Board questions set 1

Problem 1: Olympics

There are 5 competitors in the 100m final. In how many ways can gold, silver and bronze be awarded?

Problem 2: Coin flips

(a) Count the number of ways to get exactly 3 heads in 10 coin flips.

(b) For a fair coin, what is the probability of exactly 3 heads in 10 flips?

Problem 3: Poker

A deck of cards contains 52 with **13 ranks** (2, 3, ..., 9, 10, J, Q, K, A) and **4 suits** ($\heartsuit, \spadesuit, \diamondsuit, \clubsuit$). A poker hand is a set of **5 cards**. A **one-pair** is a poker hand with two cards having one rank and the remaining three cards having different ranks. For example: $\{2\heartsuit, 2\spadesuit, 5\heartsuit, 8\clubsuit, K\diamondsuit\}$

(a) How many different 5-card hands have exactly one pair?
Hint: practice with how many 2 card hands have exactly one pair.
Hint for hint: use the rule of product.

(b) What is the probability of getting a one pair poker hand?