





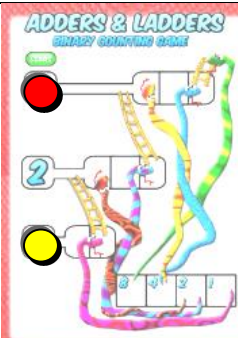
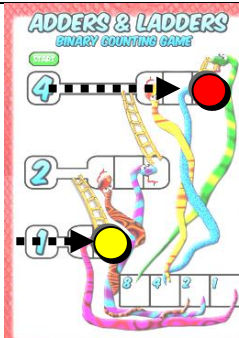
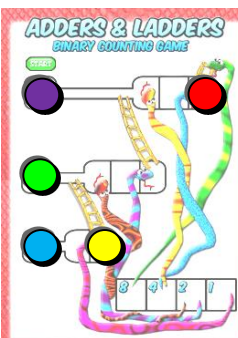
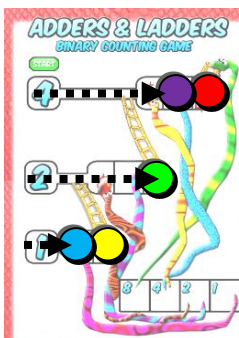


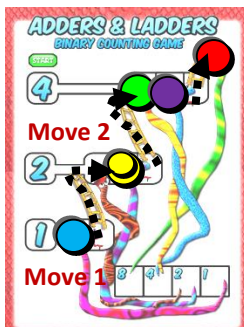
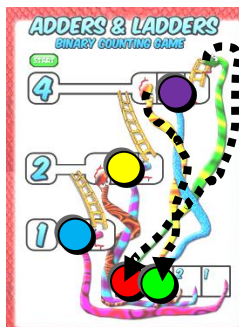


Adders and Ladders

Adders and ladders is a lot like snakes and ladders but it's not a game where you race to the finish. It's an adding machine. It adds in binary just like a processor (CPU) does. Adders and ladders is for any 3 bit numbers (up to 7) and can give a 4 bit result (up to 15).

By now you should know that computers work by sending binary signals (on/off or in binary, 0 or 1). The CPU receives signals from and sends signals to the rest of the computer. Inside the CPU a special register, the Arithmetic and Logic Unit (ALU) can do sums and other operations. It can add binary signals (numbers) together. It does it a bit like the game we are going to play. When you have worked through the walk through (below), try adding up other values (no more than 7+7).

You need 6 counters.       AND REMEMBER TO SLIDE BEFORE YOU GLIDE	
Let's try adding up 5 (101) and 7 (111). Go to START.	
1. Input 5 (101) by adding a counter at 4 and 1 then 2. Move the 2 counters as far across as they will go	 
3. Input 7 (111) In the same way, by adding a counter at 1, 2 and 4 and slide them across as far as they will go	 
4. Work from the bottom up (levels 1, 2, 4). Counters go down the snake or up the ladder. 5. If a counter is on a snake and ladder square, it goes down the snake (as shown right) unless another counter is next to it, blocking the snake (as shown below). Then it goes up the ladder instead. SLIDE BEFORE YOU GLIDE!	 
 	
There should be counters on 8 and 4 which is the binary number 1100.	