SJSU Math Circle Contest

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Instructions: In addition to drawings of your final constructions below, be sure to include an explanation in English of the steps you followed. All constructions are to be done using only a straightedge and compass with the usual rules.
Turn in your results on or before November 29, 2000.

1. Given a segment of length 1, construct the right triangle whose sides have lengths 3, 4, and 5.
2. Given a triangle, divide its area in half with a line parallel to the base of the triangle.
3. Given a circle, inscribe 4 congruent mutually tangent circles within it as illustrated on the left in figure 1. **Extra Credit:** If you can do the same thing with 5 circles as illustrated on the right in figure 1 below, you will get a prize, even if you solve none of the other problems in this set. The extra credit problem is not counted in your score for the rest of the contest. **Hint:** It might be worthwhile to do some pencil and paper calculations before beginning.

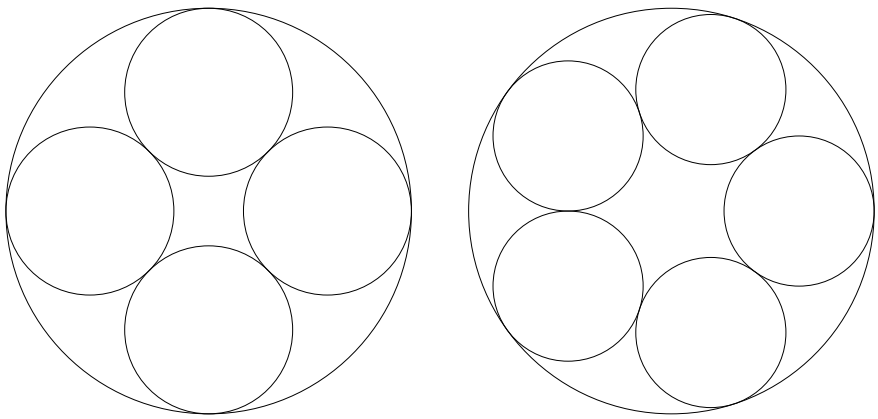

Figure 1: Inscribed Circles