

Class 1 in-class problems, 18.05, Spring 2022

Concept questions

Concept question 1. Poker hands

The probability of a one-pair hand is:

- (1) less than 5%
- (2) between 5% and 10%
- (3) between 10% and 20%
- (4) between 20% and 40%
- (5) greater than 40%

Concept question 2. DNA

1. DNA is made of sequences of nucleotides: A, C, G, T.

How many DNA sequences of length 3 are there?

- (i) 12 (ii) 24 (iii) 64 (iv) 81

Concept question 3. DNA

2. How many DNA sequences of length 3 are there with no repeats?

- (i) 12 (ii) 24 (iii) 64 (iv) 81

Board questions

Board question 1. Inclusion/Exclusion

A band consists of singers and guitar players:

7 people sing, 4 play guitar, 2 do both

How many people are in the band?

Board question 2. Rule of product

There are 5 Competitors in an Olympics 100m final.

How many ways can gold, silver, and bronze be awarded?

Board question 3.

I won't wear green and red together; I think black or denim goes with anything; Here is my wardrobe.

Shirts: 3B, 3R, 2G; sweaters 1B, 2R, 1G; pants 2D,2B.



How many different outfits can I wear?

Board question 4.

- (a) Count the number of ways to get exactly 3 heads in 10 flips of a coin.
- (b) For a fair coin, what is the probability of exactly 3 heads in 10 flips?

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18.05 Introduction to Probability and Statistics

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