Puzzle time - on propositional logic

Ladies and tigers: the story

I welcome you here to the world of ladies and tigers built by Smullyan upon the short story published by F. R. Stockton, The *Lady, or the Tiger?*, 25th century 83, 83-86 (1882). You are a young prince in love with a beautiful princess. Her father, the ruler of the kingdom, asked you to choose between two doors, behind each there is either your beloved one or a killing tiger. There are signs on each door, but you don't know if they are true or false. Your dilemma is: which door to open in order to find the lady, marry her, and get half of the kingdom (as compensation, the wagging tongues would say).

The Lady or the Tiger?

First task: Each of the two rooms contains either a lady or a tiger.

There could be tigers in both rooms or ladies in both rooms. There is a sign on each room. One of the signs is true and the other is false. Which door to open in order to find the lady, marry her, and get half of the kingdom as compensation?
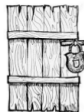
Room₁
In this room there is a lady and in the other room there is a tiger

Room₂
In one of these rooms there is a lady and in one of these rooms there is a tiger

First task

Each of the two rooms contains either a lady or a tiger. There could be tigers in both rooms or ladies in both rooms. There is a sign on each room. One of the signs is true and the other is false. Which door to open in order to find the lady, marry her, and get half of the kingdom as compensation?
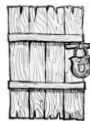
Room$_1$
In this room there is a lady and
in the other room there is a tiger

Room$_2$
In one of these rooms there is a lady and
in one of these rooms there is a tiger

```
1   assign(max_models,−1).
2   assign(domain_size,2).
3
4   formulas(assumptions).
5     L1 & L2 | L1 & T2 | L2 & T1 | T1 & T2.
6     (L1 −> −T1) & (L2 −> −T2).
7     R1 <−> (L1 & T2).
8     R2 <−> ((L1 | L2) & (T1 | T2)).
9     (R1 | R2) & −(R1 & R2).
10  end_of_list.
```

Model	L_1	L_2	T_1	T_2	R_1	R_2
1	0	1	1	0	0	1

Room$_1$
In this room there is a lady and
in the other room there is a tiger

Room$_2$
In one of these rooms there is a lady and
in one of these rooms there is a tiger