a variety of styles and sizes, they may be adjustable and tilt to almost any angle.

They must be clean, flat, smooth and large enough to accommodate the drawing and some drafting equipment. At least one edge of the board must be absolutely true/straight to accommodate the tee square.

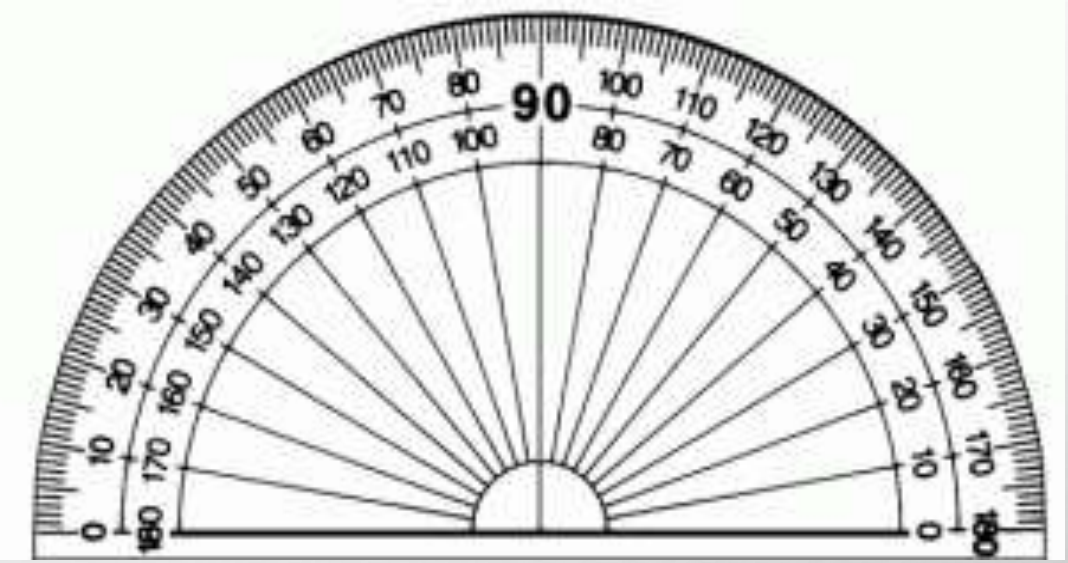
Tee Square: This is used to draw horizontal lines and border lines round a drawing paper. Also it is used to set drawing paper squarely on the drawing board, also used to draw vertical and slanted lines with the aid of additional equipment basically 45° and 60° triangles/set squares. It provides a parallel straight edge and it's composed of two parts: The head and the blade.



Compass: The compass is an instrument used to make circles and arcs. There are two main types of compasses : the friction joint type and the spring now type.

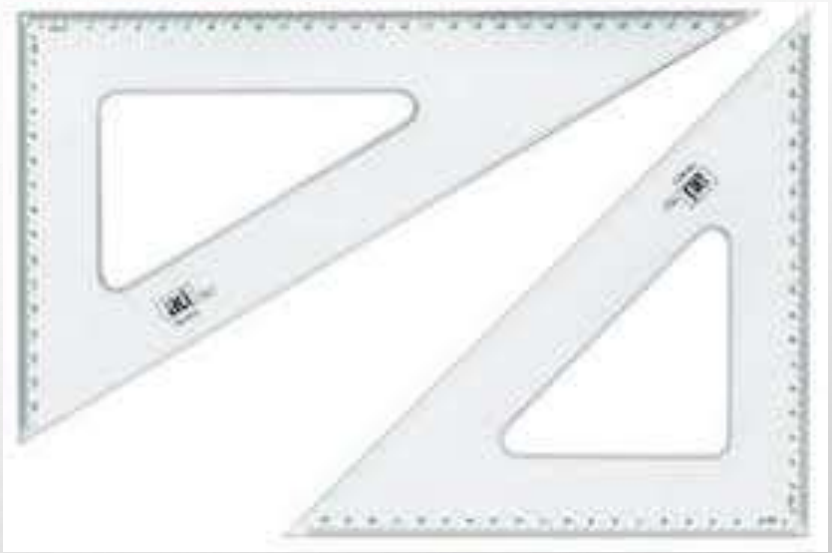
Divider: Divider is used to lay off distance and to transfer measurement. It is similar to a compass except that it has a metal point on each leg. The tool has a sliding, adjustable pivot that varies the scale.

Protractor: A protractor is used to measure and lay out angles. It can be used in place of drafting machine or an adjustable triangle.



French curves and flexible curves are used to produce curved lines that cannot be made with a compass. Such lines are referred to as irregular curves. French curves are thin, plastic tools that comes in assortment of curved surfaces. French curves are actually segments of such geometric curves as ellipse, parabolas, hyperbolas and the like.

