Scott Kobos

Stat318 HW9

4/14/19

2)

a)

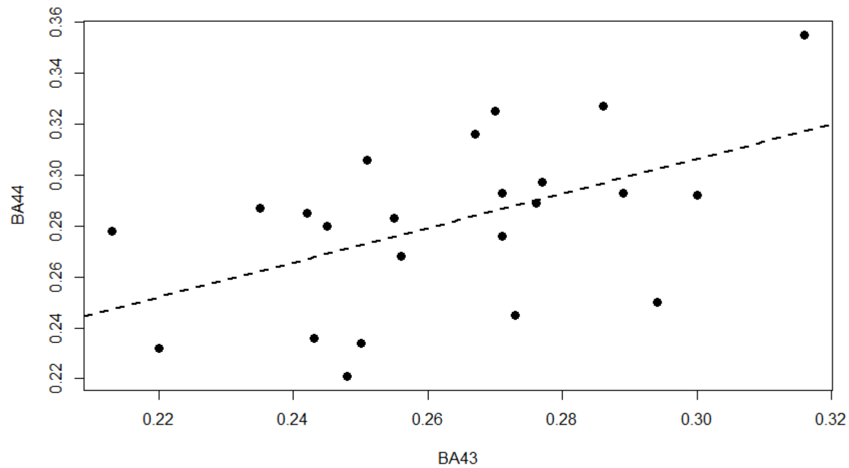
Regression line:

BA44= .10368 + .67517(BA43)

```
> baseball.data= read.delim("clipboard", header= T)
> attach(baseball.data)
> crv.mod= lm(BA44~ BA43)
> summary(crv.mod)

Call:
lm(formula = BA44 ~ BA43)

Residuals:
      Min        1Q    Median        3Q       Max 
-0.052177 -0.017221  0.006301  0.027441  0.039027 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)  
(Intercept)  0.10368    0.06636   1.562   0.1332  
BA43         0.67517    0.25128   2.687   0.0138 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.02968 on 21 degrees of freedom
Multiple R-squared:  0.2558,	Adjusted R-squared:  0.2204 
F-statistic:  7.22 on 1 and 21 DF,  p-value: 0.0138
```

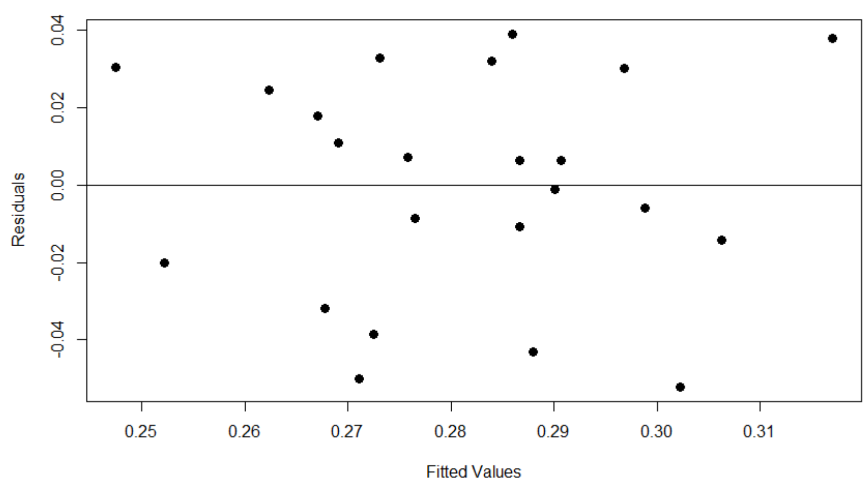
b)

```
> plot(BA43,BA44,xlab="BA43", ylab= "BA44", pch=16,cex=1.2)
> abline(a=crv.mod$coefficients[1],b=crv.mod$coefficients[2], lty=2,lwd=2)
```



c)

```
> plot(crv.mod$fitted, crv.mod$residuals, pch=16,cex=1.2,xlab="Fitted Values"
, ylab="Residuals")
> abline(h=0)
```

