

1. A restaurant serves 12 side dishes – 3 potato dishes, 5 vegetable dishes, and 4 pasta dishes. Customers are allowed to choose three distinct side dishes.
 - (a) How many possible side dish combinations can one order at this restaurant?
 - (b) How many possible side dish combinations can one order at this restaurant if you have to order 1 potato dish, 1 vegetable dish, and 1 pasta dish?
 - (c) How many possible side dish combinations can one order at this restaurant if you have to order exactly two vegetable dishes?
 - (d) How many possible side dish combinations can one order at this restaurant if you have to order at least two vegetable dishes?
2. A club with 22 members must select a president, a vice-president, and secretary from among themselves. How many ways can they do this?
3. A club with 25 members – 17 women and 8 men – must select 5 members to attend a club fair. If they want to send 3 women and 2 men, how many possible ways can they do this?
4. Let

$$A = \{a, b, c, d, e, f\}, \quad B = \{a, e, i, o, u\}$$

- (a) Find $A \cap B$.
 - (b) Find $A \cup B$.
 - (c) List all subsets of $A \cap B$.
 - (d) How many subset of B exist?
 - (e) If the universal set U is the 26-letter alphabet, how many elements are in $A' \cap B'$?
5. A parking lot contains 150 cars. 35 cars are red, 65 cars are SUVs, and 75 cars are neither red no SUVs. How many cars are red SUVs?
 6. A family has two children.
 - (a) What is the probability that both children were born on the weekend?
 - (b) Given that neither child was born on a Monday, what is the probability that both children were born on the weekend?
 - (c) Are the events “both children were born on the weekend” and ”neither child was born on a Monday” independent events?
 - (d) Are the events “both children were born on the weekend” and ”neither child was born on a Monday” mutually exclusive events?
 7. When the weather is dry, the probability that your flight will be delayed is 10%. When is it raining, the probabiity that your flight will be delayed is 25%. When it is snowing, the probability that your flight will be delayed is 45%. Suppose the probability of rain is 18% and the probability of snow is 13%.
 - (a) What is the probability that your flight will be delayed?
 - (b) Suppose you are woken up by an alert that your flight is delayed, before you have a chance to check the weather. What is the probability that is snowing?
 8. Calculate the following.

$$\sum_{k=2}^6 \frac{5k+1}{2^k-1}$$

9. A random sample of 6 bullfrogs were studied in their natural habitat, and the number of times that they croaked over a period of 15 minutes was recorded. This data is listed below.

35, 19, 26, 52, 26, 34

Find the mean, median, mode, and standard deviation for the set of data.