Exam 1 MPS Spring 2018

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

1b) Right Fence = 79+(1.5)(10) = 94 Yes, 99 is a possible outlier

1c) 25% (third quartile)

2) a) $\mu = (10)(.65)=6.5$ b) $P(X\geq 9) = 0.086$ (add up binomial values from 9 to 10)

3) a) 149 ± (1)21 = 128 to 170 grams

b) 120 ± (3)13 = 81 to 159 grams

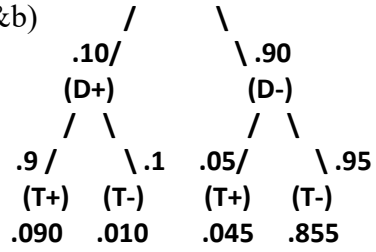
c) 0.92 d) -0.81 e) Apple is more unusual, z-score further from zero

4a) i) 700/2000 = 0.35 ii) 150/2000 = 0.075 iii) 150/500 = 0.30

4b) Yes, Independent P(Juice) = .20 P(Juice|Stanford) =.20 they are equal

4c) No, Not Independent P(Coffee) = ..35 P(Coffee|Stanford) =.30 they are not equal

5a&b)



	Test+	Test-	Total
Diabetes	**90**	**45**	**135**
No Diabetes	**10**	**855**	**865**
Total	**100**	**900**	**1000**

5c) 90/135= 0.667

6a) P(X<4) = P(<Z<-1.00) = 0.1587 6b) 4.8 + 0.67(0.9) = 4.275 minutes

6c) $P(\bar{X} > 5) = P\left(Z > \frac{5-4.8}{0.8/\sqrt{30}} \right) = P(Z > 1.37) = 0.0853$ (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?

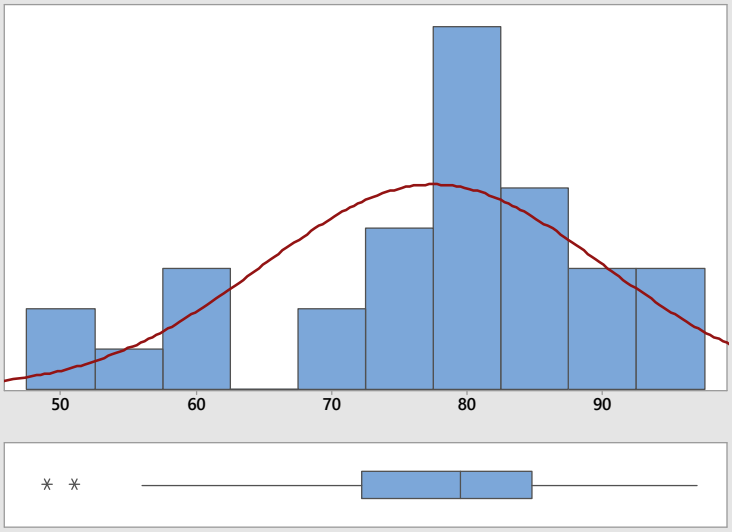
b) Explanatory: Time to bed (11PM or 2AM) Response: Exam Score

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.
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 MPS



Anderson-Darling Normality Test	
A-Squared	0.83
P-Value	0.028
Mean	77.500
StDev	12.567
Variance	157.935
Skewness	-0.721661
Kurtosis	0.026867
N	32
Minimum	49.000
1st Quartile	72.250
Median	79.500
3rd Quartile	84.750
Maximum	97.000
95% Confidence Interval for Mean	
72.969	82.031
95% Confidence Interval for Median	
76.998	83.000
95% Confidence Interval for StDev	
10.075	16.708