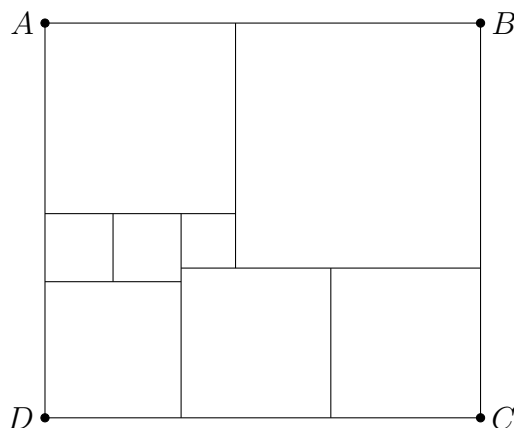# Problems

1. Josie, May and Ross are playing a round-robin table tennis tournament, where as usual, the winner stays on after each game to play the person who sat out that game. At the end of their afternoon, May is exhausted, having played the last seven straight games. Josie, who is less winded, tallies up the games played:

   - Ross played 8 games,

   - May played 12 games, and

   - Josie played 14 games.

   Who won the fourth game against whom?

2. Rectangle $ABCD$ is divided into squares. The length of side AB is 16. What is the length of side AD?

3. Solve the equation
$$x^2 + y^4 + 4 = 4xy.$$

4. What is the expected number of times a fair die must be thrown until all scores appear at least once?

5. Let A, B, C and D be four points on the circumference of a circle in that order such that $AB = 3$, $BC = 5$ and $CD = DA = 7$. Find the radius of the circle.