Assignment 4 - 0679576, Graham Eckel

2.

```
library(QuantPsyc)
set.seed(2019-11-13)
dir = "C:\\Users\\graha\\Google Drive\\1 Math Undergrad\\1 UoGuelph\\2_Fall_19\\Applied Regression Analysis\\Assignment 4\\"
file1 = "3240_F19_solar.csv"
dfSolar = read.table(file=paste(dir,file1, sep=""), header=TRUE, sep=',')

Flux = dfSolar$flux
Insolation = dfSolar$insolation
East = dfSolar$east
South = dfSolar$south
North = dfSolar$north

mlrFlux = lm(Flux~Insolation+East+South+North)
summary(mlrFlux) # 0.1911
```

a)

Yhat = 268.19249 + 0.01911(900) + 3.874(35) + 6.84325(35) + (-24.73712)(16)
= 264.70132

b)

Prediction interval - single value

```
dfSolarPred = data.frame(Insolation=900, East=35, South=35, North=16)
predict.lm(mlrFlux, newdata = dfSolarPred, interval = "prediction")
```

```
       fit      lwr      upr
1 264.7012 247.2228 282.1796
```

c)

Confidence interval - true mean

```
dfSolarConf = data.frame(Insolation=900, East=35, South=35, North=16)
predict.lm(mlrFlux, newdata = dfSolarConf, interval = "confidence")
```

```
        fit      lwr      upr
1 264.7012 256.8782 272.5242
```

d)

```
lm.beta(mlrFlux)
```

```
 Insolation        East       South       North
0.06439535  0.22324602  0.52629342 -0.97689129
```

The main advantages to standardizing coefficients are in comparing the magnitude of standardized slopes and that doing the calculations on scaled values can help reduce rounding errors”. After standardizing the coefficients, we can see that Insolation’s coefficient is small relative to other predictor variables and affects less of a relative change in the response variables.