



Consider the intersection of a regular n -gon with a regular m -gon, both with sides of unit length.

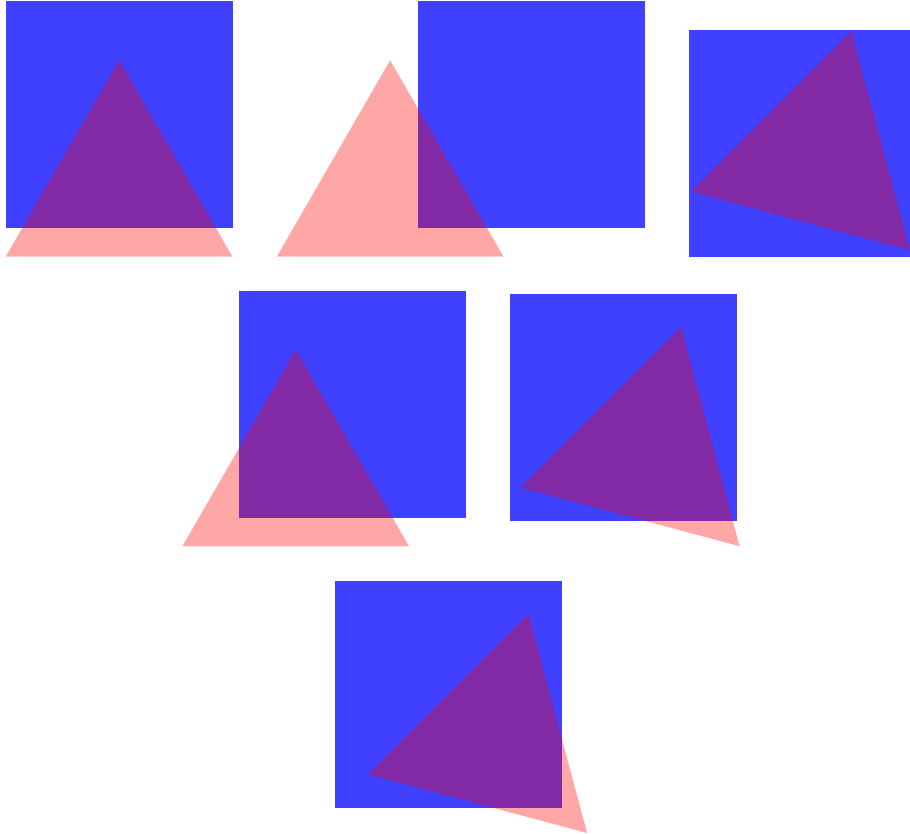


Figure 1: Six (all?) classes of intersections between a 4-gon and a 3-gon. The three triangular intersections may be considered distinct because one has all three of its sides contributed from the triangle, one has two sides from the triangle, and one has two sides from the square.

Question. What are the possible classes of polygons that can be realized as the intersection of an n -gon and an m -gon?

Related.

1. What is the largest k for which a regular unit n -gon and m -gon can intersect in a k -gon?
2. What if the polygons have unit area instead of unit length?
3. What if the regular polygons can be any size at all?
4. What if the polygons do not need to be regular? If the intersection does not need to be connected?
5. What if the polygons have integer vertices and minimal area?