Directions to Get Started with your Computerized Geometric Art Projects, or CGA's:

1: Construct and animate at least one of each of these: a <u>6-pointed daisy</u>, a <u>twelve-pointed daisy</u>, an <u>equilateral triangle</u>, a <u>regular hexagon</u>, a <u>square</u>, and a <u>regular dodecagon</u>.
- When beginning to construct a daisy, construct a circle and label the point that controls the radius of the circle as "radius". Avoid using this point when you make any further circles. You will need this point available when you are ready to animate.

2: Construct and animate a right triangle <u>shell illusion</u>.
- Start by constructing a line segment, say $\overline{AB}$. Then place a point C on that line segment. Animate point C on that segment, making sure you turn off the random animation that animates the endpoints A & B of the segment. Construct circle C with radius $\overline{CA}$. Construct $\overline{CD}$ such that it is perpendicular to $\overline{AB}$ and such that is congruent to $\overline{CA}$. Connect to form $\triangle ACD$. Repeat, with the right angle of the second triangle being located at point D.

3: Construct and animate a <u>disappearing square</u>.
- Start by constructing a square <u>without</u> using the daisy method. Make sure the square passes the drag test on all 4 vertices!
- Then construct a short segment, say $\overline{AB}$, NOT on the square – just off to the side somewhere. On $\overline{AB}$, construct another segment $\overline{AC}$. ($\overline{AC}$ should share endpoint A, but endpoint C should be ON $\overline{AB}$.) Highlight the four vertices of the square and $\overline{AC}$, go to [Construct] [Circle by center and radius], and 4 circles should appear. If you drag point C, you should see the 4 circles change sizes! Using those 4 circles, construct the second square inside the first. Use that same $\overline{AC}$ to repeatedly construct your disappearing squares.

4: Construct and animate a <u>hidden object/picture</u> of your choice.
- Start by constructing a square <u>without</u> using the daisy method. Make sure it passes the drag test on all 4 vertices!
- Then construct the midpoints of one side of the square. Hide that side – but not the midpoint. Construct two shorter segments to recreate that side of the square. Construct the midpoints of those two shorter segments and again hide the original segments and construct shorter segments using the midpoints. Repeat until the segments are about 1.5 cm long.
- Then place a point on one of the segments. Highlight that point and the segment it's on. Construct a perpendicular line. You should be able to drag that point and see the line move within the range of the short segment the point is on. Repeat, making a perpendicular line for each short segment. When you have one side done, turn all of the lines into segments. Then follow this same process to create lines movable on an adjacent side.
- Finally, you'll be able to construct mini-boxes and hide a picture or etc.

5: Construct and animate a <u>box</u> using <u>one-point perspective</u>.
- Start by constructing a square <u>without</u> using the daisy method.
- Use the point tool to place a vanishing point anywhere else on the screen. You may want to label the point as point "V". Then, construct segments from the vertices of the square to the vanishing point.   Continue…

6: Construct and animate a <u>tiled floor</u>.
- Start by constructing a square <u>without</u> using the daisy method.