You are given seven different programs, with labels A, C, E, G, I, K, M. Each program attepmpts to carry out the same task. Programs C, G, K, M are written in Python, while programs A, E, I are written in Java.

1. Suppose that programs C, A, E, I, M are correct and programs G, K are incorrect (not correct). For each statement below, say whether the statement is true or false, and give the *smallest* number of programs that must be checked to verify your claim. Justify each answer.

   (a) All Python programs are correct.

   (b) Some correct program is written in Java.

   (c) Every Java program is correct.

   (d) Only programs written in Python are incorrect.

2. Let P represent the set of all programs (our "universe" or "domain"), J represent the set of all *Java* programs, and T represent the set of all *correct* programs.

   For each statement in the previous question, draw one Venn diagram representing a situation when the statement is true, and another Venn diagram representing a situation when the statement is false—for this question, you may re-use the facts that programs C, G, K, M are written in Python and programs A, E, I are written in Java. But you may want to modify the facts about the correctness of the programs when representing the requested situations.