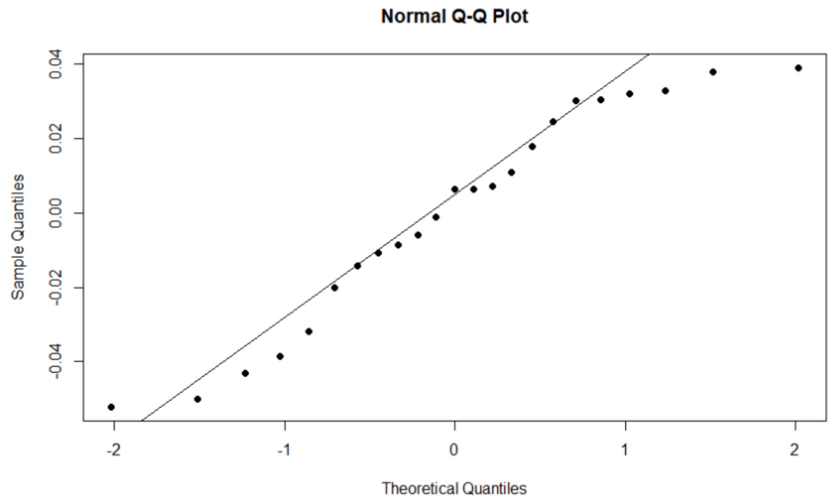


d)

The observations we can make from our models in b) and c) are that the linear model is appropriate and that the variance is constant due to the lack of a funnel shape.

e)

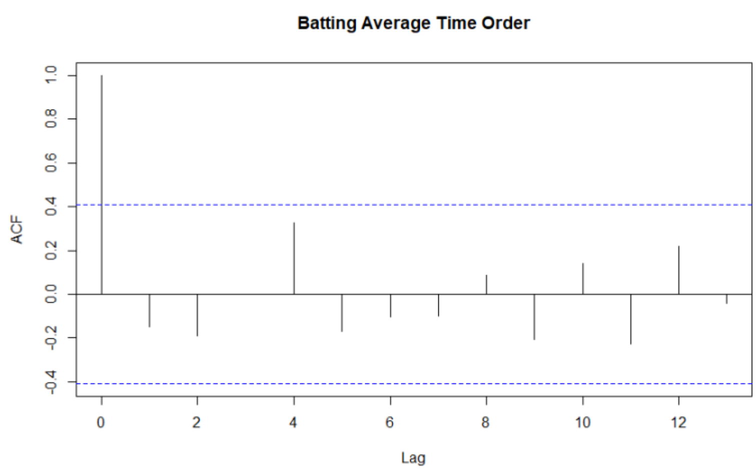
```
> qqnorm(crv.mod$residuals, pch=16)
> qqline(crv.mod$residuals)
```



From this plot we can conclude that it is not linear, it is not normal.

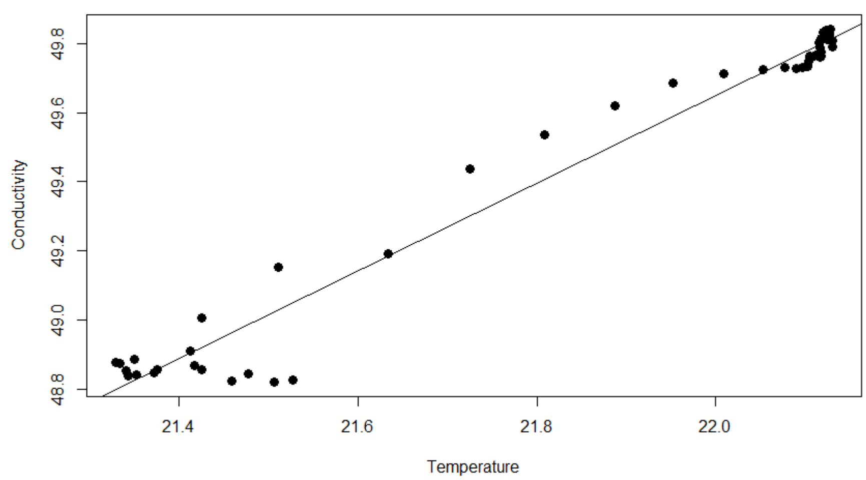
f)

```
> acf(crv.mod$residuals, main="Batting Average Time Order")
```

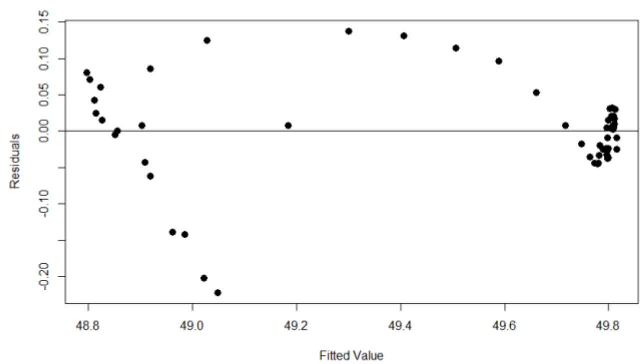


This plot, with no bars reaching the dotted line, tells us that there are no statistically significant correlations in the data, so they are independent.

