

Worksheet 7

1. Of 500 students, 230 of them are Industrial Engineering majors, 170 of them are Computer Science majors, and 6 of them of them are both Computer Science and Industrial Engineering majors.
 - (a) How many students are Computer majors and not Industrial Engineering majors?
 - (b) How many students are Industrial Engineering majors and not Computer Science majors?
 - (c) How many students are neither Industrial Engineering nor Computer Science majors?
 - (d) The school decides to add a Math program. Immediately, 10 of the students that are neither computer science nor industrial engineering majors become Math majors, 2 IE majors become dual-Math majors, 5 of the CS majors become dual-Math majors, and one of the dual-CS-IE majors decides that he would also like to be a Math major, so becomes a triple major Math-CS-IE. How many Math majors are there?
 - (e) How many non-Math majors are there?
 - (f) How many students have two majors?
2. In music, a key is a set of notes. If the set of all notes (in conventional, western music) is $\{A, A\#, B, C, C\#, D, D\#, E, F, F\#, G, G\#\}$, how many keys have exactly seven notes?
3. How many five-card poker hands have a four-of-a-kind?
4. A sports team has 8 members, and each member needs a uniform. Each player has a unique number from 1 to 8 on their uniform, and the team has to choose a color for their uniform. If the uniforms can either be black, purple, or blue, how many different ways can the team make their uniforms?