MATH 324 Homework 6

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Question 1

```
x = as.table(c(629, 693, 678, 677, 643, 432, 379))
row.names(x) = c("Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday", "Sunday")

x
```

```
##    Monday   Tuesday Wednesday  Thursday    Friday  Saturday    Sunday
##       629       693       678       677       643       432       379
```

```
(chi_test = chisq.test(x))
```

```
##
##  Chi-squared test for given probabilities
##
## data:  x
## X-squared = 169, df = 6, p-value < 2.2e-16
```

```
(e_i = sum(x)/7)
```

```
## [1] 590.1429
```

Question 2

```
(sum(x[1:5])/6)
```

```
## [1] 553.3333
```

```
(sum(x[6:7])/12)
```

```
## [1] 67.58333
```

```
chisq.test(x, correct = F, p = c(rep(1/6, 5), rep(1/12, 2)))
```

```
##
##  Chi-squared test for given probabilities
##
## data:  x
## X-squared = 34.406, df = 6, p-value = 5.616e-06
```

Question 3

```
#sample of 219 women and 210 men.

x_2 = as.table(rbind(c(92, 108, 19),
                     c(97, 81, 32)))

dimnames(x_2) = list(c("Men", "Women"), c("Newspaper", "Television", "Internet"))
```

```r
addmargins(x_2)
```

```
##       Newspaper Television Internet Sum
## Men          92        108       19 219
## Women        97         81       32 210
## Sum         189        189       51 429
```

```r
round(x_2[1, ] / sum(x_2[1, ]), 3) #first row
```

```
##  Newspaper Television   Internet
##      0.420      0.493      0.087
```

```r
round(x_2[2, ] / sum(x_2[2, ]), 3) #second row
```

```
##  Newspaper Television   Internet
##      0.462      0.386      0.152
```

```r
(chi_test_2 = chisq.test(x_2))
```

```
##
##  Pearson's Chi-squared test
##
## data:  x_2
## X-squared = 7.1175, df = 2, p-value = 0.02847
```

Question 4

```r
x_3 = as.table(rbind(c(12, 8, 5),
                     c(9, 10, 11)))

dimnames(x_3) = list(`Education Level`=c(">= H.S. Diploma", "< H.S. Diploma"),
                     `Number of Tickets in 2 Years` = c("1 or less", "2-4", ">4"))


addmargins(x_3)
```

```
##                  Number of Tickets in 2 Years
## Education Level   1 or less 2-4 >4 Sum
##   >= H.S. Diploma        12   8  5  25
##   < H.S. Diploma          9  10 11  30
##   Sum                    21  18 16  55
```

```r
chi_test_3 = chisq.test(x_3)

chi_test_3$expected
```

```
##                  Number of Tickets in 2 Years
## Education Level   1 or less      2-4       >4
##   >= H.S. Diploma  9.545455 8.181818 7.272727
##   < H.S. Diploma  11.454545 9.818182 8.727273
```

```r
chi_test_3$residuals
```

```
##                  Number of Tickets in 2 Years
## Education Level     1 or less         2-4          >4
##   >= H.S. Diploma  0.79446135 -0.06356417 -0.84274983
##   < H.S. Diploma  -0.72524067  0.05802589  0.76932182
```

```r
chi_test_3
```

```
##
##  Pearson's Chi-squared test
##
## data:  x_3
## X-squared = 2.4666, df = 2, p-value = 0.2913
```