

UNIT NUMBER	10
NAME	MODULAR STRUCTURES AND PROPORTION

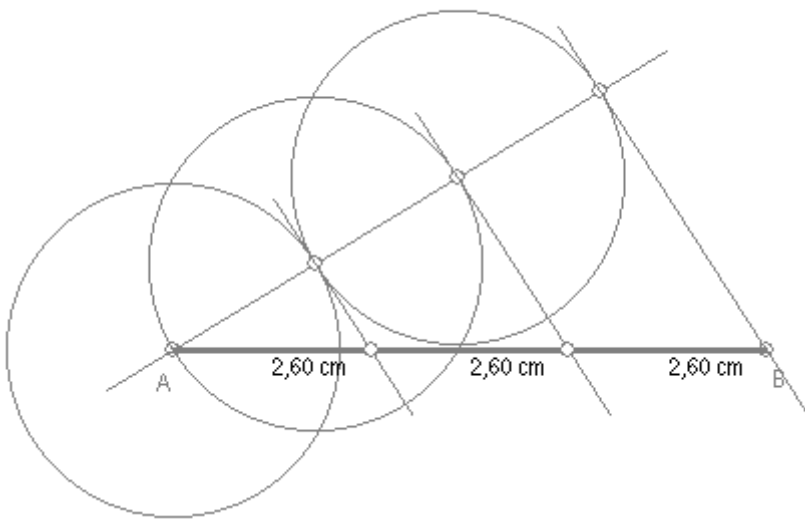
## SUMMARY

### Proportionality

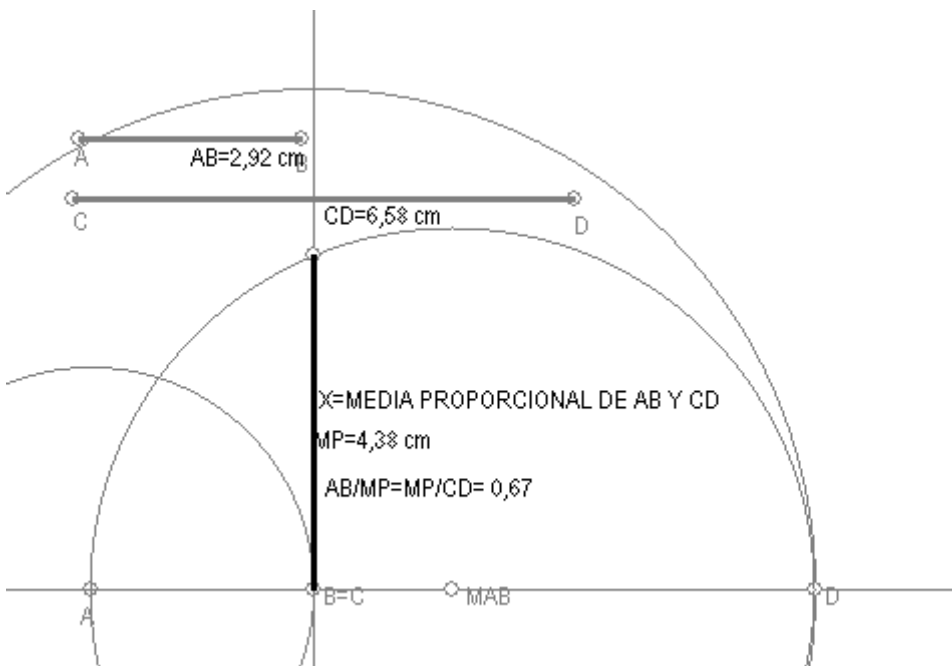
Proportion is a ratio between the sizes of two different parts of two or more figures or between the sizes of parts of a figure related to the whole.

