

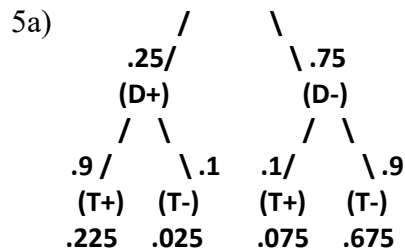
**Exam 1 MPS Winter 2018**

- 1a) The mean is less than the median (skewed negative)  
 1b) Left Fence =  $73 - 1.5(17) = 47.5$  Yes, 19 is a possible outlier  
 1c) 50% (IQR)

2) a)  $\mu = (15)(.6) = 9$     b)  $P(X \geq 10) = 0.403$  (add up binomial values from 10 to 15)

- 3) a)  $149 \pm (1)21 = 128$  to 170 grams  
 b)  $120 \pm (3)13 = 81$  to 159 grams  
 c) 0.92    d) -0.81    e) Apple is more unusual, z-score further from zero

- 4a) i)  $500/2000 = 0.25$     ii)  $150/2000 = 0.075$     iii)  $80/400 = 0.20$   
 4b) No, Not Independent     $P(\text{Stanford}) = .20$      $P(\text{Stanford}|\text{Tea}) = .10$  they are not equal  
 4c) Yes, Independent     $P(\text{USF}) = .25$      $P(\text{USF}|\text{Other}) = .25$  they are equal



	Test+	Test-	Total
<b>Diabetes</b>	<b>225</b>	<b>25</b>	<b>250</b>
<b>No Diabetes</b>	<b>75</b>	<b>675</b>	<b>750</b>
<b>Total</b>	<b>300</b>	<b>700</b>	<b>1000</b>

5b)  $300/1000 = 0.3$                       5c)  $225/300 = 0.75$

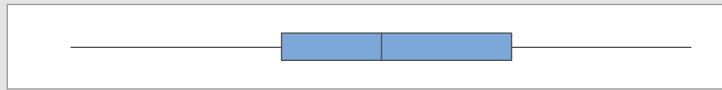
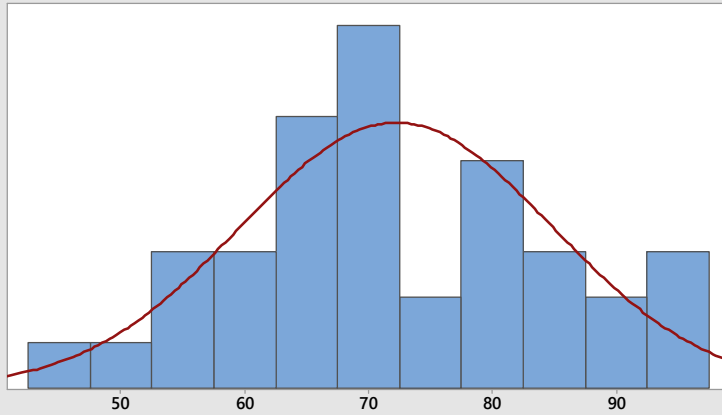
6a)  $P(4 < X < 6) = P(0.56 < Z < 1.56) = 0.6648$                       6b)  $4.5 - 0.25(0.9) = 4.275$  minutes

6c)  $P(\bar{X} > 4.7) = P\left(Z > \frac{4.7 - 4.5}{0.9/\sqrt{30}}\right) = P(Z > 1.22) = 0.1112$  (uses Central Limit Theorem)

- 7) a) Graph E            b) Graph C            c) Graph A            d) Graph D

- 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.  
 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 Exam 1



Anderson-Darling Normality Test	
A-Squared	0.22
P-Value	0.826
Mean	72.243
StDev	12.608
Variance	158.967
Skewness	0.140685
Kurtosis	-0.588121
N	37
Minimum	46.000
1st Quartile	63.000
Median	71.000
3rd Quartile	81.500
Maximum	96.000
95% Confidence Interval for Mean	
68.039	76.447
95% Confidence Interval for Median	
67.000	77.798
95% Confidence Interval for StDev	
10.253	16.378

95% Confidence Intervals