Triangles/Set Square: It is an instrument used to make common lines at common angles. There are two standard triangles used in drawing, they are usually written as 30-60degree triangle and the other is a 45 degree triangle. Triangles are made of plastics and come in a variety of sizes. The adjustable triangle may be used instead of either the 30-60 or 45 degree triangle.



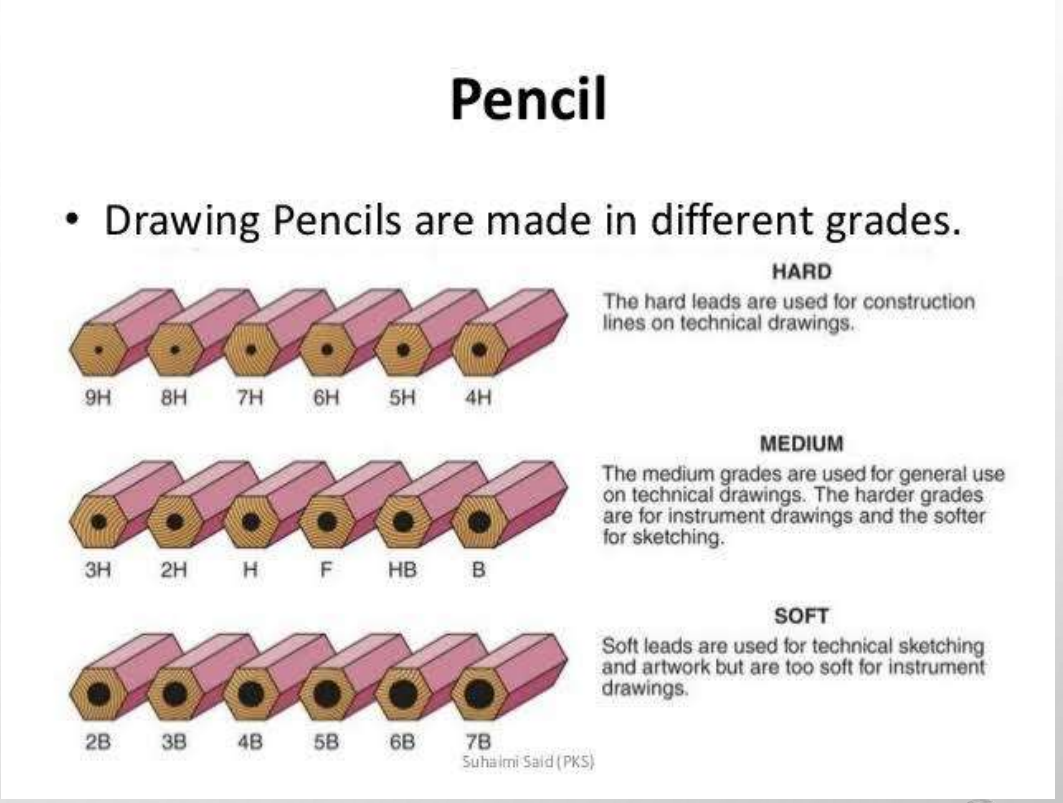
Pencils: This is an engineering instrument used to draw directly on the drawing paper, because technical drawings are made in pencils and because of that, types of pencil must be learnt. Some available types of pencil and their uses are:

•2H pencil: This is hard and use for line work, e.g outline.

•H pencil: This is moderately hard and also good for line work.

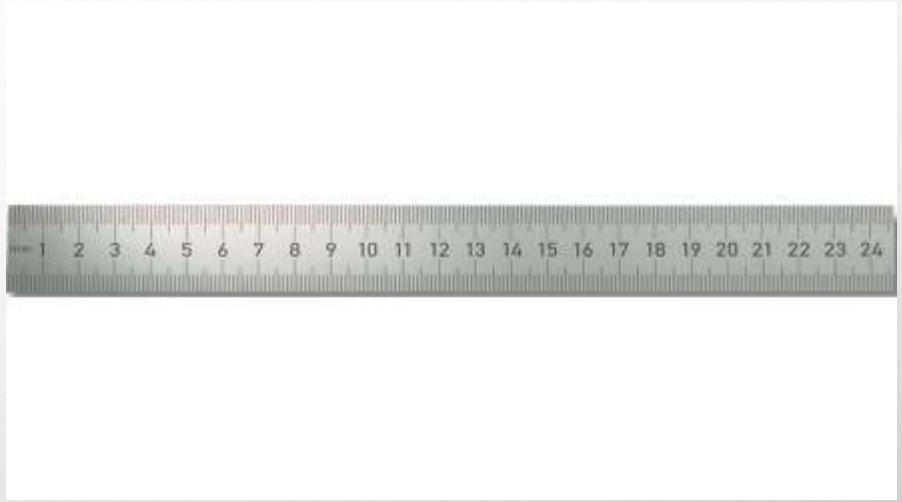
•HB pencil: This is medium, it is good for sketching, lettering and selection.

