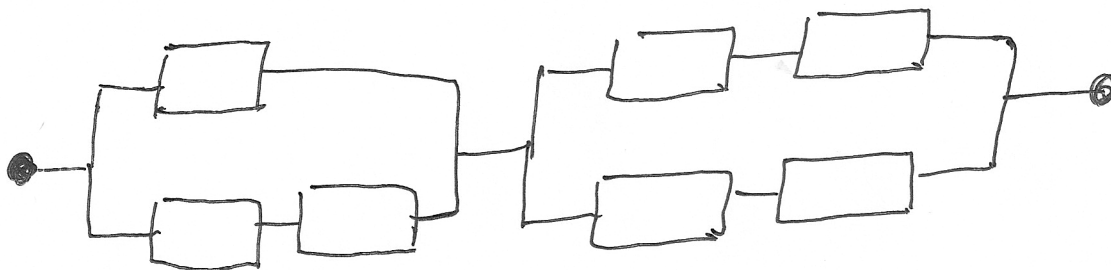


## Independence.

1. A dice is rolled twice. Let  
 $A = \{\text{the first number is odd}\}$ ,  
 $B = \{\text{the first number is even}\}$ ,  
 $C = \{\text{the second number is odd}\}$ ,  
 $D = \{\text{the second number is even}\}$ ,  
 $E = \{\text{the first number is equal to the second number}\}$ .  
Which of these events are pairwise independent?
2. Two cards are drawn from a deck of 52. What is the probability of two aces? two reds?
3. Bill has to pass three traffic lights on the way home. The probability that he stops at the first light is  $1/2$ , second- $1/3$ , third  $1/4$ . What is the probability that Bill has to stop exactly once? twice? three times?
4. Each element in the chain work with probability  $\frac{2}{3}$ . What is the probability that the whole chain works?



5. In a certain country 20% of all coins are counterfeit. A counterfeit coin has 70% of landing head while a genuine coin has 50% of landing head. A random coin is tossed twice.
  - (a) Find the probability that it will land tail 2 times.
  - (b) Given that a coin landed head 2 times find the probability that it is genuine.
6. A dice is rolled five times. What is the probability that exactly two rolls gave numbers divisible by 3?