Name: _____ ID #: _____

1) Consider the following probability distribution

x	2	3	5	8
$f(x)$	0.2	0.4	0.3	0.1

  a) Find the cumulative distribution function of X.

  b) What is $P(2.7 < X < 5.1)$?

2) A congested computer network had a 1% chance of losing a data packet, and data packet losses are independent events. An email message requires 150 packets. What is the probability that at least two packets must be re-sent?

3) A geologist has collected 5 specimens of basaltic rock and 4 specimens of granite. The geologist instructs a laboratory assistant to randomly select 3 of the specimens for analysis. What is the probability that 2 of the specimens are granite?

4) The number of memory chips that are needed in a personal computer depends on the number of application programs, X, that the owner intends to run simultaneously. Assume that the probability distribution of X is given by $f(x) = 0.05(7.5 - x)$, $x = 1, 2, 3, 4$.
   a) What is the expected number of application programs?

   b) If 4 chips are required to run 2 programs and 6 chips are required to run 3 programs, and a new computer owner is not sure of his/her needs, how many computer chips it would be wise to have?