

Graphic Expression and Communication

Graphic Materials



Pencils

Lead: made of graphite and clay

Types of pencil



Soft pencils (B)

- thick lines
- for artistic drawing

Medium pencils (HB)

- Medium lines
- for technical or artistic drawing

Hard pencils (H)

- thin lines
- for technical drawing

Graphite Lead Pencil Chart



Graphic Materials



Pencils

Lead: made of graphite and clay

Types of pencil



Graphite Lead Pencil Chart



Soft pencils (B)

- thick lines
- for artistic drawing

Medium pencils (HB)

- Medium lines
- for technical or artistic drawing

Hard pencils (H)

- thin lines
- for technical drawing

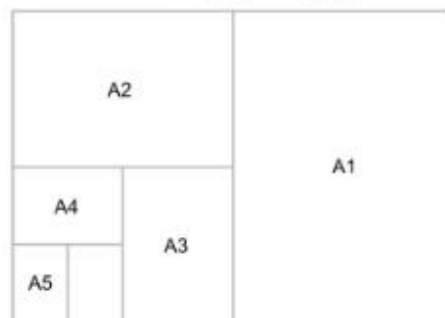
Graphic Materials



Paper can be classified by size, weight and finish.

Formats

$$A0 = 1\text{m}^2$$



Weight



Finish

rough



smooth

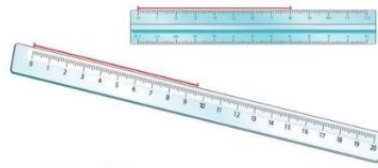


shiny



Drawing Tools

We use a ruler to measure the length of a segment.

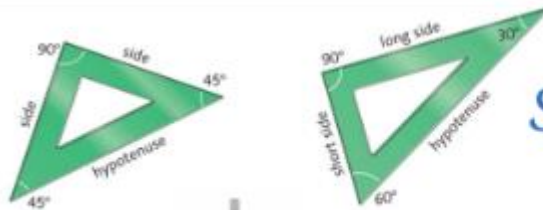


Ruler



Protractor

We use a protractor to measure and draw angles.



Set squares



Compass

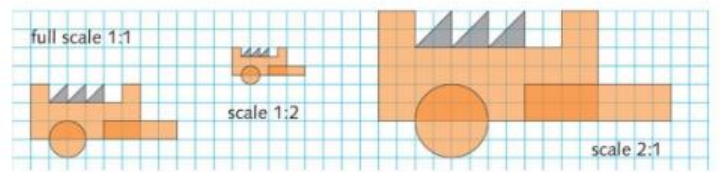
Set squares are triangular 'rulers' used to draw parallel and perpendicular lines. (Escuadra y cartabón)

We use a compass to draw circles and arcs, and to copy segments.

Scale

* *Scale 1:1 = Full scale (escala natural)*

The drawing is the same size as the real object.



* *Scales to reduce the size of drawing. (escala de reducción)*

1:2 , 1:3 , 1:10 , 1:50.000 , ...

The drawing is smaller than the object.

Scale 1:2

The drawing is half the size of the real object.

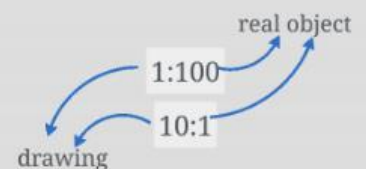
* *Scales to enlarge the size of drawing. (escala de ampliación)*

2:1 , 3:1 , 10:1 , 100:1 , ...

The drawing is bigger than the object.

Scale 2:1

The drawing is twice as big as the real object.



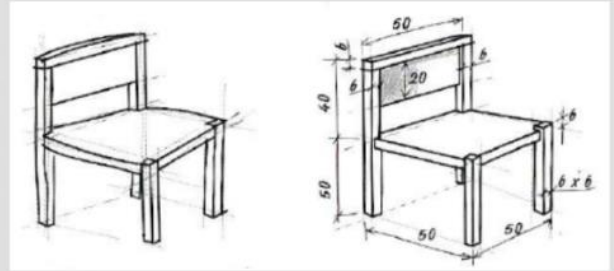
Sketches, Diagrams and Technical Drawings

Sketch (boceto)

It shows our first idea of the object we want to make.

