

1. Read in `AnnualTemp` data from the shared dropbox folder.
 - (a) Plot Temperature vs CO2. In this plot, using `points` mark the mean of both variables as a special point with red color. Using the `abline`, `v` and `h` plot two lines, horizontal and vertical respectively at each of the means.
 - (b) Compute the correlation between Temperature and CO2.
 - (c) Plot the linear regression line.
 - (d) Test whether the slope is 0 or not.
2. In the `ToothGrowth` data set observe that there are lot of repetitions in the `ToothGrowth$dose` variable.
 - (a) Find the correlation coefficient between `ToothGrowth$len` and `ToothGrowth$dose`.
 - (b) Plot `ToothGrowth$len` versus `ToothGrowth$dose`.
 - (c) Using `split` command find the group means for each duplication of `ToothGrowth$dose`.
 - (d) Find the correlation coefficient between group means of `ToothGrowth$len` and the appropriate `ToothGrowth$dose`.
3. In the `UsingR` package take the dataset `SAT`.
 - (a) Find the correlation between `SAT$total` and `SAT$salary`
 - (b) Perform the following in R


```
> require(UsingR)
> plot(total~salary, data=SAT)
> plot(total~salary, data=SAT, subset = perc<10, pch=15)
> plot(total~salary, data=SAT, subset = perc>40, pch=15)
```

 What can you observe ?
 - (c) Perform the following in R


```
> require(UsingR)
> total = SAT$total
> salary = SAT$salary
> perc = SAT$perc
> less10 = perc <10
> more40 = perc >40
> between = !less10 & !more40
> c(less = cor(total[less10], salary[less10]), between = cor(total[between], salary[between]),
+   more = cor(total[more40], salary[more40]))
```

 What can you observe ?