Engineering Design

(using popsicle sticks)

The goal in the following challenges/puzzles is to create a new 'design/structure' by **moving** (changing the location) a specific number of popsicle sticks OR **removing** (taking completely away!) a specific number of popsicle sticks so that the new structure satisfies the challenge.

The challenges start fairly easy, and get more difficult as you solve each challenge. (Notice that the first challenge has you dealing with 4 popsicle sticks, then 3 sticks, then 2 sticks for a few challenges until finally..., the 'hardest' challenge requires that you move ONLY 1 popsicle stick!!!)

Read the instructions carefully as each challenge may require you to do something COMPLETELY DIFFERENT from the previous challenge.

*** For the challenges that involve squares, each popsicle stick cannot be by itself, in other words... EVERY POPSICLE STICK MUST BE A SIDE OF A SQUARE!!!

*** The very last two challenges are MUCH harder than the earlier ones, but they can be solved! ☺

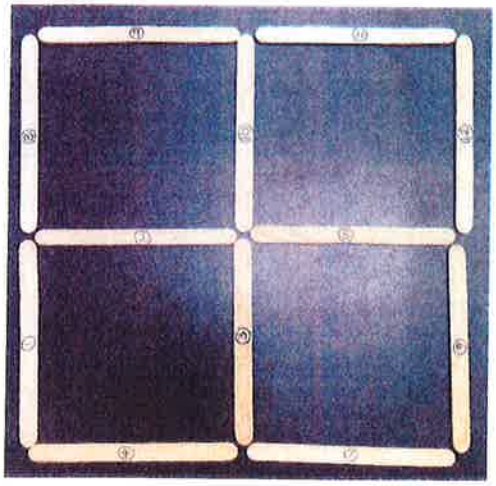
Have an open mind and have fun solving these challenges!

For starters: How many popsicle sticks do you need to make 2 squares that are both the same size?

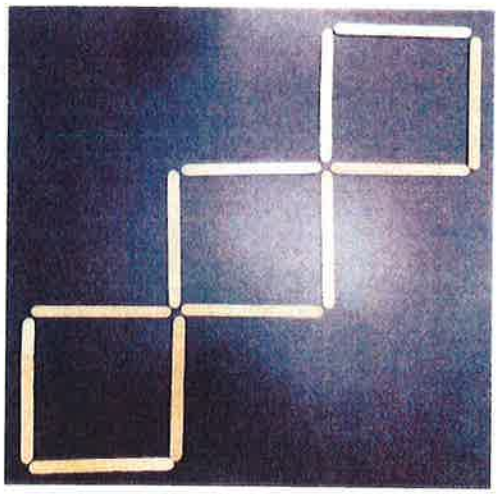
Hint: You CANNOT break any of the popsicle sticks!!!

Engineering-Design using Popsicle-sticks

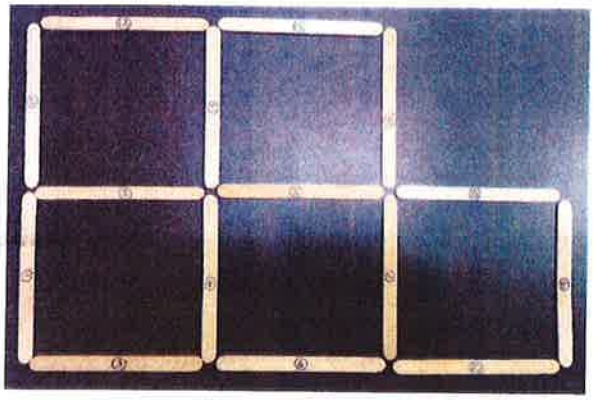
#1) Move ONLY four sticks to different locations so that you end up with JUST three squares that are all the same size. (The ends of each popsicle stick MUST be facing/touching at least one other stick!!!)



