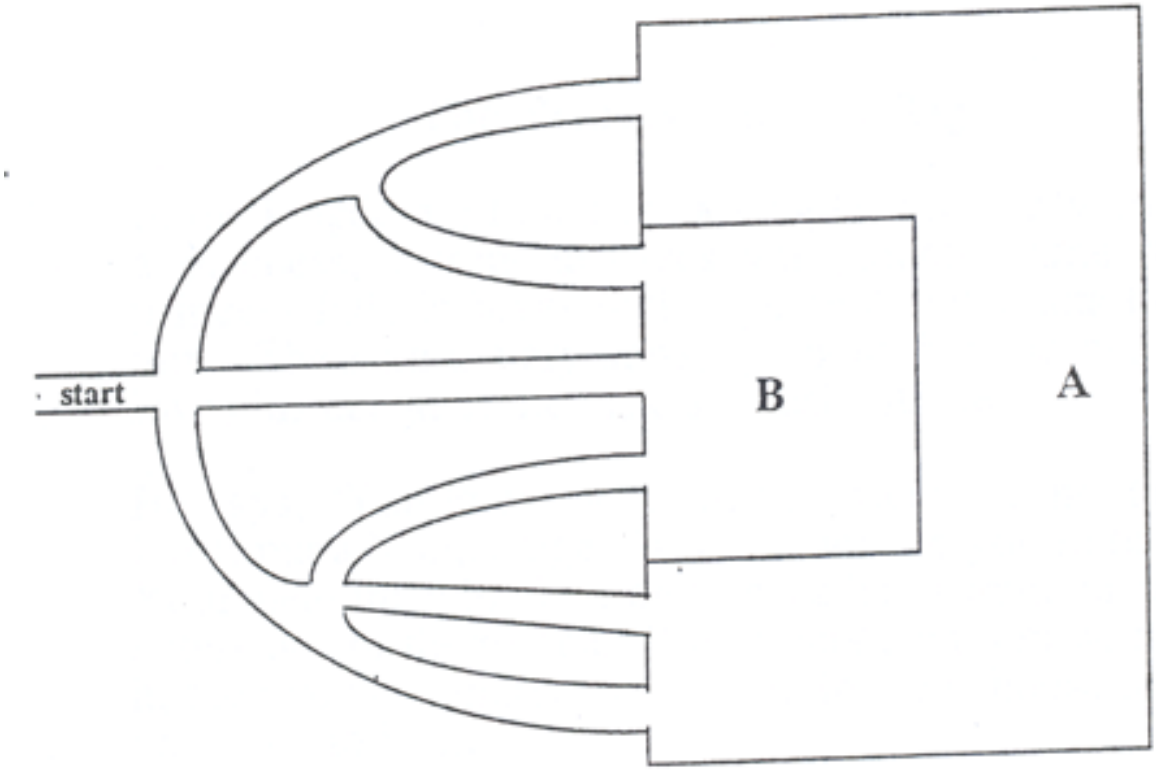
“The Princess and the Tiger” Activity

In the kingdom of Oz lives a kind 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 rooms. If he enters the room with you in it, then you can 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?



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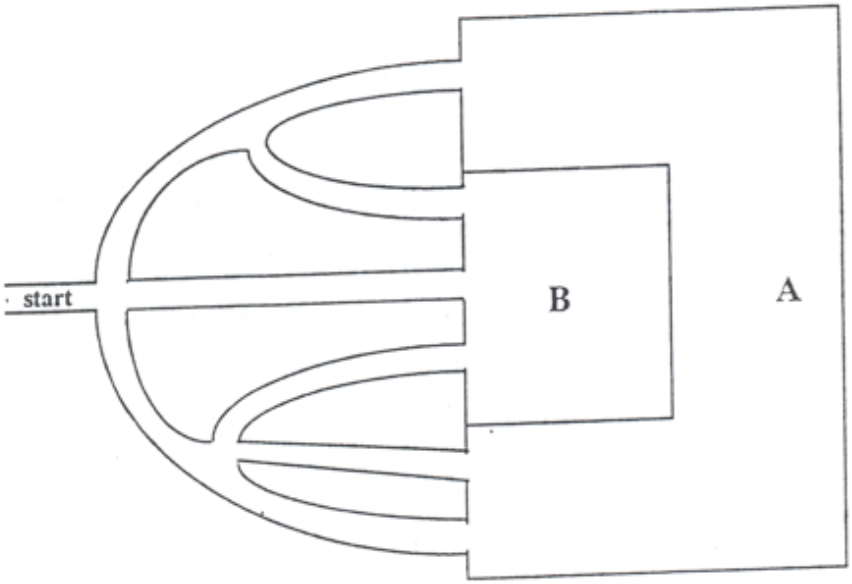

Solutions to “The Princess and the Tiger”

Arithmetic:

At start, there are three paths, so the probability of choosing any one is 1/3.

Looking at the top path, it branches into two more paths. One leads to Room A and one leads to Room B. Therefore, the probability at each of these is 1/6.

Looking at the middle path, there are no branches, so the probability of choosing Room B remains 1/3, as it was at the start.

Looking at the bottom path, it branches into three more branches. One leads to Room B and two lead to Room A. The probability of choosing any one of these is 1/9.

In summary, the total probabilities of choosing Room A are:

1/6 + 1/9 + 1/9, or a total of 7/18.

The total probabilities of choosing Room B are:

1/6 + 1/3 + 1/9, or a total of 11/18.

Thus the room to choose is Room B.

Geometric:

Looking at this solution from the standpoint of area, consider a 6 by 6 square (36 tiles).

Initially, there are three equal sections, each with 12 tiles.

Following the top branch, those twelve tiles split evenly, 6 and 6 between Rooms A and B.

In the middle path, all twelve tiles go to Room B.

In the lower path, the twelve tiles are divided evenly into three portions of four tiles each, 4 going to Room B and the remainder (8 tiles) to Room A.

In summary, the area representing Room A consists of 14 tiles and the area representing Room B consists of 22 tiles.

A = 14/36 = 7/18

B = 22/36 = 11/18

Thus, the Room B is preferred.

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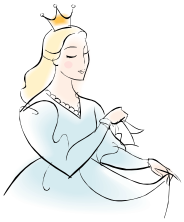
Debriefing Questions

1. What content standards were addressed? [Locate specific GLEs, checks, and SPIs if time permits)

2. Were any process standards addressed? Which ones?

3. What level of demand was this task? (Higher-level; lower-level)

4. How would this task fit in Webb’s Levels?

5. How could we assess this mathematical task (discuss both formative and summative assessment strategies)?