Let a "popsicle stick weave" be a configuration of lines segments, called "sticks", such that

(1) every stick has at least two sticks above it and one below or two sticks above and one below, and

(2) the removal of any stick results in a configuration that violates (1).

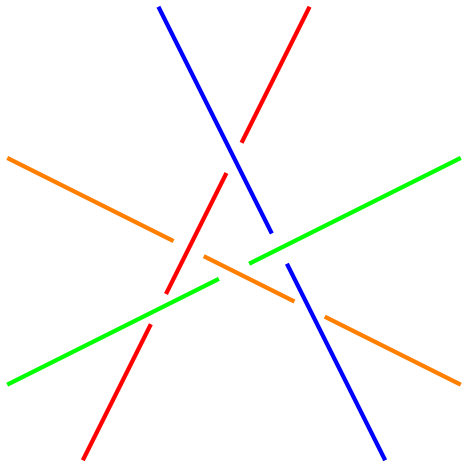

Figure 1: The unique example of a 4 stick crossing (up to reflection)

Question. How many distinct popsicle stick weaves exist for n sticks?

Related.

1. What if the sticks are only allowed to touch three other sticks?
2. What if the sticks are another geometric object (e.g. semicircles)?