Every maneuver is made up of one or more of the following basic elements: Lines, Rolls, Loops, Stall Turns, Spins, and Snaps. Every maneuver starts and ends with a STRAIGHT LINE. This makes having a well-trimmed airplane extremely important.

**Trimming:** Here's my thoughts on BASIC trimming:

- 1) Make sure your rudder is set to neutral. A problem here can cause some of the below steps to be invalid. I will assume you have reviewed the building area and there is no excessive drag on any surface.

- 2) Set the CG to where you like it. Once set, and your have progressed to other steps, of you change the CG, you will start all over trimming again. You should also be determining which prop / airspeed you like at this time.

- 3) Set your engine thrust line. Engine thrust makes little difference when the plane is moving fast. It does matter a lot when the plane is slowing down under power or the plane is going slow and you give it power.. this is where the torque comes in. Pull softly into a vertical at 1/2 throttle, let the plane slow down, then give it 3/4 - full throttle. Watch the nose of the plane, it will pull right or left, to the canopy or to the belly - torque is making this happen. Adjust the thrust so there is little to no pull when you give it gas. You want the plane to head straight up w/o pulling off to any one side. Do not change propeller pitch after this or you may need to make small adjustments again.

- 4) Set the differential. Pull into a 45 degree climb going away from you, do a 1/2 roll and watch the plane. If it does not roll on axis, you need differential in your ailerons. Put in 5% to start and try it again, if it's worse than before, put in -5%, and so on. It should not take much time to get it set properly. Then try a power off downline, it should roll on axis, and if your engine offset is correct, the same will be try on a vertical upline.
- 5) Start somewhat large loops and AT THE TOP of the loop, watch for a 'lower' wing. You are watching for the wings not level at the top of the loop... this is where airspeed has been lost a bit, but you are using the throttle so the airspeed is not much different than when you are entering the loop. If you have a lower wing, and be critical here, land and raise that aileron 1-2 turns, fly again, RETRIM for level flight as you just messed this up a bit, and try the loops again. soon your wing will not drop and the plane will fly wings level through the loop.

- 6) Now do the loop inverted (an outside loop from the bottom)..<em> any lower wing on the bottom of the loop, add a little weight to the higher wing tip. I try to actually weigh my wing halves before assembly and make changes there so I know I'm very close to start with. Also, a more critical test would be to do several stalls / spins, letting the NOSE fall through the horizon before the plane starts to spin. I use this as my final test to make sure my stalls and Spins enter correctly.</em>

**SUMMARY:** This ends basic trimming. If you have your elevators tracking correct and have followed the above steps, your plane should be ready to fly in competition, and you will do "OK" if you have paid attention to the flying video 'do's and don’ts'. 