Home Work Solutions #2
Math 40015/50015

```
## Loading required package: car
```

```
## Loading required package: carData
```

4.

```
##              ModernC Change PPgdp Frate   Pop Fertility Purban
## Afghanistan       NA   3.88    98    NA 23897      6.80     22
## Albania           NA   0.68  1317    NA  3167      2.28     43
## Algeria           49   1.67  1784     7 31800      2.80     58
## Am.Samoa          NA   2.37    NA    42    57        NA     53
## Andorra           NA   2.59 14234    NA    64        NA     92
## Angola            NA   3.20   739    NA 13625      7.20     35
```

a.

```
## [1] 125
```

b.

```
## (Intercept)      Purban
##  5.27127958 -0.04203594
```

```
##
## Call:
## lm(formula = Fertility ~ Purban, data = UN3r)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.5006 -0.9854 -0.0669  0.7088  3.6115
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  5.271280   0.289220  18.226  < 2e-16 ***
## Purban      -0.042036   0.004721  -8.903 5.87e-15 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.188 on 123 degrees of freedom
## Multiple R-squared:  0.3919, Adjusted R-squared:  0.387
## F-statistic: 79.27 on 1 and 123 DF,  p-value: 5.869e-15
```

C.

```
## (Intercept)  log(PPgdp)
##   7.7640893  -0.6305272
```

```
##
## Call:
## lm(formula = Fertility ~ log(PPgdp), data = UN3r)
##
## Residuals:
##     Min     1Q  Median     3Q     Max
## -2.6778 -0.5841  0.0314  0.5900  3.4960
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  7.76409    0.52650  14.747  < 2e-16 ***
## log(PPgdp)  -0.63053    0.06659  -9.469 2.61e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.158 on 123 degrees of freedom
## Multiple R-squared:  0.4216, Adjusted R-squared:  0.4169
## F-statistic: 89.66 on 1 and 123 DF,  p-value: 2.605e-16
```

d.

```
## (Intercept)  log(PPgdp)       Purban
##  7.10838842 -0.40103425 -0.01971583
```

```
##
## Call:
## lm(formula = Fertility ~ log(PPgdp) + Purban, data = UN3r)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -2.555 -0.674  0.018  0.697  3.379
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  7.108388   0.573081  12.404  < 2e-16 ***
## log(PPgdp)  -0.401034   0.109675  -3.657 0.000378 ***
## Purban      -0.019716   0.007584  -2.600 0.010481 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.132 on 122 degrees of freedom
## Multiple R-squared:  0.452,  Adjusted R-squared:  0.443
## F-statistic: 50.31 on 2 and 122 DF,  p-value: < 2.2e-16
```

e.

```
## Estimated Fertility value: 2.413534
```