#### Relations of proportionality between segments:

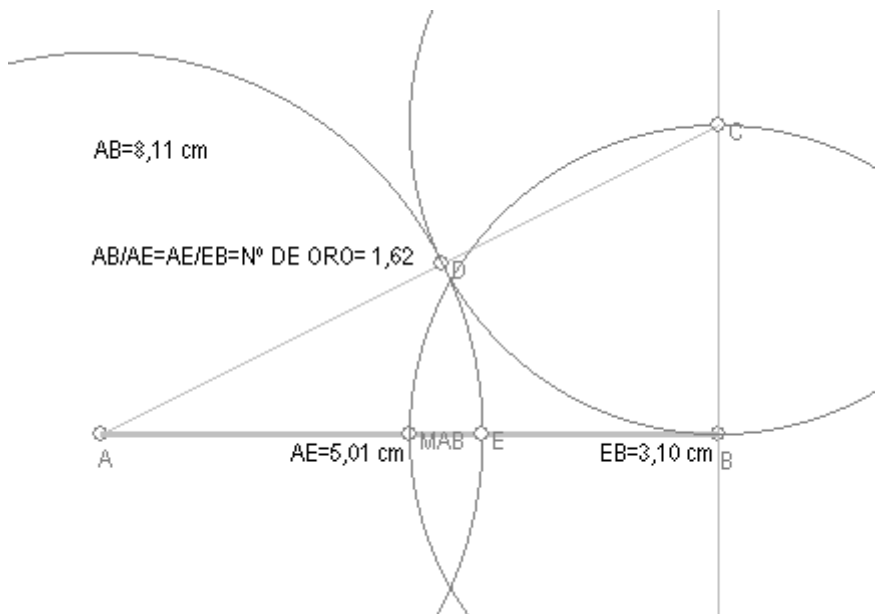
Tales theorem: division of one segment into equal parts



Theorem of height: determination of a proportional measure



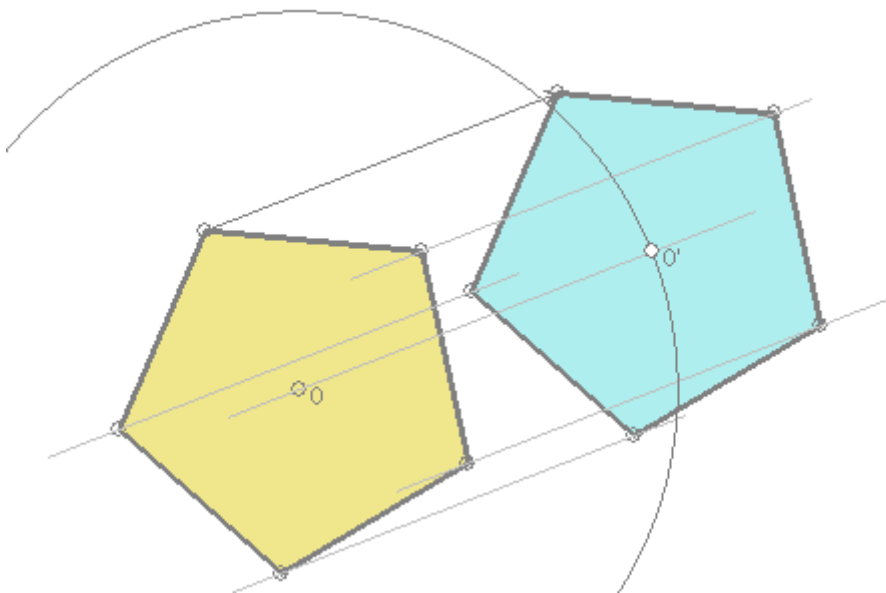
## Golden section of a segment



## Relations of Proportionality between Figures

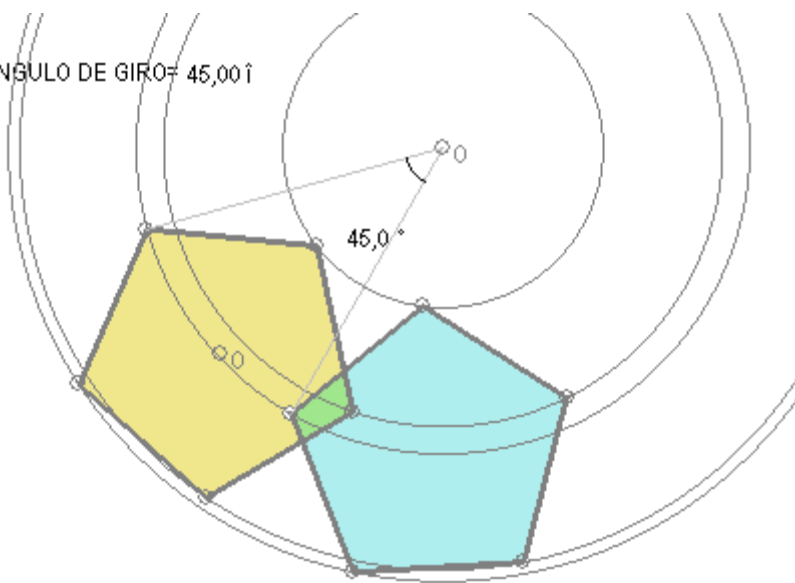
Equality: Proportion of 1:1 Can be constructed by different methods:

