Practical on introduction to R

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1. Run the commands focusing on the output:

```
2+2
pnorm(1.96)
pchisq(3.84,1)
x<-4
x
y<-c(2,7,4,1)
y
ls()
x*y
y*y
y^2
z<-y %*% t(y)
z
a<-matrix(1:30,5,6)
a
matrix(1:30,5,6,byrow=T)
matrix(c(1,2,3,4),2,4)
matrix(,2,3)
x<-c(1,2,3,4)
y<-c(2,4,6,8)
v1<-x+y
v1
v2<-x-y
v2
v3<-x*y
v3
v4<-x/y
v4
cbind(v1,v2)
rbind(v1,v2)
x<-1:4
x
```

```
seq(-3,6,2)
seq(-3,1,length=10)
x<--3:8
x
x[3]
which(x<2)
which((x>=1) & (x<=5))
z<-which((x>=1) & (x<=5))
x[z]
(x>=1) & (x<=5)
which((x>=1) & (x<=5))
A<-matrix(x,2,6)
A
A[2,3]
A[2,]
A[,3]
rm(v1,v2,v3,v4)
ls()
rm(list=ls())
```

2. Calculate $\sqrt{3^2 + 4^2}$
3. Find the probability above 4.3 in a chi-squared distribution on 1 degree of freedom.
4. Create a vector w with elements 10, 13, 9, 1, -1, 2, -2, -4, -8 and print this vector (to the screen).
5. Identify which elements are lower than 1 or higher than 4.
6. Obtain a description of using *str()*
7. Create the vector v equal to w+1, and print it.
8. Create the vector y $(0, 1, 5, 10, 15, 25, \ldots, 75)$ using c() and seq()
9. Create three vectors x,y,z with integers and each vector has 3 elements. Combine the three vectors to become a 33 matrix A where each column represents a vector. Change the row names to a,b,c.
10. Please check your result using is.matrix(A). It should return TRUE, if your answer is correct.
11. Extract a sub-matrix from A named subA. It should be a 22 matrix which includes the first two rows and two columns of matrix A.
12. Compute 3*A.
13. Identify which elements of matrix B are higher than 5 and lower than 15.