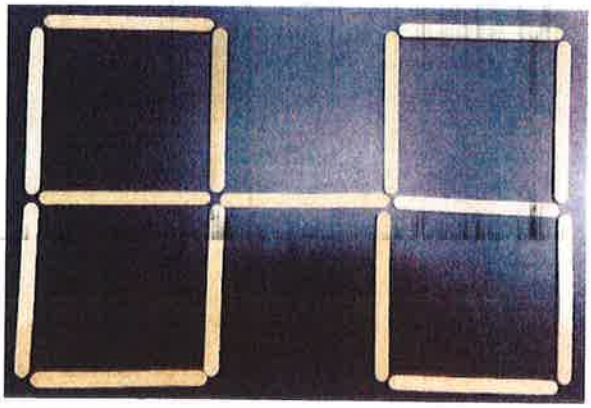
>>>>>



#2) Move ONLY two sticks to different locations so that you end up with JUST four squares that are all the same size. (The ends of each popsicle stick MUST be facing/touching at least one other stick!!!)

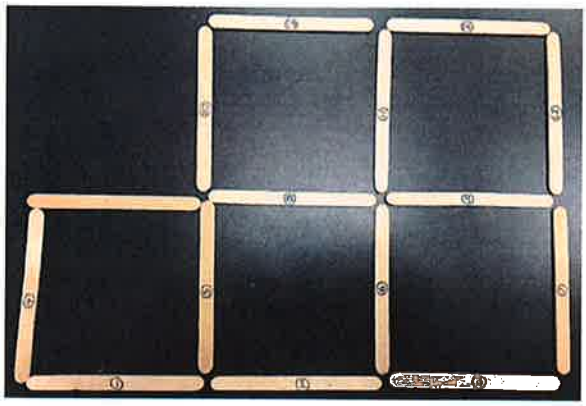


>>>>

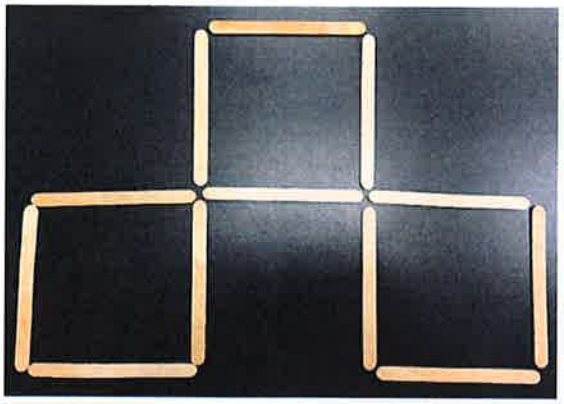


Engineering-Design using Popsicle-sticks

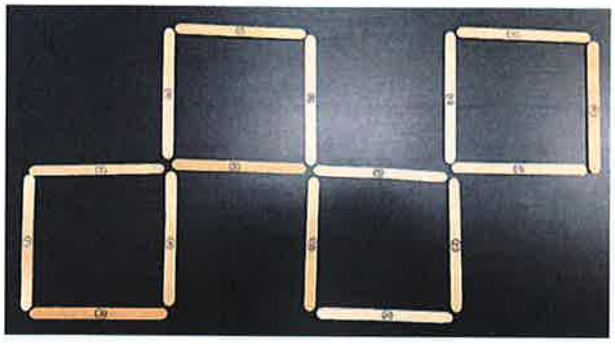
#3) **REMOVE** three sticks completely so that you end up with JUST three squares that are all the same size. (The ends of each popsicle stick MUST be facing/touching at least one other stick!!!)

