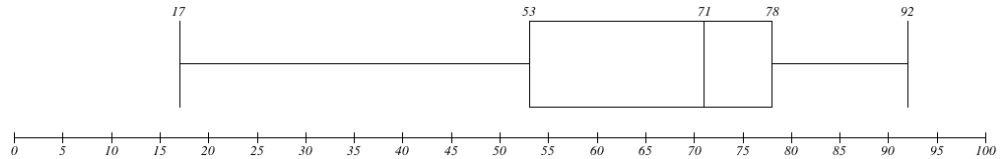


**Exam 1 Fall 2018  
Green Version**



1a) Boxplot →

1a) The mean is less than the median (skewed negative)

1c) Left Fence =  $53 - (1.5)(25) = 15.5$  No, 17 is not a possible outlier

2a)  $P(X \geq 9) = 0.375$  ( $n=10, p=.80$  add up binomial values from 9 to 10)

2b)  $\mu = (10)(.80) = 8$       $\sigma = \sqrt{(10)(.8)(.2)} = 1.27$

3) a)  $149 \pm (2)21 = 107$  to 191 grams    b) IQR =  $129 - 111 = 18$  grams

c) 1.00    d) -0.76    e) Apple is more unusual, z-score further from zero

4a) i)  $80/500 = 0.16$

ii)  $15/500 = 0.03$

iii)  $30/100 = 0.30$

4b) Yes, Independent

$P(\text{Tea}) = 0.30$

$P(\text{Tea}|\text{Stan}) = 0.30$

they are equal

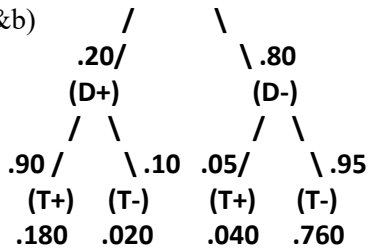
4c) No, Not Independent

$P(\text{Coffee}) = 0.40$

$P(\text{Coffee}|\text{USF}) = 0.30$

they are not equal

5a&b)



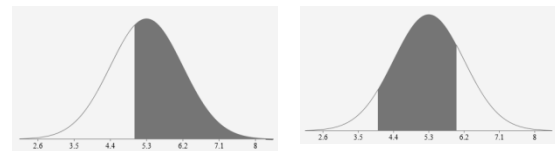
	Test+	Test-	Total
Diabetes	180	40	220
No Diabetes	20	760	780
Total	200	80	1000

5c)  $180/220 = 0.818$

6a)  $P(X > 5) = P(Z > -0.33) = 1 - 0.3707 = 0.6293$

6b)  $P(4 < X < 6) = P(-1.44 < Z < 0.78) = 0.7823 - 0.0749 = 0.7086$

6c)  $5.3 + 0.52(0.9) = 5.77$  minutes



7) a) Dot on Point ( $X=2, Y=10$ )

b)  $r = 0.5$

8) a) Is staying up extra late the night before a statistics exam better than getting lots of rest?

b) Explanatory: Time to bed (11PM or 2AM) Response: Exam Score

c) Cluster sampling plus random assignment into groups creates representative samples

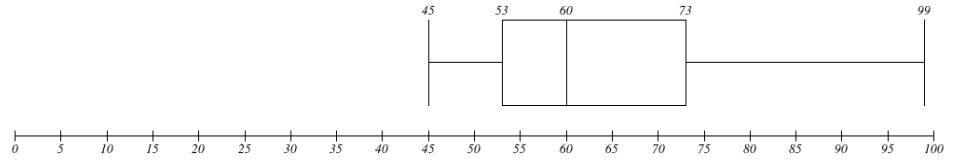
d) 77% was average exam score for 2AM group.

81% was average exam score for 11PM group.

The researchers decided that this was a significant difference.

e) The researchers concluded there was evidence that getting lots of rest the night before a statistics exam was better for student exam scores.