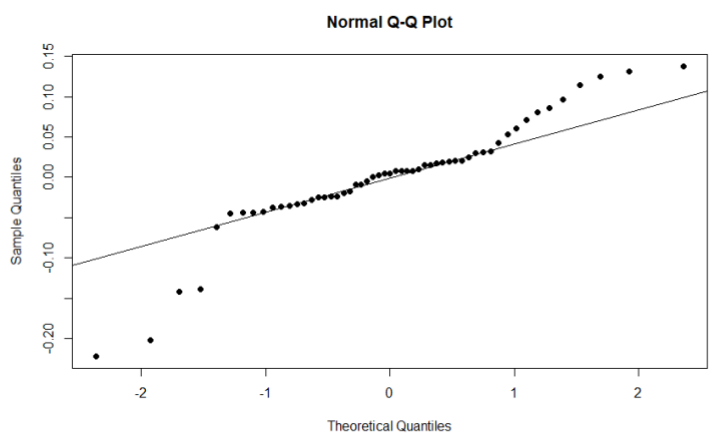
```
3) > water.data= read.delim("clipboard", header= T)
> attach(water.data)
> water.mod=lm(Conductivity~Temperature)
> summary(water.mod)

Call:
lm(formula = Conductivity ~ Temperature)

Residuals:
      Min        1Q    Median        3Q       Max 
-0.221717 -0.029799  0.005071  0.027507  0.137561 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept) 21.68384    0.63982   33.89   <2e-16 ***
Temperature  1.27117    0.02926   43.45   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.06984 on 53 degrees of freedom
Multiple R-squared:  0.9727,	Adjusted R-squared:  0.9722 
F-statistic:  1888 on 1 and 53 DF,  p-value: < 2.2e-16


> plot(Temperature, Conductivity, xlab="Temperature", ylab="Conductivity", pc
h=16, cex=1.2)
> abline(water.mod)
```



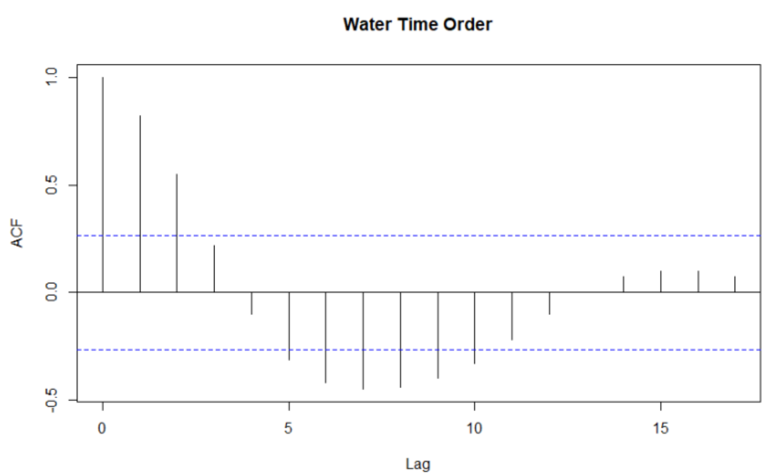
```
> plot(water.mod$fitted, water.mod$residuals, pch=16, cex=1.2, xlab= "Fitted
Value", ylab= "Residuals")
> abline(h=0)
```




```
> qqnorm(water.mod$residuals, pch=16)
> qqline(water.mod$residuals)
```




```
> acf(water.mod$residuals, main="Water Time Order")
```



-The first two plots show us that the data does not fit the linear model and the variance is not constant.

-The third plot shows us that the errors are not normally distributed.

-The fourth plot shows us that there are 8 statistically significant correlations, telling us that it is not independent.

-The data does not fit the Simple Linear Regression Model.