```r
## exo
x=seq(0,10,0.01)
y=pnorm(x,5,sqrt(2))
z=dnorm(x,5,sqrt(2))
plot(x,y,type="l")
plot(x,z,type="l")

## list
data=c(1,2,3,4)
name="ABC"
maliste=list(donnees=data,nom=name)

## data.frame
before=c(1,2,3,4)
after=c(4,5,6,7)
type=c("A","B","C","D")
x=data.frame(before,after,type)
typeof(x$type)
x=data.frame(before,after,I(type))

## factor
x=factor(c(1,3,2,2,1),levels=1:3)
levels(x)=c("A","B","C")

## matrix, cbind, rbind
matrix(1:12,nrow=3,ncol=4)
matrix(1:12,nrow=3,byrow=TRUE)
cbind(1:3,4:6,7:9)
rbind(1:3,4:6,7:9)

## fonction
masomme=function(x,y){s=x+y
   s}

## importer et enregistrer les donnees
getwd()
setwd("/Users/shuyanliu/Documents/cours/tide/stat-r")
getwd()
y=data.frame(a=I("a"),b=pi)
write.table(y,file="y.csv",sep=",",col.names=T)
y2=read.table("y.csv")
y2=read.table("y.csv",sep=',',header=T)
write.table(x,file="x.txt",sep=" ",col.names=T)
write.table(x,file="x.txt",sep=" ",col.names=T,row.names=F)
save(x,y,file="xy.RData")
load("xy.RData")

## exo
x=1:10
y=rep(0,3)
c(x[1:2],y,x[3:length(x)])
```

```r
A=matrix(1:9,nrow=3)
B=matrix(1,nrow=3,ncol=3)
A+B
A*B
A%*%B
solve(A)
det(A)
A=matrix(c(1,2,0,3),nrow=2)
solve(A)
solve(A)%*%A

x=factor(c(1,3,2,2,1),levels=1:3)
y=c(5:7)
y[x] # vecteur composant des elements de y choisis selon x

## stat descriptive
chickwts
unique(chickwts$feed)
w=cut(chickwts$weight,3)
table(w,chickwts$feed)
summary(chickwts)
plot(weight~feed,data=chickwts)

## exo
x=runif(100)
sum(x>0.5)

x=runif(100)
y=runif(100)
xg=mean(x)
yg=mean(y)
plot(x,y)
points(xg,yg,col="red")

x=rep(1:10,each=10)
y=rep(1:10,times=10)
## methode 1
if(runif(1)>0.3){plot(x[1],y[1],col="red",pch=8)}
else{plot(x[1],y[1])}
for(i in 2:100){
    if(runif(1)>0.3){points(x[i],y[i],col="red",pch=8)}
    else{points(x[i],y[i])}
}

{if(runif(1)>0.3){plot(x[1],y[1],col="red",pch=8,xlim=c(0,11),ylim=c(0,11))}
else{plot(x[1],y[1],xlim=c(0,11),ylim=c(0,11))}}
for(i in 2:100){
    if(runif(1)>0.3){points(x[i],y[i],col="red",pch=8)}
    else{points(x[i],y[i])}
}
```

```r
f=runif(100)
{if (f[1]>0.3) {plot(x[1],y[1],col="red",pch=8,xlim=c(0,11),ylim=c(0,11))}
else {plot(x[1],y[1],xlim=c(0,11),ylim=c(0,11))}}
for(i in 2:100){
    if(f[i]>0.3){points(x[i],y[i],col="red",pch=8)}
    else{points(x[i],y[i])}
}
sum(f>0.3)

## methode 2
f=runif(100)>0.3
plot(x[f],y[f],col="red",pch=8)
points(x[!f],y[!f])
sum(f)

getwd()
setwd("/Users/shuyanliu/Documents/cours/tide/stat-r")
getwd()
xyf=data.frame(x,y,f)
write.table(xyf,file="xyf.txt",col.names=F,row.names=F)
```