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#1.a Suppose there is a chest of coins with 20 gold, 30 silver and 50
bronze coins. You randomly draw 10 coins from this chest. Write an R
code which will give us the sample space for this experiment. (use of
sample(): an in-built function in R)
x=c(rep("gold",20),rep("silver",30),rep("bronze",50))
x
sample(x,size=10)

#1.b
sample(c("succ","fail"),10,replace=T,prob=c(0.9,0.1))

#2.a A room has n people
k=23
product=1
for (i in 0:k)
{
  product = product*(365-i)/365
}
prob = 1-product
print(prob)

#2.a By Simulation method
sampleSize=23
sum=a
simul=10000000
for(exp in 1:simul)
{
  a=as.integer(any(duplicated(sample(365,samplesize,replace=TRUE))))
  sum=sum+a
}
prob=sum/simul
print(prob)

#2.b
product=1
i=0
prob=0
while(prob<=0.5)
{
  product = product*(365-i)/365
  prob=1-product
  i=i+1
}
n=i+1
print(n)

#3
bayesTheorem=function(pA,pB,pBA){
  pAB=(pA*pBA)/pB
  return (pAB)
}
pRain=0.2
pCloud=0.4
pCloudRain=0.85
```

```
a=bayesTheorem(pRain,pCloud,pCloudRain)
print(a)

#4 Iris Dataset
x=iris
x
#a
head(x,n=7)
#b
str(x)#structure
#c
y=x$Sepal.Length
range(y)
#d
mean(y)
#e
median(y)
#f
quantile(y,0.25)
quantile(y,0.75)
IQR(y)
#g
sd(y)#standard Deviation
var(y)#variance
#h
lapply(x[,1:4],sd)
lapply(x[,1:4],var)
lapply(x[,1:4],mean)
lapply(x[,1:4],median)

#5
v=c(2,1,3,2,2,5,7,9,1,7,5,6)
mode=function(v){
  u=unique(v)
  u[which.max(tabulate(match(v,u)))]
}
val=mode(v)
val=val*10
print(val)
```