

## D116: 2.4 Computing probability by counting

Ex 1: Assume that you select 2 coins at random from 9 coins: 5 dimes and 4 quarters. What is the probability that all of the coins selected are dimes?

Ex 2: Assume that you randomly select 4 cards from a deck of 52.

1. What is the probability that all of the cards selected are clubs?
2. What is the probability that all of the cards selected are face cards (i.e. jacks, queens, or kings)?

Ex 3: An experiment consists of rolling three fair dice – a red die, a blue die, and a white die – and recording the number rolled on each die. Assume that the dice are fair, so that all outcomes are equally likely.

1. What probability should be assigned to each outcome?
2. What is the probability that the sum of the numbers rolled is 6?
3. What is the probability that the sum of the numbers rolled is at most 5?

Ex 4: Assume that 10 people, including a husband and wife pair, apply for 5 sales positions. People are hired at random.

1. What is the probability that both the husband and wife are hired?
2. What is the probability that one is hired and one is not?

Ex 5: A bucket contains orange tennis balls and yellow tennis balls from which 5 balls are selected at random. There are 8 orange balls and 7 yellow balls in the bucket.

1. What is the probability that, of the 5 balls selected at random, at least one is orange and at least one is yellow?
2. What is the probability that, of the 5 balls selected at random, at least two are orange and at least two are yellow?

Ex 6: Assume that there are 12 frozen dinners: 6 pasta, 3 chicken, and 3 seafood dinners. The student selects 5 of them. What is the probability that at least 2 of the dinners selected are pasta dinners?

Ex 7: Assume that there are 13 board members: 11 females, and 2 males including Tom. There are 5 different tasks to be assigned randomly, including that of reserving a room for meetings.

1. Find the probability that Tom is given a task.
2. Find the probability that Tom is given the task of reserving a room for meetings.

Ex 10: Assume that the committee consists of 8 Republicans and 5 Democrats. A subcommittee of 4 is randomly selected from all subcommittees of 4 which contain at least 1 Democrat. What is the probability that the new subcommittee will contain at least 2 Democrats?

Ex 11: Assume that some team plays 7 games. If the team is equally likely to win as to lose each game, what is the probability that they win a string of at least 5 games in a row?

Ex 12: Assume that there are 5 different issues of Newsweek, 6 different issues of Time, and 2 different issues of Sports Illustrated, on the rack. You choose 4 of them at random.

1. What is the probability that you choose 3 issues of Newsweek and 1 issue of Time?
2. What is the probability that you choose at least 3 of the Time magazines?

Ex 13: The playbook of a football contains 10 passing plays and 15 running plays. The coach randomly selects 8 plays from the playbook. What is the probability that the coach selects at least 3 passing plays and at least 2 running plays?