Quiz 5.2 Leeson Chen

1.
R code:
INPUT
```
> lmm = lm(uptake~conc, data=CO2)
> summary(lmm)
```

OUTPUT
```
Call:
lm(formula = uptake ~ conc, data = CO2)

Residuals:
   Min      1Q  Median      3Q     Max
-22.831  -7.729   1.483   7.748  16.394

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 19.500290   1.853080  10.523  < 2e-16 ***
conc         0.017731   0.003529   5.024 2.91e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 9.514 on 82 degrees of freedom
Multiple R-squared:  0.2354,  Adjusted R-squared:  0.2261
F-statistic: 25.25 on 1 and 82 DF,  p-value: 2.906e-06
```

b) confidence interval for B1 = B^1 + t(1-alpha/2, n-2) * S(B-1)
0.017731 - qt(.95, 82)*.003592 = (.01185998, .023602)
90% confident that the true value of B1 will be between .01185998 and .023602

c) For this scenario, you would build a prediction interval. This is because we want to obtain some possible credible values of what the uptake could be; not expected value, but what we actually think it will be. Since we are predicting the values, a prediction interval is more appropriate to the situation than just a confidence interval for the mean response, which only gives an expected range for the mean.