Conditions

• Random sampling condition
  – Samples must be selected at random from the population.
• 10% condition
  – When sampling without replacement, the sample size should be less than 10% of the population size.

Application

• Scores on the second exam in an introductory statistics course follow a normal model with mean, $\mu = 78$ and standard deviation, $\sigma = 8$.

Application

• Grades will be assigned as follows –
  A : score $\geq 90$
  B : $80 \leq$ score $< 90$
  C : $70 \leq$ score $< 80$
  D : $60 \leq$ score $< 70$
  F : score $< 60$
The Deal

• Before being told your score –
  – You can decide to use only your exam score to determine your grade.
  – You can decide to take your exam score and three others, chosen at random, and use the average of the four scores to determine your grade.

What should you do?

• What is the chance of getting an A?
  – Using one score alone.
  – Using the average of four scores.

What should you do?

• What is the chance of getting an F?
  – Using one score alone.
  – Using the average of four scores.