

Problem 1. Which Switch?



Three switches control the lights in three rooms, one of which is your room. You want to know which switch controls the light for that room but only want to make one trip.

How can you determine which switch turns on that light while only making one visit to the room?

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Problem 2. Weighing Blocks



Suppose you have eight rubber blocks: seven have the same weight, one is heavier than the rest. You are given a balancing scale with two pans – in which you can put multiple blocks at once.

What is the minimum number of times you need to weigh the blocks to determine which one is heavier?

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Problem 3. Three Counters



Three counters (X,Y,Z) are colored red, white, and blue, but not necessarily in this order. One, but only one, of the following statements is true:

X is red, Y is not red, Z is not blue.

What are the colors of each counter?

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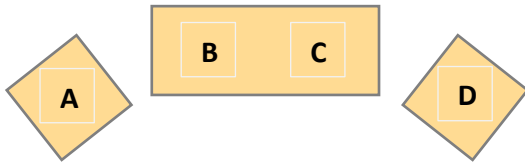


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Problem 4. Murder Mystery

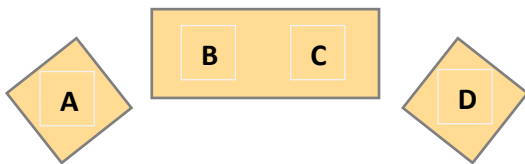


A man has been found dead in a hotel, his wine poisoned. Four people, seated on a sofa and two chairs in front of the fireplace, are discussing the foul deed. The four (Howard, Scout, Juliana, and Wallace) are, not necessarily respectively, a journalist, teacher, engineer, doctor.

- (a) The waiter pours a beer for Scout and a glass of whiskey for Juliana, moving left to right.
- (b) In the mirror, the journalist sees the door close, and turns to speak to Wallace one seat over.
- (c) Neither Howard nor Scout have any siblings.
- (d) The teacher is a teetotaler, and the journalist orders a glass of wine.
- (e) Howard, sitting in one of the chairs, is the engineer's brother in law.
- (f) The teacher is next to Howard on his left.
- (g) Suddenly, a hand moves stealthily to put something in Juliana's whiskey. Is it the murderer?

No one has left their seat and no one else is in the room. What is the profession of each person, where are they sitting, and who is the murderer?

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