

The Maze Problem

In the kingdom of Oz lives a king who has only one child, a princess whom he loves very much. One day the princess falls in love with a peasant and wants to marry him. The king is very unhappy about this, but because he loves his daughter, he makes a deal with her. He says, "you know we have two rooms in the dungeon. I will put a hungry tiger in one room and you in the other. Your peasant will then choose paths at random until he enters one of the two rooms. If he enters the room with you in it, then you may marry him. I will let you choose the room you want to be in." If the princess knows the maze, which room should she choose?

To make a decision, suppose the princess wishes to simulate the situation by rolling a die.

Use the following plan for the simulation:

For an intersection point in the maze that has three doors, choose the left-hand door if the die shows 1 or 2, the middle door if the die shows 3 or 4, and the right-hand door if the die shows 5 or 6.

For an intersection point in the maze that has two doors, choose the left-hand door if the die shows 1, 2, or 3 and a right-hand door if the die shows 4, 5, or 6.

Note: Keep rolling the die and selecting the path until you reach room X or room Y.

Work in pairs to perform the simulation 10 times. For each trial, fill in the chart on the next page. To fill in the column labeled path, list the doors that were used. For example: AD, B, CF, etc.

When all groups are done with the simulation, we will combine the results to calculate the experimental probability for reaching room X and for reaching Room Y. At that time, we can decide what advice to give the princess.

The Maze Problem Labsheet

Trial Number	First Door	Second Door	Path	Room Entered
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Number of times chosen

	Yours	Class
Paths:	_____	_____
A – D	_____	_____
A – E	_____	_____
B	_____	_____
C – F	_____	_____
C – G	_____	_____
C – H	_____	_____
Rooms:		
X	_____	_____
Y	_____	_____


