# CH3 88 (extra credit 5 points)





1. For the bus data of Buena School District, the maintenance cost on last month is clustered from $360 to $500. The mean maintenance cost is $450.29, the median cost is $456.00. Since it is almost symmetric, so the median and mean are both Ok.
2. The range of maintenance cost is $241, the standard deviation is $53.69. About 95% of the maintenance costs are between $342.92 and $557.66.

# CH4 36



1. The ASPAN consists the mean of 348.50, median of 276 and standard deviation of 273.94 members per component.
2. The skewness is 1.17. It is positively skewed.
3. Location of Percentile Formula 4-1:

First Quartile: L(25) = (40+1)25/100 = 41/4 = 10.25; The distance between the 10th component(106) and 11th component(115) is 9. To locate first quartile need to move 0.25 of distance between 10th and 11th component, so 9\*0.25=2.25. The **first quartile** is 108.25, found by 106+2.25.

Third Quartile: L(75) = (40+1)75/100 = 41\*0.75= 30.75; The distance between the 30th component(517) and 31th component(531) is 14. To locate third quartile need to move 0.75 of distance between 30th and 31th component, so 14\*0.75=10.5. The **third quartile** is 527.5, found by 517+10.5.

1. There is one outliers 1165 members in California, found by its value is larger than the limit = Q3+1.5\*(Q3-Q1) = 527.5 + 1.5\*(527.5-108.25) = 1156.37.

# CH5 56

1. According to the special rule of multiplication, the likelihood all four of the selected flights arrived within 15 minutes of scheduled time is 0.6561, found by

P(F1 and F2 and F3 and F4)=P(F1)\*P(F2)\* P(F3)\*P(F4)=0.9\*0.9\*0.9\*0.9=0.6561.

1. According to the special rule of multiplication and complement rule, the likelihood that none of the selected flights arrived within 15 minutes of scheduled time is 0.0001, found by

P(~F1 and ~F2 and ~F3 and ~F4)=P(~F1)\*P(~F2)\* P(~F3)\*P(~F4)=0.1\*0.1\*0.1\*0.1=0.0001.

1. According to the special rule of addition, the likelihood at least one of the selected flights did not arrive within 15 minutes of scheduled time is 0.4, found by

P(~F1 or ~F2 or ~F3 or ~F4)= P(~F1)+P(~F2)+ P(~F3)+P(~F4)=0.1+0.1+0.1+0.1=0.4.

# CH5 64

1. The probability of selecting a family that prepared their own taxed is 0.5, found by P(F1)=10/20=0.5.
2. The probability of selecting two families, both of which prepared own taxes is 0.2369, found by General Rule of Multiplication P(F1 and F2)=P(F1)\*P(F2|F1)=(10/20)\*(9/19)=0.5\*0.4737=0.2369.
3. The probability of selecting three families, all of which prepared own taxes is 0.1053, found by General Rule of Multiplication P(F1 and F2 and F3)=P(F1)\*P(F2|F1)\*P(F3|F1 and F2)=(10/20)\*(9/19)\*(8/18)=0.5\*0.4737\*0.4444=0.1053.
4. The probability of selecting two families, neither of which had their taxes prepared by H&R Block is 0.7158, found by General Rule of Multiplication P(~H1 and ~H2)= P(~H1)\*P(~H2l~H1)=(17/20)\*(16/19)=0.7158.

# CH6 48



1. Less than 1 (0.840) new cardholder out of 12, should expected to default. The standard deviation is 0.884.
2. The likelihood that none of the cardholders will default is 0.4186.
3. The likelihood at least one will default is 0.5814.

# CH6 58



1. The probability that none of the states selected has any coastline is 0.02198.
2. The probability exactly one of selected states has a coastline is 0.2198.
3. The probability at least one of the selected states has a coastline is 0.978.

# CH6 64



1. I would expect the bank to have 2.206 foreclosures last month.
2. The probability of exactly two foreclosures is 0.2680.
3. The probability of at least one foreclosure is 0.8899.