Translation

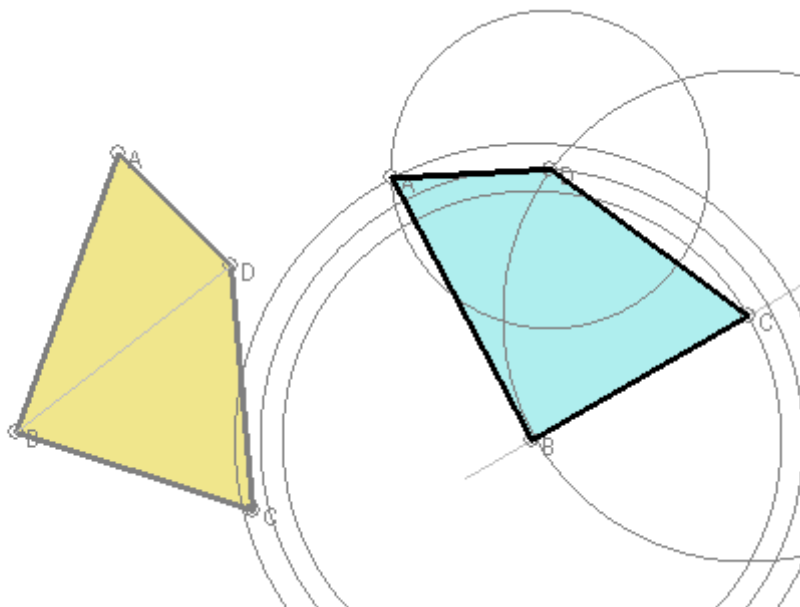


Turning

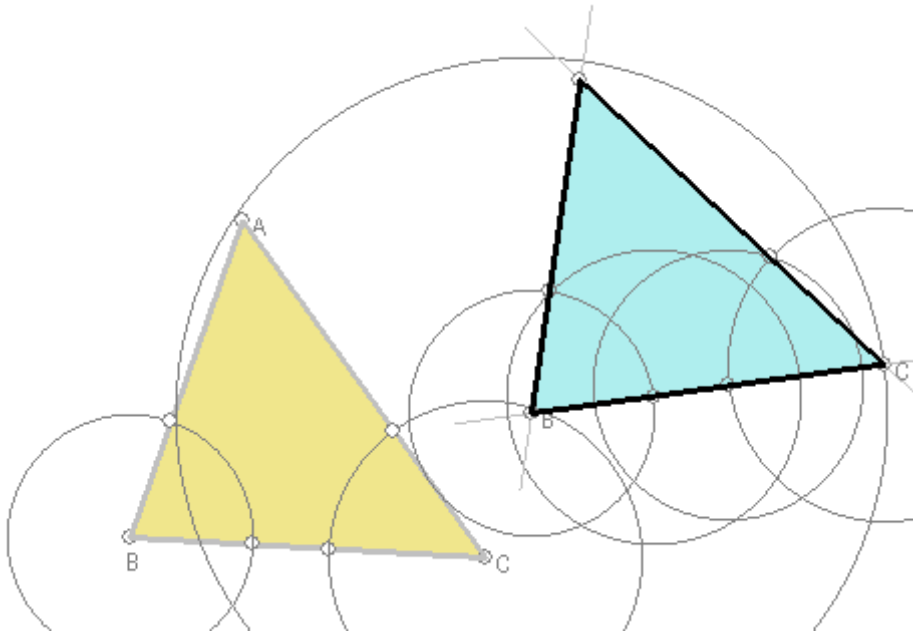
ÁNGULO DE GIRO=  $45,00^{\circ}$



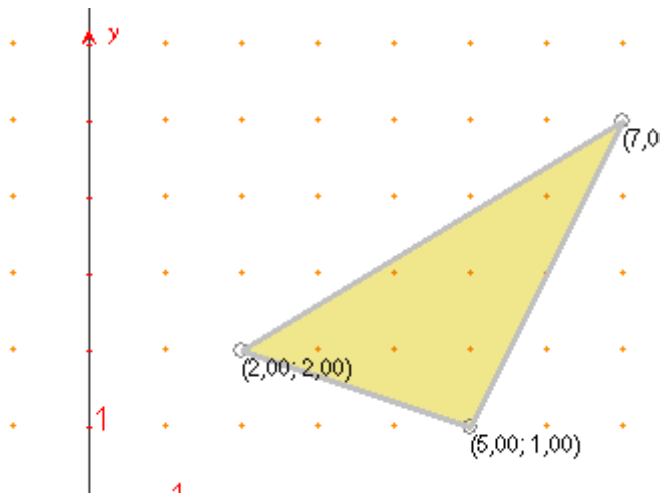