•2B pencil: This is soft and black, it is good for art work.

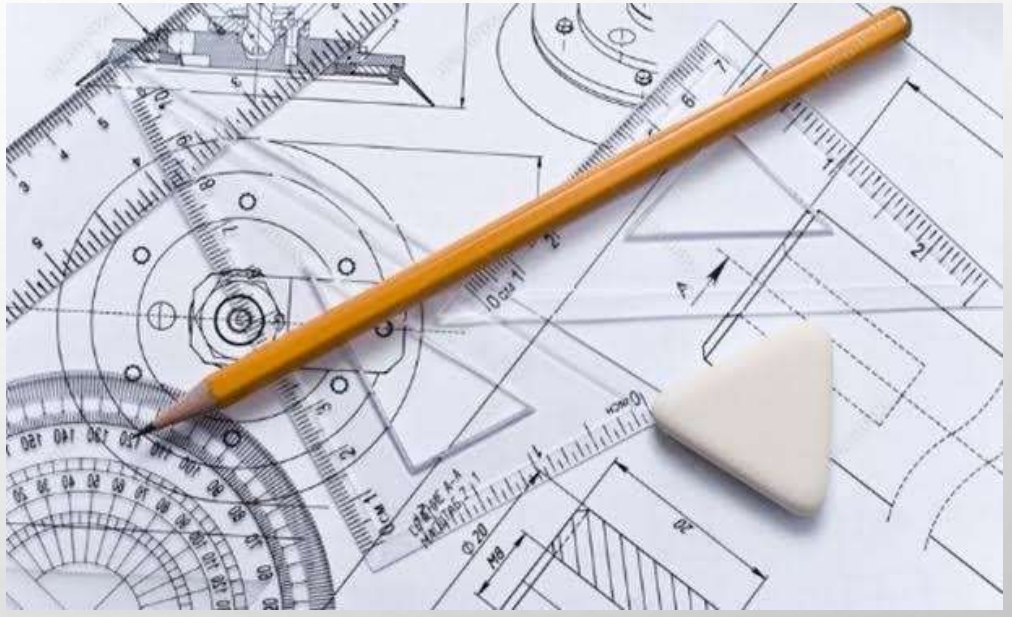


Eraser and Erasing Shield: Various kinds of eraser are available to a drafter. One of the most commonly used is a soft, white block type eraser. While Erasing Shield restricts the erasing area so that the correctly drawn lines will not be disturbed during the erasing procedure. It is made from a thin, flat piece of metal with variously sized cut outs

Ruler: The ruler is the easiest of all measuring tools to use. It is use in measuring the distance between two points.



Drawing paper: They are plain papers of different sizes which are always placed on the drawing board. When selecting drawing sheet/paper, consider the size of objects to be drawn, drawing scale, amount of additional content (border, title block, items list, notes etc.) and drafting standards.



CORRECT TECHNIQUES FOR HANDLING DRAWING INSTRUMENTS AND MATERIALS

- While drawing with the Tee square, the head must always lay on the true/straight edge of the drawing board at the left side. This is to guarantee parallel lines.
- All horizontal lines must be drawn with the aid of a tee square.

- Before drawing, the drawing paper must be aligned to the drawing board using the tee square.

- To use the protractor, place the center point on the corner point of the angle. Align the base of the protractor along one side of the angle. The degree are read along the semi-circular edge.

- Erasing shield is used by placing it over the line to be erased and Erasing through the cut out.

- A3 drawing paper are best use for junior classes because of it size designation (vertical is 297 and horizontal is 420)

CARE OF DRAWING INSTRUMENTS AND MATERIALS

- Drawing board must be carefully stored when it is not in use so that the smooth surface and its edges are not damaged.
- Drawing papers should be folded but stored in a pair of thick cardboard folder. Also they can carefully be rolled into a scroll and held by a rubber band.

- Triangles/Set Square smooth edges must be maintained. Prevent kerosene from
- touching it in order to prevent it from cracking and breaking.
- Compasses must be cleaned from sweat after use to prevent corrosion.
- Tee Square should not be used as a walking stick. The blade must always be at right angles to the stock.

Evaluation:

- Define and state properties of technical drawing
- Identify drawing instruments and materials
- State uses of drawing instruments and materials
- Correctly handle drawing instruments and materials
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THANK YOU FOR WATCHING!!!