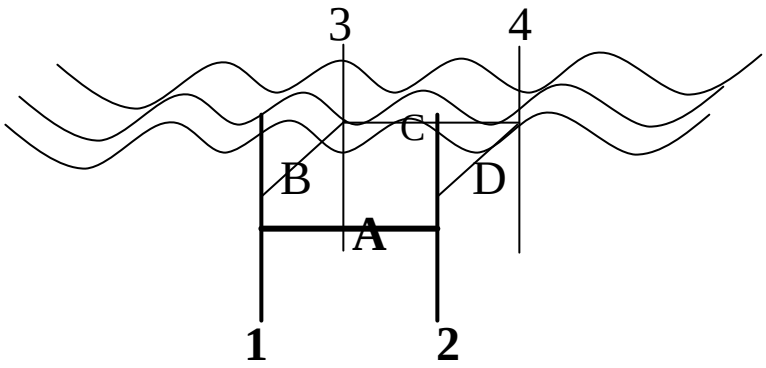
ROV Design Brief/Specifications

Before you cut your first piece of PVC, some decisions about what your ROV will look like need to be made. You will need to know the shape and configuration of your ROV in order to be able to cut each piece of pipe the right length.

Of course, in order to create a good design, you need to know what your ROV will need to do. The three tasks your ROV will have to accomplish are as follows:

1) Obstacle Course:



Starting at the edge of the pool, your ROV must travel between posts 1&2 above bar A, then navigate (in no particular order) between posts 1&3, 3&4, and 2&4 below bars B,C, and D, respectively, then return to touch the edge of the pool. Points will be awarded based on time to complete the course.

2) Speed test: Starting at the edge of the pool, each team of two will pilot their ROV beneath a line/rope stretched across the pool 15 feet from the pool's edge. Once the judges determine that the line has been crossed, pilots will return to the edge of the pool and hand the controls off to their teammate, who will repeat the process. Points will be awarded based on time for the second pilot to touch the edge of the pool after completing both runs.

3) Target Practice: the class will be divided into two teams of three ROVs (Red team and Green team). Working together, each team will have 5 minutes to pick up PVC cross pieces (color-coded for each team) from the bottom of the pool and drop them into targets of various sizes. The smaller targets will be awarded higher point values per successful drop, with the largest targets counting for the fewest points.

Once you have decided what your ROV will look like:

1) Create a drawing or diagram of your project. You must include front, side and top views. You may use paper and pencil or CAD to accomplish this task.
2) Fill in the table below, showing how many of each joint piece you will need and how many pieces of PVC you will need to cut. You will need to fill in the lengths of the PVC pipe on the chart yourself.

   IMPORTANT: when calculating the length of PVC, don't forget that each piece must long enough to fit into the elbow or joint piece an extra ¾", not just reach to the joint. For example, if you want your ROV to be 10 inches long, and a corner piece is 1¾ inches long in each direction, then you need a piece of PVC 8 inches long (1¾ + 1¾ + 8 = 11½, minus ¾" times 2 = 1½").

Item/Piece	Quantity
½" PVC elbows	
½" PVC side-out 90º corners	
½" PVC tees	
½" PVC crosses	
½" PVC pipe (list lengths below)	----------