Triangulation



Copy of angles

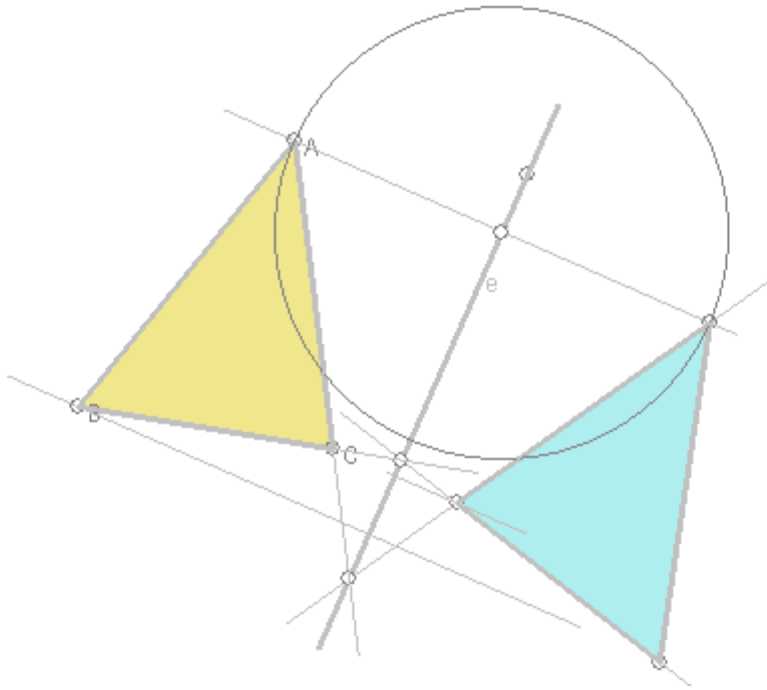


Use of coordinates axes

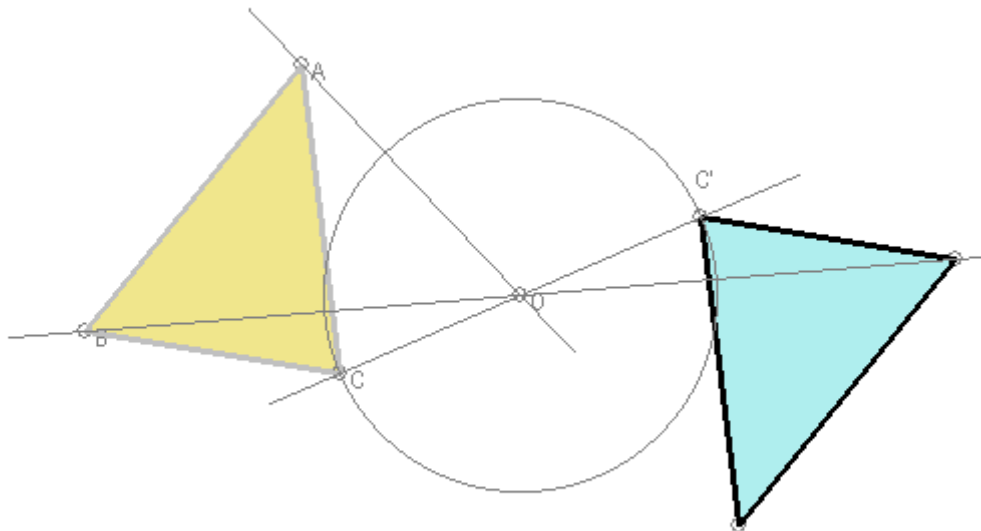


Symmetry: same shape and size but opposite.

