5) You have two sand timers, which can show 4 minutes and 7 minutes respectively. Use both the sand timers (at a time or one after other or any other combination) and measure a time of 9 minutes.

Ans. Start the 7 minute sand timer and the 4 minute sand timer. Once the 4 minute sand timer ends turn it upside down instantly. Once the 7 minute sand timer ends turn it upside down instantly. After the 4 minute sand timer ends, only 1 minute is elapsed in 7 minute sand timer, therefore for another minute turn the 7 minute sand timer upside down. When the 7 minute sand timer ends, total time elapsed is 9 minutes.

6) John and Mary are a married couple. They have two kids, one of them is a girl. Assume safely that the probability of each gender is 1/2.

What is the probability that the other kid is also a girl?

Ans. The possible dataset for the kids are as follows:

{B,B}

{G,B}

{B,G}

{G,G}

Since we know that one of the child is a girl, by eliminating the first dataset, we still have 3 possibilities and our required outcome is {G,G} which means it 1/3 possibility that the other kid is also a girl.

7) The following appeared as part of a campaign to sell advertising time on a local radio station to local businesses.

Ron’s Cafe began advertising on our local radio station this year and was delighted to see its business increase by 10 percent over last year's totals. Their success shows you how you can use radio advertising to make your business more profitable.

Discuss how well reasoned you find this argument. In your discussion be sure to analyze the line of reasoning and the use of evidence in the argument. For example, you may need to consider what questionable assumptions underline the thinking and what alternative explanations or counterexamples might weaken the conclusion. You can also discuss what sort of evidence would strengthen or refute the argument, what changes in the argument would make it more logically sound and what, if anything, would help you better evaluate in conclusion.

Ans. To understand if Radio Station advertising actually worked we need to look into multiple different factors. One is that while Radio Station advertising might increase the outreach, other factors such as new management or a change in menu or addition of newer discounts might have aided the cafe to be more successful than the Radio Station advertising. Other possibility includes the lack of competition for Ron’s café making him the sole cafe store in the area which would have increased the sales as well. Regardless of whether it is allowed that radio advertising is answerable for the Ron's success, another presumption should be made before we can infer that radio advertising will bring about expanded benefits for café when all is said in done. We should likewise expect that what is valid for the Ron will moreover be valid for most different cafes. While cafes might have had success using Radio advertising it may not be necessary that other small scale businesses will actually gain the same amount of success from such advertising. Taking everything into account, it would be hasty for a business to put resources into radio advertising exclusively based on the proof introduced. To fortify the conclusion, it should be set up that radio advertising was the sole reason for expanded business at Ron’s.