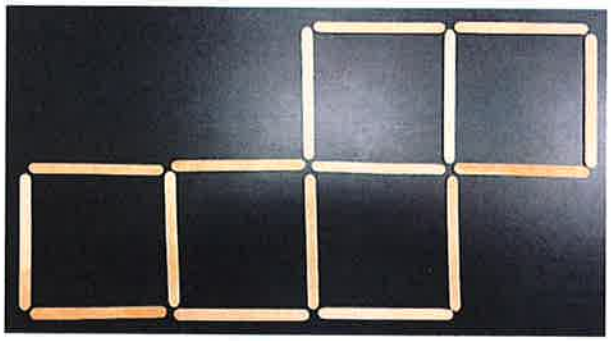


>>>>



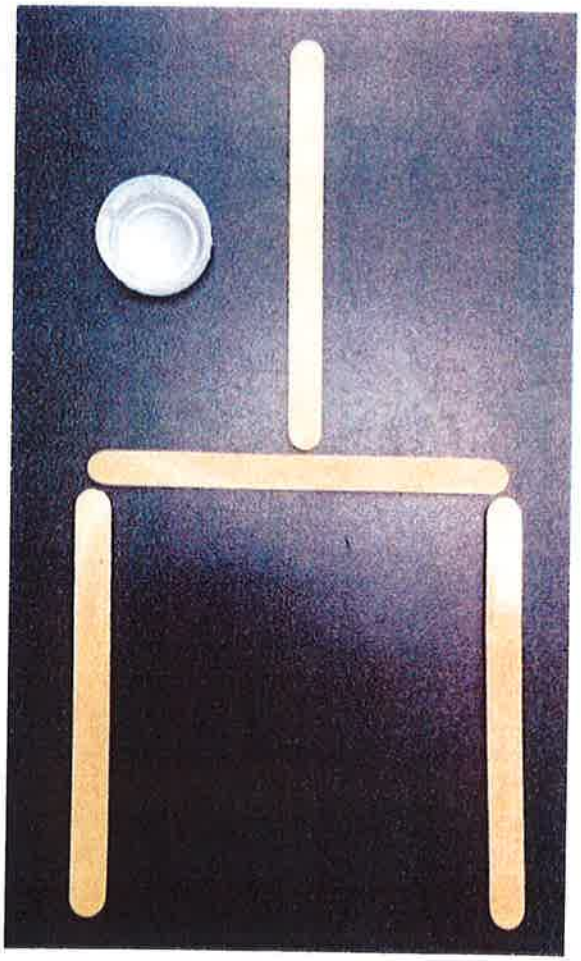
#4) Move ONLY two sticks to different locations so that you end up with five squares that are all the same size. (The ends of each popsicle stick MUST be facing/touching at least one other stick!!!)





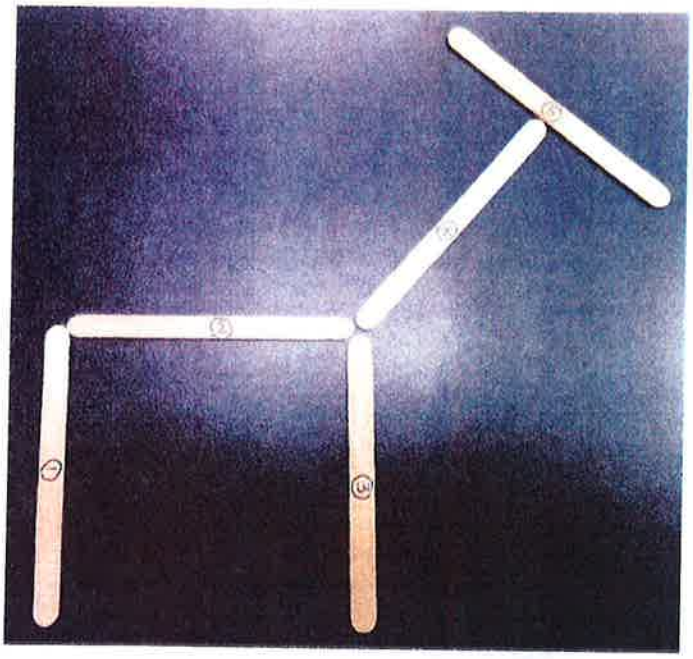
Engineering-Design using Popsicle-sticks

#5) Move ONLY two sticks to different locations so that you end up with the bottle cap sitting OUTSIDE of the sticks. (The resulting shape should remain the same, that an upside-down football goal-post.)



Engineering-Design using Popsicle-sticks

#6) Move ONLY one stick to a different location so the Llama is now facing the opposite direction!



?