Eclipse, Kliezl P. Exercise 4.1 – 1

Q: *Ferrying soldiers*: A detachment of *n* soldiers must cross a wide and deep river with no bridge in sight. They notice two 12-year-old boys playing in a rowboat by the shore. The boat is so tiny, however, that it can only hold two boys or one soldier. How can the soldiers get across the river and leave the boys in joint possession of the boat? How many times need the boat pass from shore to shore?

A:

//Let the shores be called left and right and assume all soldiers and boys are initially on the left shore

for each soldier, **do**
    send two boys across the right shore of the river
    return one boy back to the left shore
    send soldier across the right shore
    return other boy back to the left shore

Since crossing one soldier needs the boat to pass from shore to shore four times, it takes ***4n*** times of boat travel for all soldiers to be on the opposite shore.