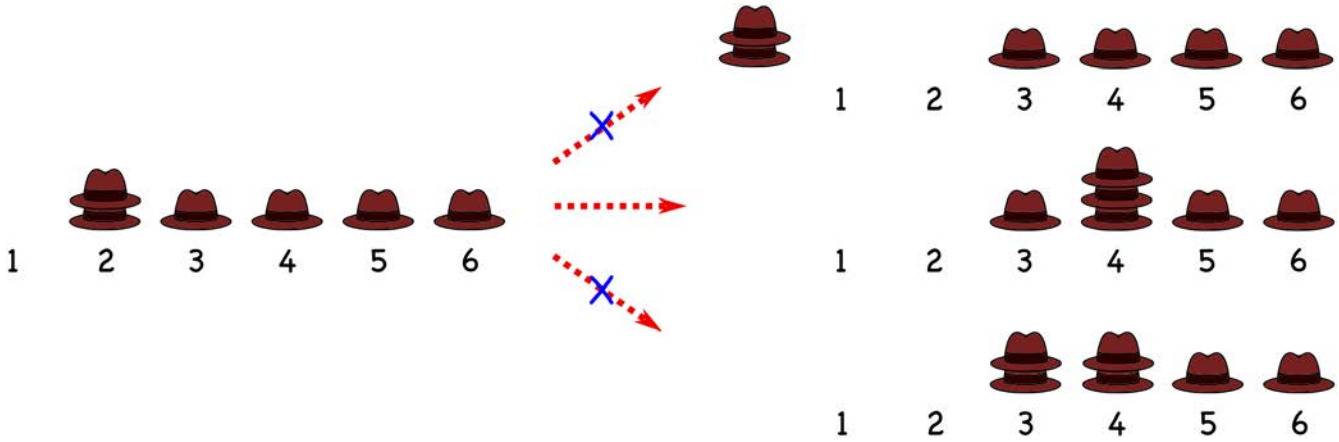
Puzzle of the Week
Stacking Hats – 1

Rules for stacking:

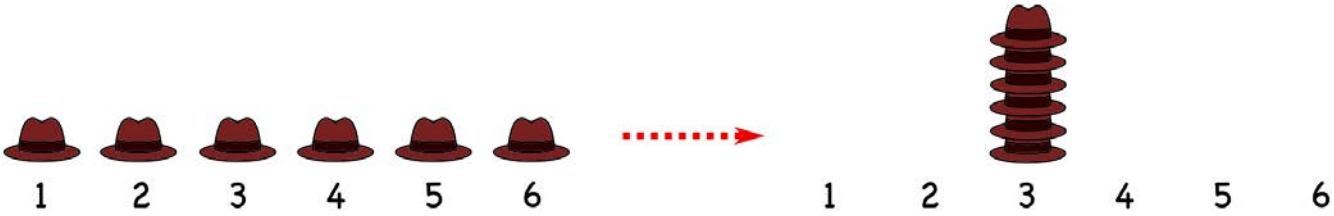
1) When you move a stack, you must move the whole stack onto a place with at least one hat.

2) A stack moves over the number of places for how many hats there are.

3) You can only use the original six spots.



THE CHALLENGE: Use these rules to move the six hats into one stack. Can the final stack of six hats end up in any of the six positions, or do only some of the positions work?



EXPLORATION: What happens if you start with seven hats in seven places? What about other numbers?

Puzzle of the Week
Stacking Hats – 1 – Notes

THE CHALLENGE & EXPLORATION: It is actually easiest to show how to do this with any number of hats ending up in any position. Interestingly, sometimes making a problem more general makes it easier to do.

Doing this puzzle for one, two, or three hats is very easy.

So, assume we have some number of hats that is bigger than three, and also assume we know how to do this puzzle for any number of hats less than this number.

Select the spot where you want all the hats to end up. Leave that hat alone - it does not ever need to move. I'll assume there are hats on both sides of that special hat - if there aren't, then you only need to concern yourself with the one side.

For the hats that form a group of hats on the left side, use your expertise to pile them up in one stack on the far left side. Similarly, for the hats that form a group of hats on the right side, use your expertise to pile them up in one stack on the far right side. Finally, jump the hats on the far left onto the special hat and jump the hats on the right side onto the special hat. We now have all the hats in one pile where we wanted them to be.