Diagram (croquis)

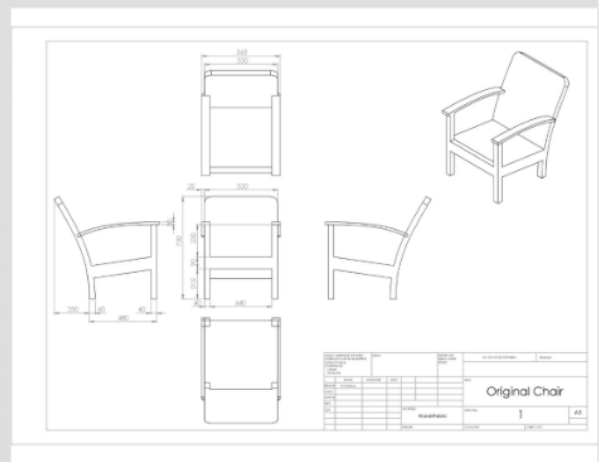
It gives more information, including measurements, materials, ways of connecting pieces, etc



Both of them are freehand with pencil.

Technical drawing

It has the same information as a diagram but we must use a ruler, set squares and a compass, or a computer, to give an exact picture.

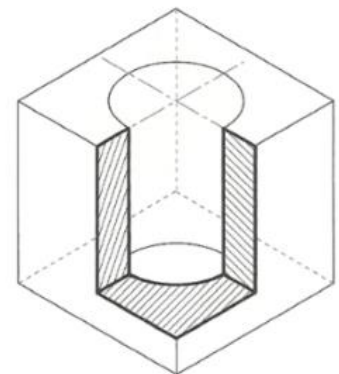


Rules

Types of lines

Different types of lines are used on a technical drawing to represent different things.

Name	Style	Purpose
Edge	—————	Shows the edge of the object
Hidden edge	- - - - -	Shows a hidden edge (not visible on the real object from a particular viewpoint)
Section	—————	Shows a cut (usually imaginary) through the object
Axis	- - - - -	Shows the axis of an object
Sectioned plane		Shows the plane of a sectioned object



Dimensions

Dimensions show the real measurements of an object to help us understand the drawing. The following elements can be used in annotations.

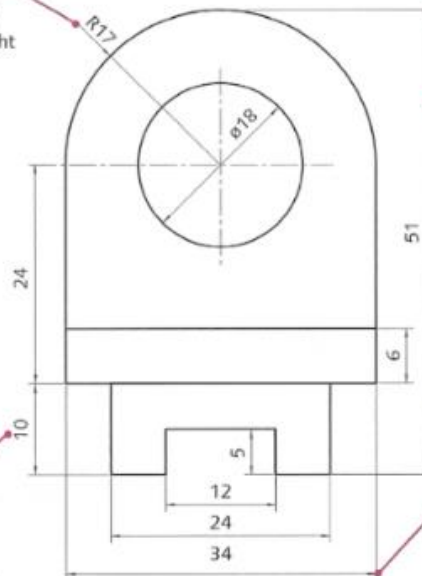
Symbols: we write these before a number to show a special dimension that is not a straight edge, e.g. R for radius.

Symbols at the end of the dimension lines: these include arrows, sloping lines or dots.

Dimension line: a line parallel to and the same length as the edge we want to measure.

Dimension: this number shows the real measurement of the object. We normally write it in millimetres. You must write all measurements in the same unit.

Auxiliary dimension line: a line perpendicular to two dimension lines. It shows the measurement from one line, or edge, to the other. We draw it 2 mm in from the end of the dimension lines.



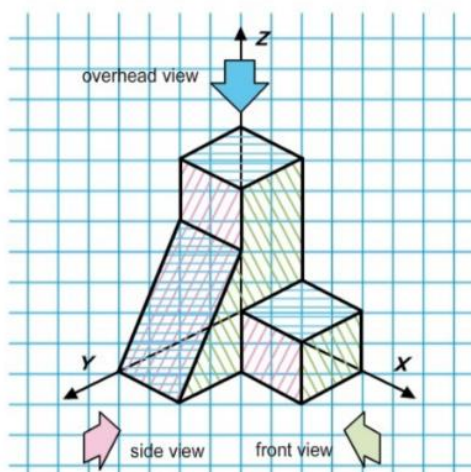
Views of an object

Front view (alzado): this is what we see when we are in front of the object. The drawing from this view is called a **front elevation**.

