STAT515 Homework #1 — Mathew Houser

2.59 (a) $\{-2, 0, 3, 3, 4, 7\}$

Mean: 2.5 Median: 3 Mode: 3

(b) $\{1, 2, 2, 2, 3, 3, 3, 3, 3, 4, 4, 5, 5\}$

Mean: 3.07 Median: 3 Mode: 3

(c) $\{37, 41, 45, 47, 48, 50, 50, 51, 59, 68\}$

Mean: 49.6 Median: 49 Mode: 50

2.88 (a) Range: 12.93 m $(\bar{x} = 9.72)$

(b) $1.22^2 + 3.99^2 + 1.66^2 + 2.46^2 + 8.11^2 + 2.20^2 + 2.15^2 + 4.28^2 + 3.63^2 + 4.82^2 + 3.87^2 + 4.62^2 + 2.95^2 = 201.2018$

$s^2 = 201.2018 \div 12 = 16.77\ m^2$

(c) $s = \sqrt{s^2} = \sqrt{16.77} = 4.09$ m

3.15

(a) Sample Points	(b) Probability
Blue, Blue	$(2/5)(1/4) = 2/20 = 0.1$
Blue, Red	$(2/5)(3/4) = 6/20 = 0.3$
Red, Blue	$(3/5)(2/4) = 6/20 = 0.3$
Red, Red	$(3/5)(2/4) = 6/20 = 0.3$

(c) P(2 Blues) = 0.1

P(2 Reds) = 0.3

P(1 Blue and 1 Red) = 0.6

3.18 (c) P(Cereal or Orchard) = 0.50

(d) P(Not Vineyard) = 0.85

3.24 (a) 0.006 (b) 0.12

(c) 0.007 (d) 0.07

3.58 (a) $P(A) = P(\text{Male}) = 39/59 = 0.66$

(b) $P(B) = P(\text{Jump}) = 11/59 = 0.19$

(c) No

(d) $P(A^c) = 0.34$

(e) $P(A \cup B) = 0.66 + 0.19 - 0.12 = 0.73$

(F) $P(A \cap B) = 0.12$

3.76 (c) $P(A \cap B) = 0.00225$

(d) $P(A|B) = 0.22$

3.86 (a) $P(\text{Stated} | \text{Guilt}) = 45/57 = 0.79$

(b) $P(\text{Anger} | \text{Not Stated}) = 50/111 = 0.45$

(c) $P(\text{Stated} | \text{Guilt}) = 0.79 \neq P(\text{Stated}) = 60/171 = 0.35$

$\therefore$ Not independent

3.114 (a) $\binom{6}{2} = \frac{6!}{2!\,4!} = 15$

(b) $\binom{10}{2} = \frac{10!}{2!\,8!} = 45$

(c) $6 \cdot 10 = 60$

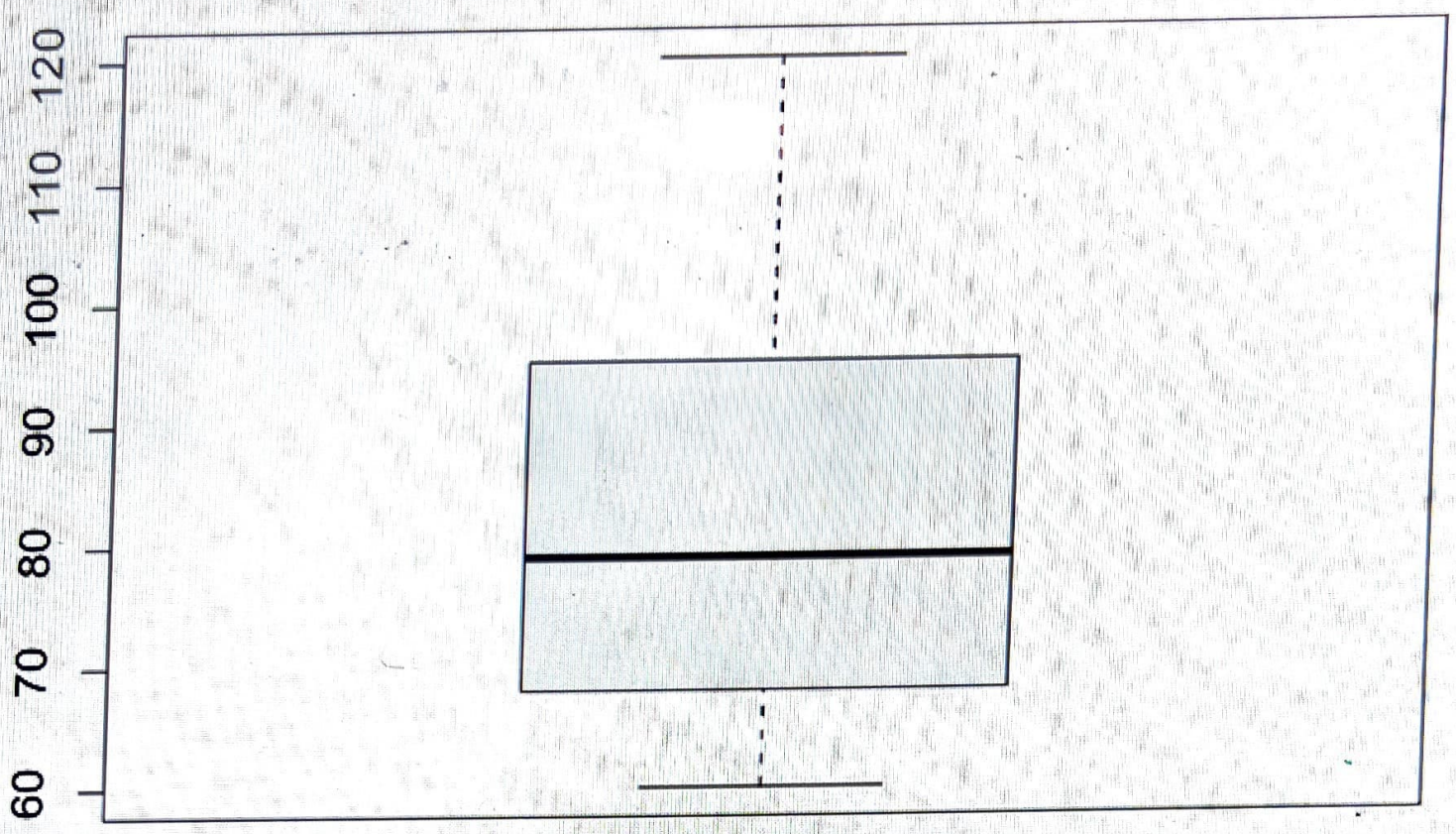
3.138 (a) $$\frac{(0.2)(0.5)}{(0.2)(0.5) + (0.8)(0.3)} = 4.167$$

(b) $$\frac{(0.8)(0.3)}{(0.2)(0.5) + (0.8)(0.3)} = 10$$

Budget Hotel Question.

Median is best measure of center.

Standard deviation is best for dispersion



RGui (64-bit) - [R Console]

File Edit View Misc Packages Windows Help

```
> Rate=c(68, 80, 60, 95, 78, 67, 95, 79, 111, 120, 68)
> mean(Rate)
[1] 83.72727
> sd(Rate)
[1] 19.28777
> summary(Rate)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  60.00   68.00   79.00   83.73   95.00  120.00
> boxplot(Rate)
> boxplot(Rate)
> boxplot(Rate)
> boxplot(Rate)
```