# SYNOPTIC AND EPISTEMOLOGICAL VISION OF POINTS IN A FIGURAL TASK ON THE CARTESIAN PLANE

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This research is based on two cognitive functions related to vision: epistemological vision (EV), associated with local perception, and synoptic vision (SV), associated with global perception, Duval (1999). Although point-by-point procedure is in general, enough to build a graph it not the same for to **see** the final configuration in the spatial sense. I proposed 101 students this task that claim:

3. En el plano de la derecha localiza los siguientes puntos, los de abscisas positivas márcalos con una cruz (X) a los de abscisas negativas márcalos con un círculo.

  a) (-13, 0)
  b) (2, -4)
  c) (-7, 2)
  d) (3, 5)
  e) (0, -4)
  f) (11, 11)
  g) (-3, -3)
  h) (1, 2)
  i) (-4, -8)
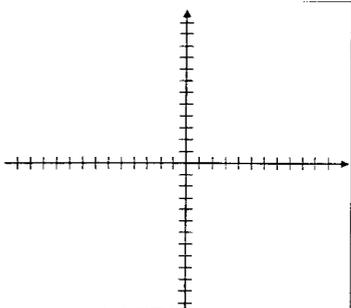
In the plane on the right, you plot the following points indicated; those of them with positive abscissas should be marked with an "X", and those with negative abscissas marked with a circle.

Plotting points needs spatial orientation in order to choose the adequate direction (right or left, up or down for each case), but it is not necessarily evident that this task will give to students a general criterion for making the spatial orientation of points on the plane. In marking task, they must decide on the right direction, as well as select a suitable mark to put on the point.

The results say us that the use of EV for plotting points does not imply the employment of SV which students need in order to mark points on the plane. And considering that both types of vision play an important role in understanding graphs completely, it is necessary to have practice in order to develop both types of vision.

 - Duval R. (1999), Representation, Vision y Visualization, Cognitive Function in Mathematical Thinking, *Proceedings of the Twenty First Annual Meeting PME-NA* v 1, pp 2-26