Logic Problems

1. There are three switches downstairs. Each corresponds to one of the three light bulbs in the attic. You can turn the switches on and off and leave them in any position. How would you identify which switch corresponds to which light bulb if you can only go up to the attic once?
2. A digital clock displays the time in 24-hour format (00:00 to 23:59). How many times in a day do the minute and hour hands of the clock form a right angle?
3. You have 12 balls that all look identical, but one is slightly lighter or heavier than the others. Using a balance scale only three times, how can you determine which ball is different and whether it is lighter or heavier?
4. In a town, 70% of the adults are married, 80% have a driver's license, and 85% own a car. What is the maximum percentage of people who are married, have a driver's license, and own a car?
5. You have a rope that burns unevenly. It takes one hour to burn completely from one end to the other. However, different sections of the rope might burn in different amounts of time. How can you measure exactly 45 minutes using only this rope?
6. A prisoner is told: "If you tell the truth, I will hang you; if you lie, I will shoot you." What can the prisoner say to save himself?
7. A boat is crossing a river and ends up exactly opposite to the starting point, but downstream. The river flows at a constant speed. Where should the boat start its journey to minimize the time taken to cross?
8. There are three closed boxes, one containing only apples, one containing only oranges, and one containing both apples and oranges. The boxes are labeled incorrectly. You are allowed to open just one box and draw only one piece of fruit. How can you correctly label the boxes?
9. A farmer has a rectangular field surrounded by a fence. He uses 80 meters of fence to enclose a square area and 100 meters of fence to enclose a rectangular area. What are the dimensions of the field?
10. You have two hourglasses, one measures 7 minutes and the other measures 11 minutes. How can you accurately time 15 minutes using only these hourglasses?