Problem 1
Our department has 12 faculty members. We need to form a committee of two to serve on the college senate. In how many ways can we do that?

(a) Describe the task of generating one committee in terms of phases and making choices. How many phases are needed? What set(s) do we need?

(b) Write down each phase and in how many ways it can be done. Use the multiplication rule to figure out the count.

(c) Come up with a representation using #P and write the corresponding program. Make sure to ask the two golden questions. Try it and compare to the answer you obtained using the multiplication rule. Is there a discrepancy?

(d) Repeat the entire exercise knowing that the committee of two has to have one senator and one alternate senator. How does that change things? Write the corresponding program.

Problem 2 In a group of 10 people, 4 must be selected. A student in CSCI 10N01 suggest that the following representation is good:

\{\{?person : 2\} : 2\}

Argue in favor or against and provide justification. In particular, consider the two golden questions.

Problem 3
Repeat the problem of assigning 5 people to 3 chairs that we have seen in class, this time however, make use of next as well as any in creating your representation. Argue that your representation is good using the two golden questions. Write the program and confirm that it gives the same answer as before.

Problem 4
We have 15 junior and 12 senior students. In how many ways can we form a group of 4 seniors and 4 juniors with one of the 4 seniors being a leader? Work out this problem to get to the final program and obtain the answer.