Chapel Hill Math Circle
Beginners Group (1-3)
April 30, 2016

Working Backwards

1. Judy is waiting for the school bus alone. When she gets on the bus, there are already some students inside. At the next bus stop, 5 students get on. After a few minutes, another 7 students get on at the following stop. All 24 students get off the bus at school. How many students were on the bus when Judy boarded the bus?

2. Bacteria that double every 24 hours fill a lake it has infested after precisely 60 days. On what day was the lake half-full?[1]

3. Two players take turns at removing 1 to 4 coins from an original pile of 16 coins. The winner is the one who removes the last coin. Is there a winning strategy for either player?[2]

[1] Chess Grand Master Maurice Ashley
https://www.youtube.com/watch?v=v34NqCbAA1c

[2] Working Backwards Strategy
https://www.youtube.com/watch?v=cGdFJ0x7sQo&list=PL1zAhPH1F4PNoDsu4fOHx8Q-nF5qNY7WQ&index=5