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You can only use the faculty approved calculator with sticker. Pens, pencils, erasers, and straight edges only. No crib sheets. NO CELL PHONES. If you have a difficulty you may try making REASONABLE assumptions. State the assumption and how that assumption limits your answer. Justify your responses. Good Luck

1. In a certain school there are only Electrical Engineering students, Civil Engineering Students and Mechanical Engineering students. These students must take a class where they give a presentation. Students feel that the order of presentations is very important.
   a. If there are 9 students in the class and all give their presentation on one day how many different ways can you arrange the order of the presentations? **(1 mark)**
   b. If there are 18 students in the class but only 9 can give their presentation on Day 1, how many different orders of presentation can you have for Day 1. **(2 marks)**
   c. If the class contains 7 Mechanicals, 6 Civils and 5 Electricals and we require that the 9 individuals who give their presentations on Day 1 must include 3 Mechanicals, 3 Civils and 3 Electricals, how many different orders of presentation are there for Day 1? **(4 marks)**
   d. Suppose that all of the presentations that you counted in c) part are equally likely. Suppose that you are one of the 5 Electrical Students. What is the probability that you will be the first one to give a presentation on Day 1? **(3 marks)**
2. Your factory receives 3 lots of screws. There are 100 screws in Lot 1, 200 in Lot 2 and 300 in Lot 3. Lot 1 contains 1% defective screws. Lot 2 contains 2% defective screws and Lot 3 contains 3% defective screws. All the screws are dumped in one bin and then a screw is selected randomly.
   a. What is the probability that the selected screw came from Lot 1? **(3 marks)**
   b. What is the probability that the selected screw was defective? **(3 marks)**
   c. If the screw was defective what is the probability that it came from Lot 2? **(4 marks)**
3. You work as a lobster fisherman. You set several traps every day. There is a probability of 0.08 that any one of your traps will catch a lobster on a given day. Assume that whether or not a trap catches a lobster is independent of what happens with the other traps.
   a. If you set 10 traps, what is the probability that you will catch more than 2 lobsters? **(3 marks)**
   b. If you catch more than 2 lobsters your boss will let you eat one for dinner. (Note that even if you catch 5 lobsters in one day you still only get one for dinner.)What is the probability that you will be able to eat a lobster in the next 3 days? **(4 marks)**
   c. What is the expected number of days you will have to wait until you will have had 2 lobster dinners? **(3 marks)**