Section R1 A Cartesian Coordinates

The Cartesian Coordinate Plane

1-D Tradition:

The (+) and (-) conventions of 1-D give us the coordinate plane conventions of 2-D:

We also name the Quadrants in a symmetric way.
Sometimes we use Roman Numerals to indicate the numbering of the quadrants.

Example: Locate the points (3, 1), (-2, -1), (-3, 2) on a coordinate plane.

We normally assume a labeling structure like (x, y). We draw an xy-coordinate plane with the origin = (0, 0).

Example: Mark the coordinate (1.5, -2.5). Notice that we approximate the location based (in this case) on unit scale.
Example: What is the 4th vertex of a rectangle defined by the 3 known vertex points: (6, -2), (6, 3) and (-4, 3)?

Problem Approaches
(Easy): Draw picture and project sides
(Mathy): Notice that (6, 3) and (6, -2) share an x-position and that (-4, 3) and (6, 3) share a y-position. Because, this is a rectangle, the sides of our object appear parallel to the known axes. They should be $x = 6 \quad y = 3$ $x = -4 \quad y = -2$

and the final two sides tell us the missing coordinate (-4, -2).

Thinking the “mathy” way now will help us later as we visualize more difficult shapes.