Lesson 1.3.2

1-64. a. Both rooms have the same average of 140 points and Latavia, McKenna, and Kirk have the higher score so it appears they have won the day.

b. Latavia, McKenna, and Kirk's z-score $\frac{220-140}{45} = 1.78$ for *The Apartment*, while Cory, Jamison, and Harper scored 1.80 for *The Basement* so the relative standings slightly favor Cory, Jamison, and Harper.

c. 140 – 2(35) = 70 points which is two standard deviations below the mean.

d. Answers will vary. Some examples include: crime rates, golf scores, mile times …

1-65. a. $z = \frac{0.788-0.854}{0.053} = -1.24528$

b. $x = 0.\ 854 + 1.54(0.053) = 0.9356$

c. 1.714 is further from the mean than –1.254. There are fewer data points beyond 1.714 so it is more unusual.

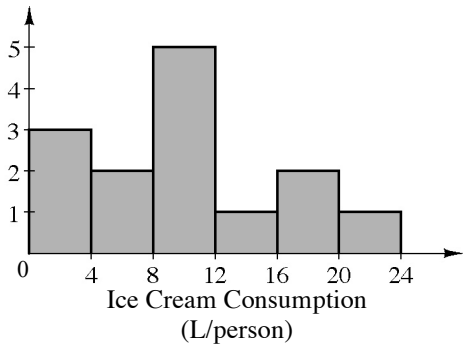
1-66. a. $z = \frac{1204-1239}{15.7} = -2.229$

b. $x = 1239 + (-1.554) \cdot 15.7$, $x = 1214.6$ºC

c. granite $z = \frac{1272-1239}{15.7} = 2.102$, live oak $z = \frac{0.701-0.854}{0.053} = -2.887$; The live oak specimen is more standard deviations away from the mean of its distribution, so it is the more unusual find.

1-67. a. 14

b.



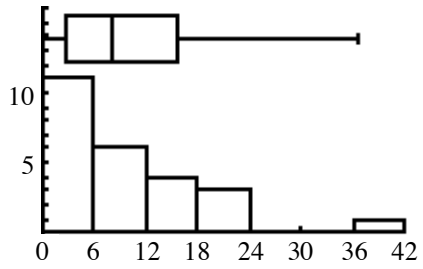
c. 9.70 liters per person. The data is nearly symmetric.

d. 6.66 liters per person

e. $\frac{5.6-9.70}{6.66} = -0.616$

f. $\frac{0.01-9.70}{6.66} = -1.45$ Japan, $\frac{22.5-9.70}{6.66} = 1.92$ New Zealand, New Zealand's z-score is furthest from the mean and represents the most unusual of the data points.

1-68. a. See the combination histogram boxplot at right. The five number summary (for the boxplot) is 0, 2.75, 8, 15.7, 36.5.



b. The distribution has a right skew and an outlier at 36.5 pounds so the center is best described by the median of 8.0 pounds and the spread by the IQR of 12.95 pounds.

c. The median is better in this case because it is not affected by skewing and outliers.

d. The IQR is better in this case because it is less affected by skewing and outliers than the standard deviation.

e. If you remove the outlier from the data the mean drops to 8.7 pounds which is below the profitable minimum. You could suggest running the test a few more weeks because perhaps as people get used to the composting program they will participate even more.

1-69. There is enough information remaining that the missing values cannot vary. See bold values in table below.

Critical Expense Report ($1000)

wk	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	tot
1	**20**	**80**	**60**	**75**	**87**	**37**	**65**	**52**	**83**	**48**	**76**	**49**	**732**
2	**55**	71	76	54	67	35	90	49	93	61	45	91	787
3	**62**	80	94	96	53	68	63	77	58	76	42	84	853
4	**75**	87	80	80	42	42	97	36	41	55	59	40	734
tot	**212**	318	310	305	249	182	315	214	275	240	222	264	3106