

Game 8 – Mousetraps

Shelby will set mousetraps among seven different locations in her house—the foyer, the guest room, the kitchen, the living room, the master bedroom, the pantry and the study. At most, Shelby sets one mousetrap at each location. Shelby's setting of the mousetraps is consistent with the following conditions:

If Shelby sets a mousetrap in the living room, she does not set one in the study.

If Shelby sets a mousetrap in the foyer, she does not set one in the kitchen.

If Shelby sets a mousetrap in the study, then she also sets one in master bedroom.

If Shelby sets a mousetrap in either the foyer or the kitchen, then she sets one in the study.

- Which could be a complete and accurate list of the places where Shelby could set a mousetrap?
 - the pantry, the living room, the foyer
 - the pantry, the living room, the foyer, the study
 - the pantry, the foyer, the study, the master bedroom
 - the pantry, the kitchen, the study
 - the foyer, the kitchen, the study, the master bedroom
- If Shelby does not set a mousetrap in the master bedroom, which one of the following could be true?
 - Shelby sets a mousetrap in both the pantry and the living room.
 - Shelby sets a mousetrap in both the pantry and the foyer.
 - Shelby sets a mousetrap in both the foyer and the living room.
 - Shelby sets a mousetrap in both the kitchen and the living room.
 - Shelby sets a mousetrap in both the guest room and study.
- If Shelby sets the greatest number of mousetraps possible, then she cannot set a mousetrap in
 - the living room
 - the guest room
 - the foyer
 - the kitchen
 - master bedroom
- If Shelby does not set a mousetrap in the study, which one of the following must be true?
 - Shelby sets a mousetrap in the living room.
 - Shelby sets a mousetrap in the pantry.
 - Shelby does not set a mousetrap in either the master bedroom or the guest room.
 - Shelby sets at least three mousetraps.
 - Shelby sets at most three mousetraps.
- Each one of the following could be true EXCEPT
 - Shelby sets a mousetrap in the pantry and exactly two other places.
 - Shelby sets a mousetrap in the foyer and exactly three other places.
 - Shelby sets a mousetrap in the study and exactly four other places.
 - Shelby sets a mousetrap in the guest room and exactly one other place.
 - Shelby sets a mousetrap in the kitchen and exactly one other place.
- If Shelby does not set a mousetrap in the kitchen, what is the maximum number of places that Shelby can set a mousetrap?
 - 2
 - 3
 - 4
 - 5
 - 6

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1. C
2. A
3. A
4. E
5. E
6. D

Question 1 involves eliminating all the choices which break one of the rules. A, B, D and E all fail to comply with one of the conditions. On Question 2, you can deduce based on the third rule that Shelby has not placed a mousetrap in the study, and based on rule 4 that she has not placed one in either the foyer or the kitchen.

The third question asks for a maximum number. On these you should always identify rules which exclude certain elements. For example, the living room excludes the possibility of placing a mousetrap in the study, and thus the master bedroom, foyer, and kitchen. This means that you can get the most mousetraps by excluding the living room and including the others. It takes some checking, but you should see that rules that say two things can't be together mean that one thing will result in more traps than another.

Question 4 involves a similar deduction to the second question—if there is no mousetrap in the study, then there is no mousetrap in the master bedroom, foyer, or kitchen. This leaves three rooms at most. Question 5 likewise is about a combination of inferences. If Shelby places a mousetrap in the kitchen, then she places one in the study—and thus places one in the master bedroom. Question 6 is the same maximum you dealt with earlier, with has either the kitchen or the foyer, but not both—you can achieve the maximum number of 5 mousetraps with either a mousetrap in the kitchen or in the foyer (but they cannot be in both).