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.

© Source unknown. All rights reserved. This content is excluded from our Creative Commons license. For more information, see https://ocw.mit.edu/fairuse.
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?