

Problem Set 2

- Which of these numbers cannot be a probability?
 - 0.00001
 - 0.5
 - 1.001
 - 0
 - 1
 - 20%
- There are 5 red balls and 3 yellow balls in a box. They are exactly the same except the different colors. If a ball from this box is selected at random, what is the probability that this ball is yellow?
- There are 5 balls in a box. They are exactly the same except the different colors—red and white. If the probability to select a ball that is red randomly is $\frac{2}{5}$
 - How many red balls and white balls in the box?
 - What is the probability to select two balls that are both red randomly? (Assume that we are sampling with replacement).
 - What is the probability to select two balls that are both red randomly? (Assume that we are sampling without replacement).
- The blood groups of 400 people are distributed as follows: 100 have type **A** blood, 130 have **B** blood type, 140 have **O** blood type and 30 have type **AB** blood. If a person from this group is selected at random, what is the probability that this person has O blood type?
- A dice is rolled, find the probability that an odd number is obtained.
- Consider two independent events A and B. Let $P(A) = 0.2$ and $P(B) = 0.5$. What is $P(\bar{A} \cap \bar{B})$? Are these independent events?
- If Sue eats Wheaties for breakfast she has a 90% of getting an A on this quiz, but if she does not eat Wheaties then she only has a 50% chance of getting an A. If Sue eats Wheaties 60% of the mornings of a quiz, what is the probability that she gets an A?
- Suppose that I shoot a rifle at a target and hit it 25% of the time. Suppose that I fire 10 shots and the probabilities of hitting the target each time are independent. What is the probability of hitting it at least once?
- Suppose that your friend has 4 coins. Half are fair, but half turn up "heads" 75% of the time. Suppose that you randomly choose one of these coins and flip it 3 times and get 3 heads. What is the probability that you chose a fair coin?
- Suppose that $P(A) = 0.25$ and $P(B) = 0.5$. If $P(A \cup B) = 0.70$ what is $P(A|B)$?