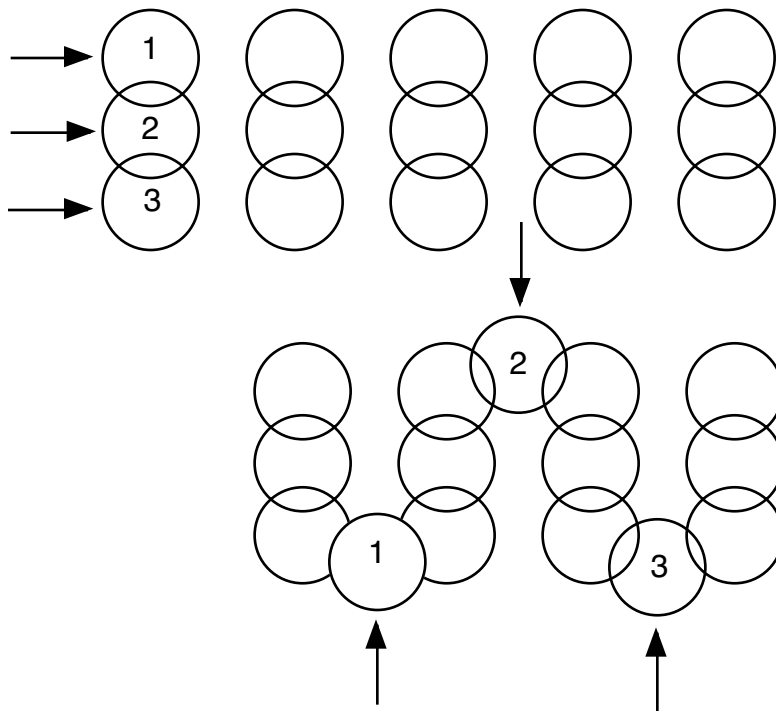


Solution to Chain Link

A farmer needs a chain fifteen links long and finds that he has available five pieces of chain of three links each. The blacksmith tells him that it will cost a dollar for each cut and weld.

Assuming that the blacksmith does the job in the cheapest possible way, how much will it cost to have the five pieces joined into one continuous chain?



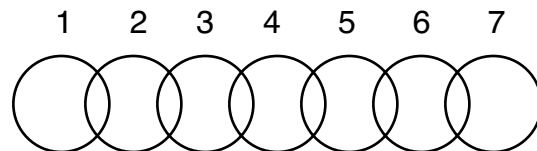
Make three cuts where the arrows are, move the three links to connect the other four sections of chain, and then weld. Total cost: \$3.

Solution to Link in Nebraska

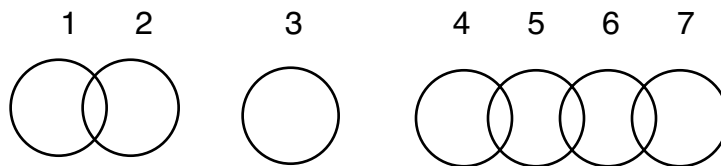
You just arrived in Omaha. You have no money, but you have a gold chain containing seven links. In exactly a week, you will receive your inheritance. Until then, the innkeeper has agreed to let you have food and lodging at the inn at the cost of one link each day. After seven days, if you have the money, you may buy back the chain. The innkeeper insists, however, that correct payment be made each day.

He will not accept the entire chain in advance. Each day, you must arrange for the innkeeper to have the correct number of links. Since this chain has been in your family for generations, you want to make the fewest possible cuts necessary to arrange payment.

Tell which links (1 to 7) you would cut and explain how you would arrange the correct payment.



Only one cut is necessary. Cut link 3.



On day 1, pay with link 3.

On day 2, retrieve link 3 and give the innkeeper links 1 and 2.

On day 3, give the innkeeper link 3.

On day 4, retrieve links 1, 2, and 3 and give the innkeeper links 4, 5, 6, and 7.

On day 5, give the innkeeper link 3.

On day 6, retrieve link 3 and give the innkeeper links 1 and 2.

On day 7, give the innkeeper link 3.