1.

a) We select 3 letters from 26. Thus there are $\Pi(26, 3) = 26!/(26 - 3)! = 26 \times 25 \times 24 = 15,600$ ways to form a sequence of 3 letters out of the 26 letters without replacement.

b) We select 5 letters from 26. Thus there are $\Pi(26, 5) = 26!/(26 - 5)! = 26 \times 25 \times 24 \times 23 \times 22 = 7,893,600$ ways to form a sequence of 5 letters out of the 26 letters without replacement.

2. We select 4 students from 200. That is $\Pi(200, 4) = 200!/(200 - 4)! = 200 \times 199 \times 198 \times 197 = 1,552,438,800$ ways of selecting these four officers.

3.

a) $100!/97! = 100 \times 99 \times 98 = 970,200$.

b) $200!/195! = 200 \times 199 \times 198 \times 197 \times 196 = 304,278,004,800$.

4.

a) A code is a sequence of four pegs each having one of six colors. That is $\Pi(6, 4) = 6!/(6 - 4)! = 6 \times 5 \times 4 \times 3 = 360$. Hence there are 360 different codes.

b)