The authors investigate several geometrical problems of a combinatorial flavour. Let be given n points in the plane. Then they determine at most $4n^{5/2}$ triangles which have the same non-zero area. On the other hand one can find n points in the plane which determine $cn^2 \log \log n$ triangles having the same non zero area.

Several other related results are proved and many unsolved problems are stated.

Classification:

05B25 Finite geometries (combinatorics)