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Stat318 HW7

3/21/19

1)

d) Calculation of Z

```
qnorm(1-.05/2)
[1] 1.959964
```

2)

d) Calculation of Z

5)

```
> oddsratio(9,2,9,17, conf.level= .95)
           Disease Nondisease Total
Exposed          9          9    18
Nonexposed       2         17    19
Total           11         26    37

        Odds ratio estimate and its significance probability

data:  9 2 9 17
p-value = 0.009599
95 percent confidence interval:
  1.503676 48.048911
sample estimates:
[1] 8.5
```

6)

```
> oddsratio(3235,1561,63,80, conf.level= .95)
           Disease Nondisease Total
Exposed       3235         63  3298
Nonexposed    1561         80  1641
Total         4796        143  4939

        Odds ratio estimate and its significance probability

data:  3235 1561 63 80
p-value = 4.84e-09
95 percent confidence interval:
 1.881317 3.681117
sample estimates:
[1] 2.631606
```

7)

a)

explanatory variable= number of bites

response variable= length of cookie

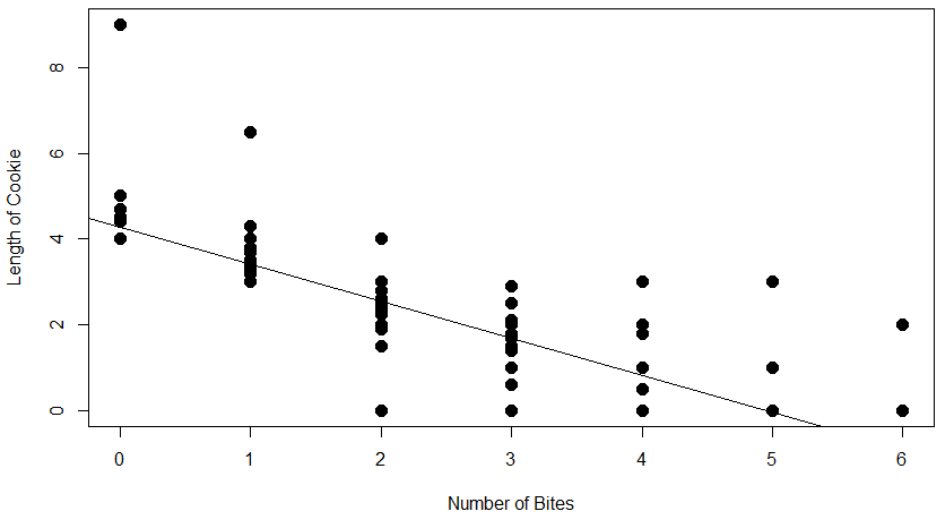
b)

```
> cookie.mod = lm(Length~ Bites)
> summary(cookie.mod)

Call:
lm(formula = Length ~ Bites)

Residuals:
    Min      1Q  Median      3Q     Max
-2.5526 -0.4149 -0.0149  0.2227  4.7227

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  4.27729    0.11795   36.27   <2e-16 ***
Bites       -0.86235    0.04953  -17.41   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.8773 on 144 degrees of freedom
Multiple R-squared:  0.678,    Adjusted R-squared:  0.6757
F-statistic: 303.2 on 1 and 144 DF,  p-value: < 2.2e-16
```

Equation of line: Length= 4.27729- .86235(# of bites)

c)

```
> abline(cookie.mod)
```



d)

slope= -.86235

For every additional bite of cookie taken, an average decrease in length of cookie of .86235 is expected.

Intercept= 4.27729

When zero bites of a cookie have been taken, the expected length is 4.27729.

The interpretation of the intercept is meaningful because it makes sense that a cookie would be a positive value with zero bites taken out of it, because you can't have a negative length of cookie.

e)

```
> predict(cookie.mod, newdata=data.frame(Bites= c(0,1,2,3)))
       1        2        3        4
4.277292 3.414939 2.552587 1.690234
```

f)

First observation= (0,4.50) residual=.222708

Second observation= (1, 3.50) residual= .08506068

```
> cookie.mod$residual[1]
       1
0.222708
> cookie.mod$residual[2]
         2
0.08506068
```