**Blue Version**



1a) Boxplot →

1b) The mean is greater than the median (skewed positive)

1c) Right Fence =  $73 + (1.5)(20) = 103$  No, 99 is not a possible outlier

2a)  $P(X \geq 7) = 0.504$  ( $n=8, p=.80$  add up binomial values from 7 to 8)

2b)  $\mu = (8)(.80) = 6.4$   $\sigma = \sqrt{(8)(.8)(.2)} = 1.13$

3) a)  $120 \pm (2)13 = 94$  to 146 grams    b)  $IQR = 165 - 134 = 31$  grams

c) 0.77    d) -0.90    e) Orange is more unusual, z-score further from zero

4a) i)  $150/500 = 0.30$

ii)  $30/500 = 0.06$

iii)  $120/250 = 0.48$

4b) No, Not Independent

$P(\text{Coffee}) = 0.40$

$P(\text{Coffee}|\text{UC}) = 0.48$

they are not equal

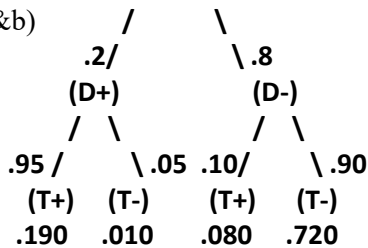
4c) Yes, Independent

$P(\text{Tea}) = 0.30$

$P(\text{Tea}|\text{USF}) = 0.30$

they are equal

5a&b)



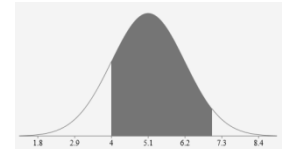
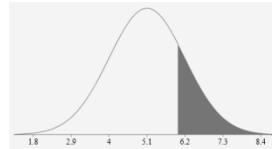
	Test+	Test-	Total
Diabetes	190	80	270
No Diabetes	10	720	730
Total	200	800	1000

5c)  $190/270 = 0.704$

6a)  $P(X > 6) = P(Z > -0.81) = 1 - 0.7910 = 0.2090$

6b)  $P(4 < X < 7) = P(-1.00 < Z < 1.73) = 0.9582 - 0.1587 = 0.7995$

6c)  $5.1 + 0.84(0.9) = 6.02$  minutes



7) a) Dot on Point ( $X=4, Y=20$ )

b)  $r = 0.5$

8) a) Is staying up extra late the night before a statistics exam better than getting lots of rest?

b) Explanatory: Time to bed (11PM or 2AM) Response: Exam Score

c) Cluster sampling plus random assignment into groups creates representative samples

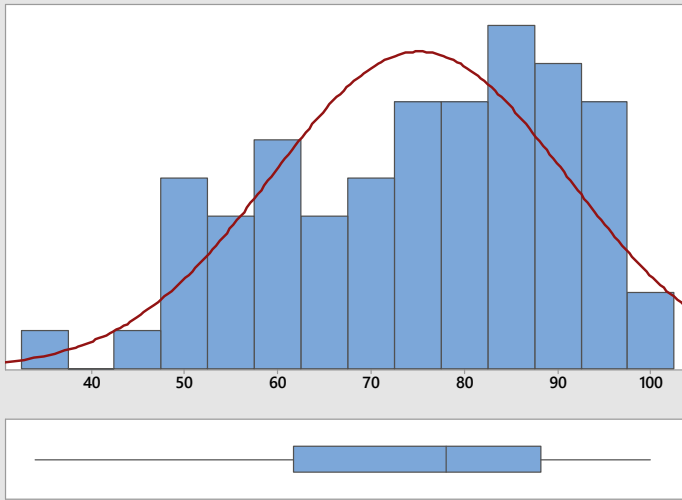
d) 77% was average exam score for 2AM group.

81% was average exam score for 11PM group.

The researchers decided that this was a significant difference.

e) The researchers concluded there was evidence that getting lots of rest the night before a statistics exam was better for student exam scores.

## Summary Report for E1



### Anderson-Darling Normality Test

A-Squared 0.96  
P-Value 0.014

Mean 75.167  
StDev 15.850  
Variance 251.218  
Skewness -0.451293  
Kurtosis -0.711477  
N 66

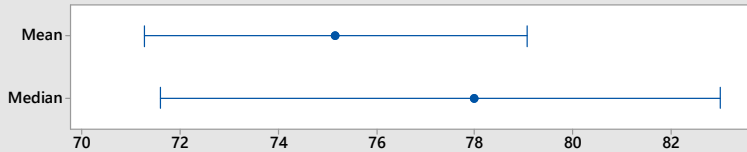
Minimum 34.000  
1st Quartile 61.750  
Median 78.000  
3rd Quartile 88.250  
Maximum 100.000

95% Confidence Interval for Mean  
71.270 79.063

95% Confidence Interval for Median  
71.601 83.000

95% Confidence Interval for StDev  
13.532 19.134

### 95% Confidence Intervals



## Scatterplot of Pct vs Missing Work

