Gold Chain

A wealthy man needed to pay the mason building his house. He was running low on cash so he decided to pay the mason with a gold chain made of 7 links. The mason's fee was equal to one gold link each day. The wealthy man needed to pay the mason each day or he would stop working. But, at the same time he didn't want to pay the mason any more than one link in a day because he might run off and not return.

Cutting the chain was very difficult. What is the minimum number of cuts that the wealthy man could make in the chain and still pay the mason each day for seven days?

Gold Chain Extended

You are backpacking through Europe. You have one month left until your flight home, but you have run out of money. However, you have a 50 link gold chain and you have found a hotel that is willing to accept one link per night for payment of room and board. However, the manager wants payment every day and he is willing to help you out by cutting links for you. The problem is that he wants one gold link payment for every link he cuts. What is the most number of links that you will have left when you fly home?

Painted Cube

Paint all the sides of a 3 x 3 x 3 cube. Once it is dry take it apart into its 1 x 1 x 1 unit cubes. How many of these unit cubes have paint on three faces? Two faces? One face? No faces?

Explore for 4 x 4 x 4, etc.