Axial: respect to one line of symmetry



Central: respect to a center of symmetry

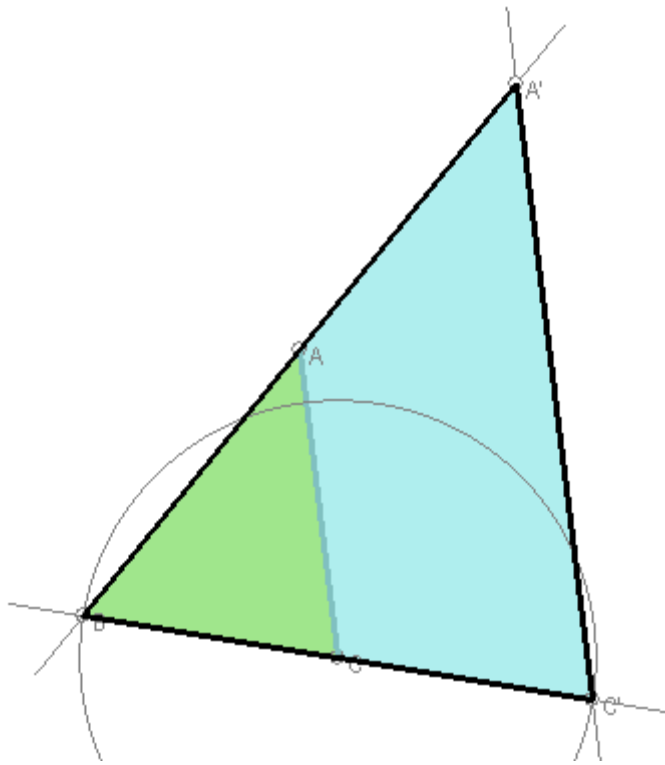


Bilateral: respect to a plane of symmetry

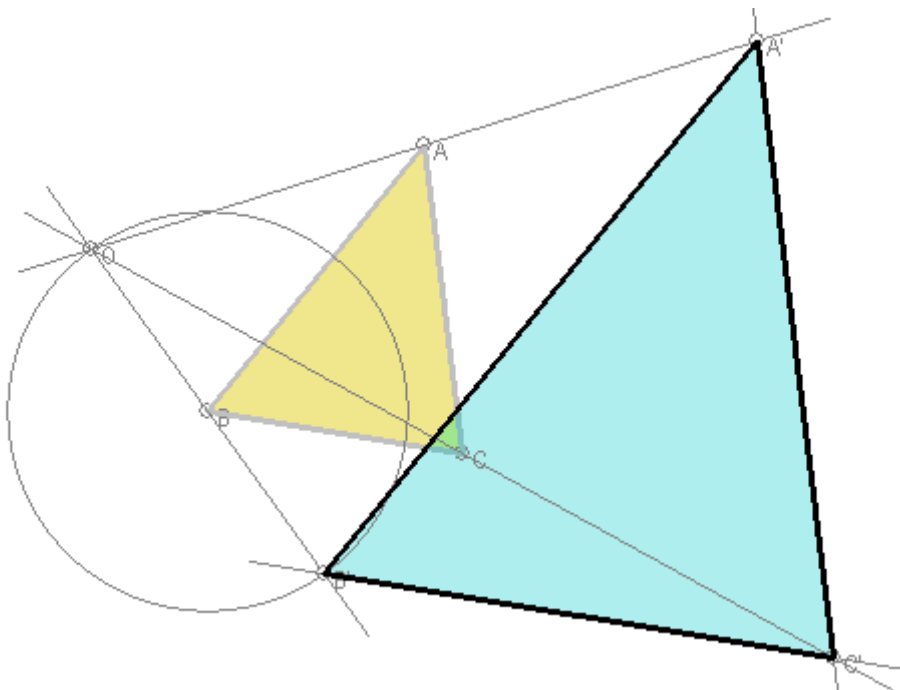


Similarity: same shape but different size

Radiation from a vertex



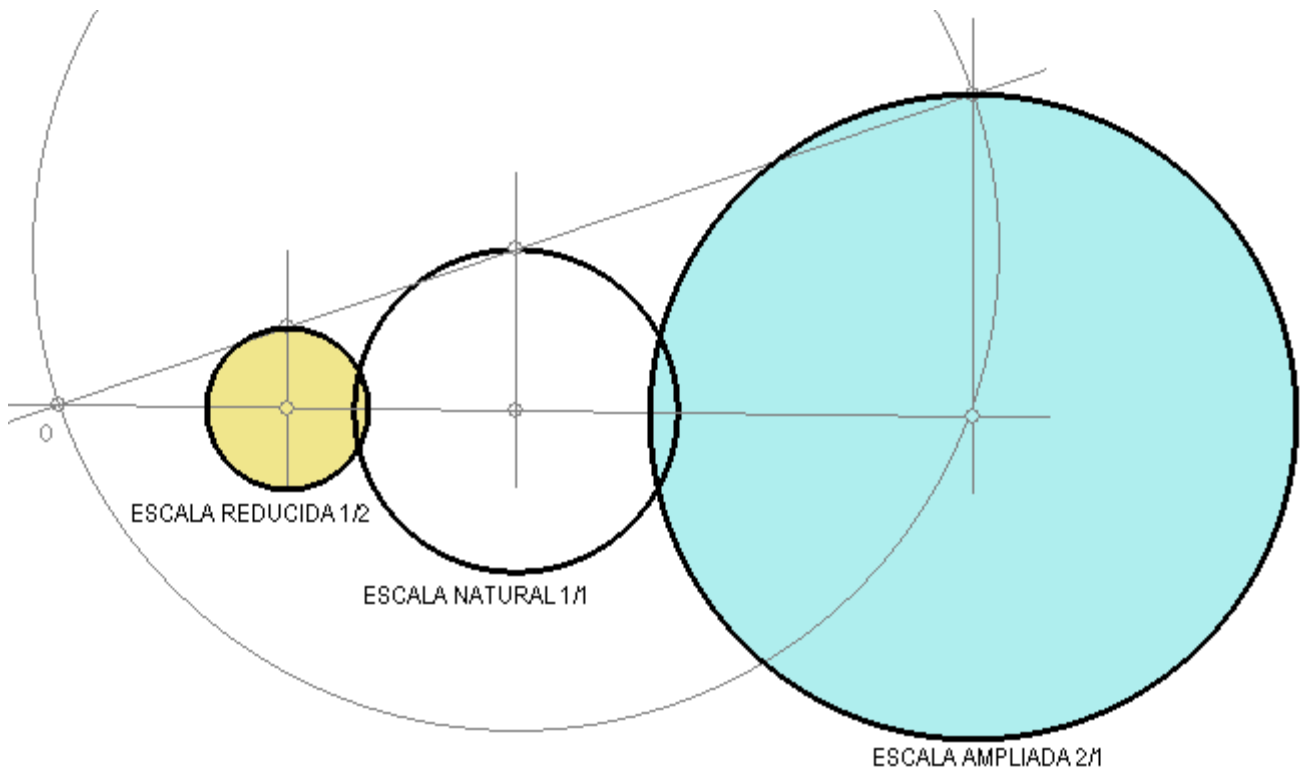
Radiation from an exterior point



### Scales

Scales: Scale is the link between the represented length of a segment and the length that it has in reality

Types: natural  
 amplified  
 reduced



### Modular nets

Modular nets are structures, generally geometric, that allow equal or similar figures to connect, called modules on the same surface

