```r
#Script Name: dilip.k.lalwani_HW07_Script.R

#Location: C:\Users\dilip\Google Drive\FALL 2017 CLASSES\STAT 604\HW07

#Created by Dilip Lalwani

#Creation Date: 10/04/17

#Purpose: Practice using higher level graphics and adding objects to graphs.

#Last executed: 10/05/17


Sys.time()

#1 housekeeping

objects()

ls()

rm(list=ls())

#2 load previously saved workspace

load("C:/Users/dilip/Google Drive/FALL 2017 CLASSES/STAT 604/HW04/HW04.RData")

# show contents of workspace

ls ()

#3 Send graphics to PDF file

pdf("C:/Users/dilip/Google Drive/FALL 2017 CLASSES/STAT
604/HW07/dilip.k.lalwani_HW07_graph.pdf")

#4a First histogram with default number of breaks

hist(Oklahoma$PTRatio, freq=FALSE, xlab="Pupils/Teacher", main="Pupil/Teacher Ratios in Oklahoma
Schools")

#4b Vector that can be used to extend the length of the X axis and force breaks every 5 pupils/teacher

brv <- seq(0,max(Oklahoma$PTRatio, na.rm=TRUE),5)

#4c New histogram with break points at 5 pupils/teacher

hist(Oklahoma$PTRatio, freq=FALSE, breaks=brv, xlab="Pupils/Teacher", main="Pupil/Teacher Ratios in
Oklahoma Schools")

#5 Maroon line to the graph that shows the normal distribution density of the PTRatio numbers

xd <- seq(min(Oklahoma$PTRatio, na.rm=TRUE), max(Oklahoma$PTRatio, na.rm=TRUE), 0.01)
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yd <- dnorm(xd, mean=mean(Oklahoma$PTRatio, na.rm=TRUE), sd=sd(Oklahoma$PTRatio, na.rm=TRUE))

lines(xd, yd, col="RED")

#6 Vertical line on the previous histogram at the average PTRatio

abline(v=mean(Oklahoma$PTRatio, na.rm=TRUE), col=5)

#7 New plot showing the number of teachers compared to the PTRatio

plot(Oklahoma$Teachers, Oklahoma$PTRatio, pch=3, col="#FF9900",xlim=c(0,140), xlab="Teachers", ylab="Pupil/Teacher Ratio")

#8 Colored fit line for the plot

abline(lm(PTRatio~Teachers, Oklahoma), col="PURPLE")

fl <- lm(PTRatio~Teachers, Oklahoma)

summary(fl)

#9 Date and time of creation embedded near the upper right hand corner of the graph area

text(80, 150, Sys.time(), adj=0)

#10 Boxplot of the number of students in each grade (Columns Grade7 through Grade12)

boxplot(Oklahoma[6:11], range=0, names=c(7,8,9,10,11,12), xlab="Grades", ylab="Students", main="Tulsa County vs. State", col="lightgreen")

#11 Diamonds representing average number of students in each grade from Tulsa County.

okla <- rep(0, 6)

for(i in 6:11)

{

okla[i-5] <- mean(Oklahoma[grepl("Tulsa", Oklahoma$County, ignore.case = TRUE),i], na.rm=TRUE)

}

lines(okla, type="p", pch=23, col="red", bg="darkgreen", cex=1.5)

dev.off()
```