1. A straight line is painted in two colors. Prove that there are three points of the same color such that one of them is located exactly at the midpoint of the interval bounded by the other two.

2. Find all positive integral solutions \( x, y \) of the equation \( xy = x + y + 3 \).

3. Can one cut a square into isosceles triangles with angle \( 80^\circ \) between equal sides?

4. 20 children are grouped into 10 pairs: one boy and one girl in each pair. In each pair the boy is taller than the girl. Later they are divided into pairs in a different way. May it happen now that
   
   (a) in all pairs the girl is taller than the boy;
   
   (b) in 9 pairs out of 10 the girl is taller than the boy?

5. Mr Mouse got to the cellar where he noticed three heads of cheese weighing 50 grams, 80 grams, and 120 grams. Mr. Mouse is allowed to cut simultaneously 10 grams from any two of the heads and eat them. He can repeat this procedure as many times as he wants. Can he make the weights of all three pieces equal?