PROBLEM CORNER

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Problem 1

There are 17 rooms in a row with a door between every two adjoining rooms. Additionally, each room has a door opening to the corridor. A princess lives in one room each day and moves to an adjoining room the next day at 7 in the morning. A prince wants to talk to the princess and knocks on one door each day at noon. If the princess is in that room, she will open the door and they can converse. Otherwise, the prince leaves and tries again at some door at the same time the next day. Is there a strategy to guarantee that the prince will meet the princess if he has 30 days to try?

Problem 2

A horizontal meter ruler has 7 ants randomly dropped on it. Once on the ruler, each ant chooses to crawl to the right or to the left, independent of other ants, at a constant speed of 1 meter per minute and does not change direction unless it meets another ant coming towards it, whereupon it changes its direction but not its speed. When an ant reaches either end of the ruler, it falls off the ruler. Find out the least time duration since the commencement of the ants' motion till all ants fall off the ruler.