1. The heights of a group of college females are normally distributed with an average of 65 inches and a standard deviation of 2.07 inches. The weights of this same group of college females are normally distributed with an average weight of 128.9 pounds and a standard deviation of 9.86 pounds. The correlation between height and weight is $r = 0.6$ and the scatterplot is homoscedastic.

   a) Approximately what percent of college females weigh between 120 and 130 pounds? 37%
   b) Approximately what percent of college females are over 62 inches tall? 92.5%
   c) Predict the height of a college female who weighs 135 pounds. 65.77"
   d) Predict the weight of a college female who is 61 inches tall. 117.47 lbs
   e) Predict the %-tile in height of a college female who is at the 40%-tile in weight. 44.90-tile
   f) Predict the height of a college female who is at the 95%-tile in weight. 67.04"
   g) Predict the %-tile in weight of a college female who is at the 75%-tile in height. 66.90-tile
   h) Predict the weight of a college female who is at the 25%-tile in height. 124.88 lbs

2. A large sample of hot dogs are tested for sodium content and number of calories. Sodium content is normally distributed with an average of 370 mg and a standard deviation of 47.2 mg. Number of calories is normally distributed with an average of 147 calories and a standard deviation of 15.7 calories. The correlation between sodium and calories is 0.5.

   a) Approximately what percent of hot dogs contain more than 400 mg of sodium? 26.35%
   b) Approximately what percent of hot dogs have between 150 and 170 calories? 35.5%
   c) Predict the number of calories in a hot dog that contains 250 mg of sodium. 126.96 calories
   d) Predict the sodium content of a hot dog with 161 calories. 391.01 mg
   e)Predict the %-tile in calories of a hot dog that is at the 35%-tile in sodium content. 42.590-tile
   f) Predict the number of calories in a hot dog that is at the 70%-tile in sodium content. 151.08 calories
   g) Predict the %-tile in sodium content for a hot dog that is at the 80%-tile in calories. 66.90-tile
   h) Predict the amount of sodium in a hot dog that is at the 10%-tile in calories. 339.79 mg
3. A study is done on class attendance and final grades in a Math 109 class. The number of absences is normally distributed with an average of 5.5 and a standard deviation of 2.9. Final grades are normally distributed with an average of 72.5 and a standard deviation of 15.3. The correlation between number of absences and final grade is -0.88 and the scatterplot is homoscedastic.

   a) Approximately what percent of students missed more than 8 days? 19.5%
   b) Approximately what percent of students earned a B (80-89) in Math 109? 16.5%
   c) Predict the final grade of a student with 2 absences. 88.75
   d) Predict the number of absences for a student whose final grade is 80. 4.23 days
   e) Predict the %-tile in final grade for a student who is at the 75%-tile in absences. 27.5%tile
   f) Predict the final grade for a student who is at the 20%-tile in absences. 83.81
   g) Predict the %-tile in absences for a student whose final grade is at the 39%-tile. 60%tile
   h) Predict the number of absences for a student whose final grade is at the 88%-tile. 2.46 days

4. SAT scores and first semester GPAs of a group of college freshmen are studied. SAT scores are normally distributed with an average of 1120 and a standard deviation of 160. GPA’s are normally distributed with an average of 2.5 and a standard deviation of 0.5. The correlation between SAT and GPA is 0.8 and the scatterplot is homoscedastic.

   a) Approximately what percent of students scored above 1250 on their SAT? 21%
   b) Approximately what percent of students had a first semester GPA between 2.4 and 3.0? 42.9%
   c) Predict the GPA of a student who scores 1000 on their SAT. 2.2
   d) Predict the SAT of a student who has a GPA of 3.2. 1300
   e) Predict the %-tile in SAT for a student who is at the 90%-tile in GPA. 84.5%tile
   f) Predict the SAT score of a student who is at the 5%-tile in GPA. 910
   g) Predict the %-tile in GPA for a student who scored at the 99%-tile on the SAT. 97%tile
   h) Predict the GPA for a student who scored at the 50%-tile on the SAT. 2.5