In-class Problems - Rachna Sha
24.1

1. A license plate consists of either 3 letters followed by 3 digits (standard plate) 5 letters (vanity plate) 2 characters - letters or numbers (big shot plate) Compute the number of different possible license plates

   Solution:

   The set of letters L::= {a,b..z,A,B...Z } and digits D ::= {0...9}

   P_s = license plates with 3 letters followed by 3 digits
   $= (52 * 52 * 52 * 10 * 10 * 10) = (52^3 * 10^3)$

   P_v = license plates with 5 letters
   $= (52 * 52 * 52 * 52 * 52) = (52^5)$

   P_{bs} = license plates with 2 characters - letters or numbers
   = license plates with 2 letters $\cup$ license plates with 2 numbers
   $= (56 * 56) \cup (10 * 10)$
   $= (56^2) + (10^2)$

   Total different possible license plates $= |P_s| + |P_v| + |P_{bs}|$
   $= (52^3 * 10^3) + (52^5) + (56^2 + 10^2)$
   $= (140608000) + (380204032) + (2704 + 100)$
   $= 520814836$