1. Suppose I have a strip one foot wide and $n$ feet long. I want to perfectly cover the strip using tiles. I have an unlimited supply of tiles. There are 1-foot squares that come in both orange and purple, and 1-foot by 2-foot rectangles that come in each of red, white, and blue. Determine a recurrence for $s(n)$, the number of ways of covering the strip.

$$s(n) = 2s(n - 1) + 3s(n - 2)$$

2. Consider a convex polygon with $n$ sides. Let $t(n)$ be the number of ways of adding $n - 3$ chords to divide the polygon into triangles. Determine a recurrence for $t(n)$. (Hint: fix some boundary edge and consider the triangle containing that edge.)

For the fixed boundary edge, suppose the triangle containing that edge splits the remaining vertices so that have $i$ on one side. (Draw a picture!) Then, if we define $t(2) = 1$, we get recurrence

$$t(n) = \sum_{i=0}^{n-3} t(i + 2) \times t(n - 1 - i).$$