Week 8 Quiz

Question 1 — 5 pts

How many distinguishable ways can the letters of the word "BACCALAUREATE" be arranged in order?

1.) $\binom{13}{4}\binom{9}{2}\binom{7}{2}\binom{5}{1}\binom{4}{1}\binom{3}{1}\binom{2}{1}\binom{1}{1}$

Question 2 — 15 pts

a) How many ways can the letters of the word COMPUTER be arranged in a row?

b) How many ways can the letters of the word COMPUTER be arranged in a row if O and M must remain next to each other as either OM or MO?

c) How many permutations of the letters COMPUTER contain P, U and T (all three of them) not to be together in any order?

2.a.) 8!

2.b.) 6!

2.c.) 8! – (5!3!)

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Week 8 Quiz

Question 3 — 15 pts

Consider a bag of jelly beans that has 40 red, 40 yellow, and 40 green jelly beans.

a) How many color sequences can you get by drawing 6 beans from the bag?

b) How many color combinations of 10 beans have at most 3 yellow beans?

c) How many color combinations of 10 beans have at least 6 yellow beans?

3.a.) 3^6

3.b.) $\binom{10}{0} + \binom{10}{1} + \binom{10}{2} + \binom{10}{3}$

3.c.) $\binom{10}{7} + \binom{10}{8} + \binom{10}{9} + \binom{10}{10}$

Question 4 — 5 pts

How many different combinations of nickles, dimes and quarters can a piggy bank contain if it has 40 coins in it?

4.) $\binom{40+4-1}{4-1} = \binom{43}{3}$

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Question 5

10 pts

Consider a class with 8 boys and 6 girls .

a) In how many ways can a committee of nine consisting of 4 boys and 5 girls be chosen?

b) How many of the possible ways a committee of 7 can be chosen at random from the class consists at least 3 girls ?

5.a.) $\binom{8}{4}\binom{6}{5}$

5.b.) $\binom{6}{3}\binom{8}{4}+\binom{6}{4}\binom{8}{3}+\binom{6}{5}\binom{8}{2}+\binom{6}{6}\binom{8}{1}$