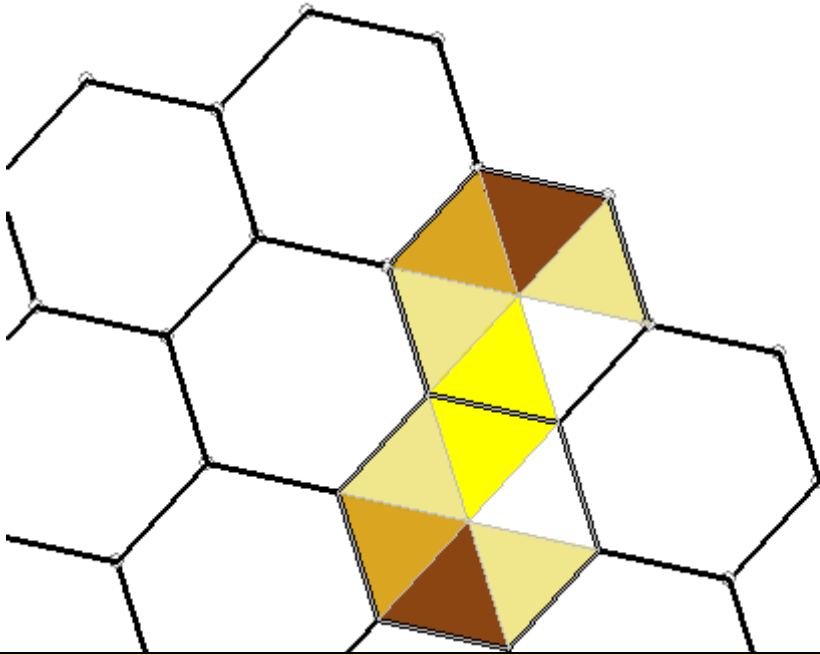
Types: Simple: Triangular      Deformed  
                   Square                Irregular  
                   Rectangular        Bricked  
                   Gully                    Terraced  
                   Rhomboid            gradation

Composed: By juxtaposition of regular polygons  
                   By superposition of simple nets

### The Module

The module is the basic figure repeated in modular structures. It has a fundamental characteristic: The capacity to be joined together to form a bigger group, called a supermodule

Movements of the module: Turning  
   Displacement



### SELF EVALUATION

1. What is the reason of two quantities? Define the concept of proportion.
2. Describe the Tales theorem and apply it to divide the segment into 7 equal parts.
3. Construct the golden section of the segment AB of 6 cms.
4. Draw a figure equal to that represented through the method of translation.
5. Determine by what scale the figure in the grid is amplified.
6. What is a modular net? Name the types of simple modular nets that you know.
7. Which type of modular net does this drawing present?
8. Which polygons have the capacity of compacting bidimensional space? Give a reason for your answer.
9. Which artistic objectives are we expected to get with the use of modular anomalies?
10. What is a module?
11. Which graphic processes have been used in this drawing to create a three dimensional sensation?
12. What is the fundamental proportion of the rule of Policletus? With what geometric figures did Leonardo da Vinci relate the human figure in order to establish a series of relations between the parts of the body?

### FINAL ACTIVITIES

12. Make a free composition in which appear various groups of different figures that are not geometric. Use photocopies or traces of the figures and draw the interior with different motifs with felt tip pens.
13. Draw two similar figures of an outlined animal of different sides, with concave and convex angles, applying the process of radiation from the interior point. Look how it has been done in the example.  
  
Use felt tips or coloured pencils to colour the resulting animals.
14. Draw a sketch of an object on a scale of 2:1. Draw first, on a sheet of vegetable paper place around the figure, the axis of symmetry and the main symmetric points, to familiarise yourself with the structure.  
  
Colour the drawing with coloured pencils.
15. A method of copying the same measurement or amplifying artistic compositions, similar to the coordinated axis, is to use a grid.  
  
A grid has been placed over this landscape. Make an amplification of scale 2:1 and reproduce the main details of the drawing on the new grid with coloured pencils.
16. Observe the drawing of a model, its distribution in a modular net and the final coloured design. Design a different



module and make your own composition with coloured pencils or felt tip pens.