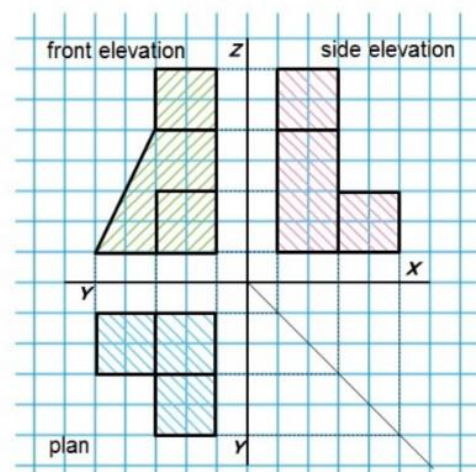
Side view (perfil): this is what we see when we look at the profile from one side of the object. The drawing from is called **side elevation**.

Overhead view (planta): this is what we see when we look down from above the object. The drawing from this view is called **plan**.

Perspective

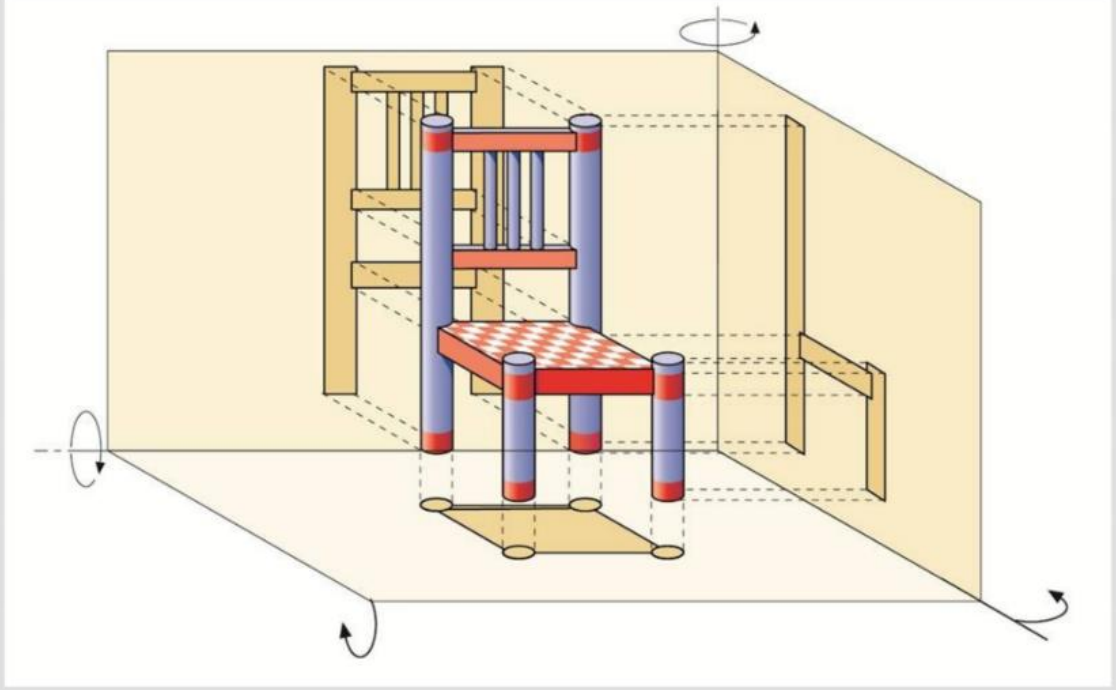


Views



Dihedral System. Perspective.

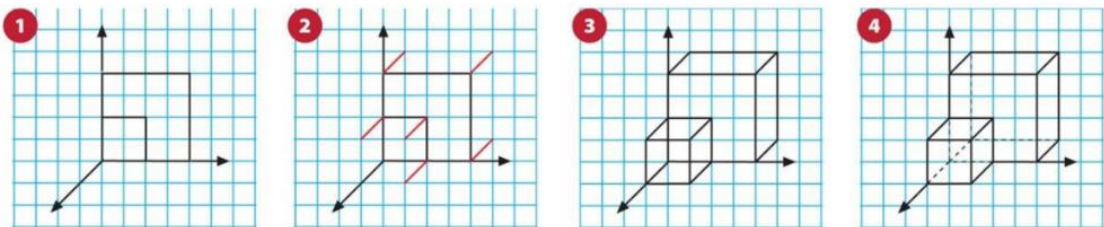
Perspective show us the whole object instead of its separate views.



