321 Section Feb. 21

Natalie Linnell

HW6 #4: Let w be a bit string that starts with 0. Prove that if w ends with 0, the string 01 occurs in w one more time than the string 10.

HW6 #6: Prove by structural induction that the number of leaves is one greater than the number of internal nodes.

How many positive integers between 100 and 999 inclusive are

- Divisible by 7?

- Odd?

How many positive integers between 100 and 999 inclusive are

- Not divisible by 4

- Divisible by 3 or 4

How many positive integers between 100 and 999 inclusive are

- Divisible by 3 but not by 4

How many license plates can be made using either two letters followed by four digits or two digits followed by four letters?

A coin is flipped 10 times where each flip comes up either heads or tails. How many possible outcomes

- Are there in total?

- Contain exactly 3 heads?

A coin is flipped 10 times where each flip comes up either heads or tails. How many possible outcomes

- Contain at least 3 heads?

- Contain the same number of heads as tails?

A club has 25 members

- How many ways are there to choose four members of the club to serve on an executive committee?

A club has 25 members

- How many ways are there to choose the president, secretary, and treasurer of the club, where no person can hold more than one office?

Suppose a department contains 10 men and 15 women. How many ways are there to form a committee with six members if it must have the same number of men and women?

How many numbers must be selected from the set {1,2,3,4,5,6} to guarantee that at least one pair of these numbers add up to 7?

What is the minimum number of students, each of whom comes from one of the 50 states, who must be enrolled in a university to guarantee that there are at least 100 who come from the same state?