Types of perspective

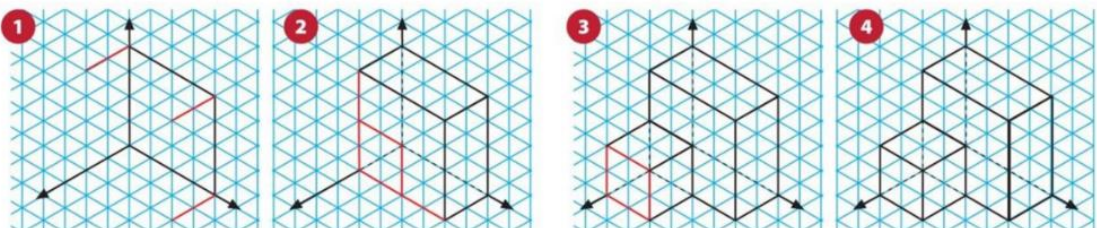
One-point perspective (Perspectiva caballera)

Two axis separated 90° , and the third axis at 135° to the others.



Isometric perspective (Perspectiva isométrica)

Three axis separated 120° between them.



Dihedral System

ACTIVITIES to do on your notebook.

1.- Choose the correct answers. Write the sentences in your notebook.

your notebook.

- a) We can read the news in print / ink newspapers.
- b) The most common paper size is A3 I A4.
- c) Gloss paper is shiny I matte.
- d) A3 paper is bigger I smaller than AS.
- e) To get the DIN A formats we divide / multiply the length of the longest side of the previous format by 2.

2.- What are these instruments?

- a) What's the difference between them?
- b) What can you draw with them?
- c) Draw a picture of each one and write what angles we can measure with them.



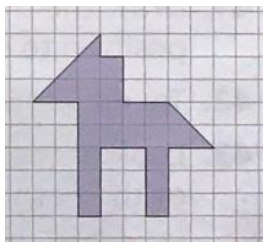
3. Draw two five-centimetre squares.

- a) Fill one with vertical lines separated by 0.5 cm.
- b) Fill the other with horizontal lines separated by 0.5 cm.

4.- Draw a circumference. Now draw these elements on it:

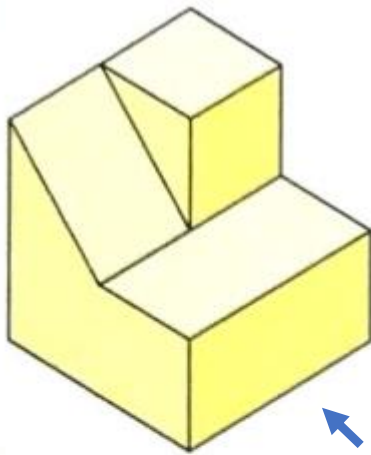
- A secant line
- A tangent
- A concentric circumference
- A parallelogram inscribed in the circle

5.- Draw this figure in your notebook at 2:1 and 1:2 scale.

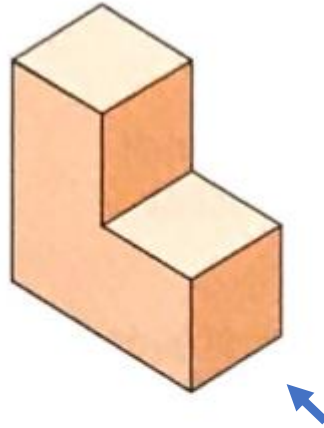


6.- Make correct freehand drawings of the plan view, the right-side view, the left-side view and the front view for the following figures:

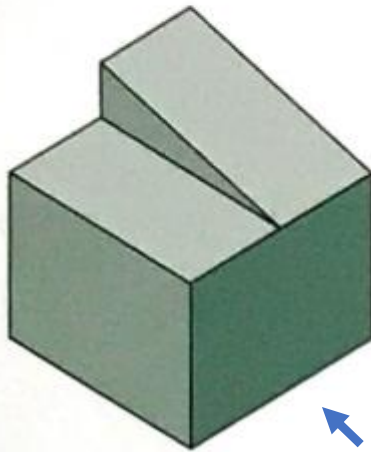
a)



b)



c)



d)

