A-8.R

acer

2020-06-05

#1  
x=list(a =5:10,b=rnorm(20),c=runif(30))  
sapply(x,mean)

## a b c   
## 7.50000000 0.03496475 0.56863829

#2  
x1=list(a =rep(c(1,2),3),b=rnorm(20,1,2),c=runif(30,1,2))  
sapply(x1,median)

## a b c   
## 1.500000 1.274744 1.488698

#3  
df=data.frame(CO2)  
df

## Plant Type Treatment conc uptake  
## 1 Qn1 Quebec nonchilled 95 16.0  
## 2 Qn1 Quebec nonchilled 175 30.4  
## 3 Qn1 Quebec nonchilled 250 34.8  
## 4 Qn1 Quebec nonchilled 350 37.2  
## 5 Qn1 Quebec nonchilled 500 35.3  
## 6 Qn1 Quebec nonchilled 675 39.2  
## 7 Qn1 Quebec nonchilled 1000 39.7  
## 8 Qn2 Quebec nonchilled 95 13.6  
## 9 Qn2 Quebec nonchilled 175 27.3  
## 10 Qn2 Quebec nonchilled 250 37.1  
## 11 Qn2 Quebec nonchilled 350 41.8  
## 12 Qn2 Quebec nonchilled 500 40.6  
## 13 Qn2 Quebec nonchilled 675 41.4  
## 14 Qn2 Quebec nonchilled 1000 44.3  
## 15 Qn3 Quebec nonchilled 95 16.2  
## 16 Qn3 Quebec nonchilled 175 32.4  
## 17 Qn3 Quebec nonchilled 250 40.3  
## 18 Qn3 Quebec nonchilled 350 42.1  
## 19 Qn3 Quebec nonchilled 500 42.9  
## 20 Qn3 Quebec nonchilled 675 43.9  
## 21 Qn3 Quebec nonchilled 1000 45.5  
## 22 Qc1 Quebec chilled 95 14.2  
## 23 Qc1 Quebec chilled 175 24.1  
## 24 Qc1 Quebec chilled 250 30.3  
## 25 Qc1 Quebec chilled 350 34.6  
## 26 Qc1 Quebec chilled 500 32.5  
## 27 Qc1 Quebec chilled 675 35.4  
## 28 Qc1 Quebec chilled 1000 38.7  
## 29 Qc2 Quebec chilled 95 9.3  
## 30 Qc2 Quebec chilled 175 27.3  
## 31 Qc2 Quebec chilled 250 35.0  
## 32 Qc2 Quebec chilled 350 38.8  
## 33 Qc2 Quebec chilled 500 38.6  
## 34 Qc2 Quebec chilled 675 37.5  
## 35 Qc2 Quebec chilled 1000 42.4  
## 36 Qc3 Quebec chilled 95 15.1  
## 37 Qc3 Quebec chilled 175 21.0  
## 38 Qc3 Quebec chilled 250 38.1  
## 39 Qc3 Quebec chilled 350 34.0  
## 40 Qc3 Quebec chilled 500 38.9  
## 41 Qc3 Quebec chilled 675 39.6  
## 42 Qc3 Quebec chilled 1000 41.4  
## 43 Mn1 Mississippi nonchilled 95 10.6  
## 44 Mn1 Mississippi nonchilled 175 19.2  
## 45 Mn1 Mississippi nonchilled 250 26.2  
## 46 Mn1 Mississippi nonchilled 350 30.0  
## 47 Mn1 Mississippi nonchilled 500 30.9  
## 48 Mn1 Mississippi nonchilled 675 32.4  
## 49 Mn1 Mississippi nonchilled 1000 35.5  
## 50 Mn2 Mississippi nonchilled 95 12.0  
## 51 Mn2 Mississippi nonchilled 175 22.0  
## 52 Mn2 Mississippi nonchilled 250 30.6  
## 53 Mn2 Mississippi nonchilled 350 31.8  
## 54 Mn2 Mississippi nonchilled 500 32.4  
## 55 Mn2 Mississippi nonchilled 675 31.1  
## 56 Mn2 Mississippi nonchilled 1000 31.5  
## 57 Mn3 Mississippi nonchilled 95 11.3  
## 58 Mn3 Mississippi nonchilled 175 19.4  
## 59 Mn3 Mississippi nonchilled 250 25.8  
## 60 Mn3 Mississippi nonchilled 350 27.9  
## 61 Mn3 Mississippi nonchilled 500 28.5  
## 62 Mn3 Mississippi nonchilled 675 28.1  
## 63 Mn3 Mississippi nonchilled 1000 27.8  
## 64 Mc1 Mississippi chilled 95 10.5  
## 65 Mc1 Mississippi chilled 175 14.9  
## 66 Mc1 Mississippi chilled 250 18.1  
## 67 Mc1 Mississippi chilled 350 18.9  
## 68 Mc1 Mississippi chilled 500 19.5  
## 69 Mc1 Mississippi chilled 675 22.2  
## 70 Mc1 Mississippi chilled 1000 21.9  
## 71 Mc2 Mississippi chilled 95 7.7  
## 72 Mc2 Mississippi chilled 175 11.4  
## 73 Mc2 Mississippi chilled 250 12.3  
## 74 Mc2 Mississippi chilled 350 13.0  
## 75 Mc2 Mississippi chilled 500 12.5  
## 76 Mc2 Mississippi chilled 675 13.7  
## 77 Mc2 Mississippi chilled 1000 14.4  
## 78 Mc3 Mississippi chilled 95 10.6  
## 79 Mc3 Mississippi chilled 175 18.0  
## 80 Mc3 Mississippi chilled 250 17.9  
## 81 Mc3 Mississippi chilled 350 17.9  
## 82 Mc3 Mississippi chilled 500 17.9  
## 83 Mc3 Mississippi chilled 675 18.9  
## 84 Mc3 Mississippi chilled 1000 19.9

lapply(df[sapply(df, is.numeric)], mean)

## $conc  
## [1] 435  
##   
## $uptake  
## [1] 27.2131

#4  
df1=data.frame(a=c(1,2,3), b=c(12,22,33), d=c(14,24,34))  
df1

## a b d  
## 1 1 12 14  
## 2 2 22 24  
## 3 3 33 34

names(df1)=c('Quarter1','Quarter 2','Quarter 3')  
apply(df1, 2, sum)

## Quarter1 Quarter 2 Quarter 3   
## 6 67 72

#5  
x2=list(a =-1:10,b=rnorm(10),c=runif(30))  
x2

## $a  
## [1] -1 0 1 2 3 4 5 6 7 8 9 10  
##   
## $b  
## [1] 0.170727604 0.450316619 0.007989372 -0.255375008 0.986435694  
## [6] -1.589353244 -1.728145128 -1.569017557 2.748829822 0.457356974  
##   
## $c  
## [1] 0.9265635 0.9445742 0.5691314 0.5628690 0.3159943 0.5086343 0.3926863  
## [8] 0.3429914 0.2446812 0.5093505 0.5358037 0.4316514 0.5702126 0.8769635  
## [15] 0.3955775 0.4522332 0.1055486 0.9951273 0.1247232 0.2591043 0.8429884  
## [22] 0.1302226 0.1581781 0.7533526 0.8672884 0.6183105 0.1799513 0.7033574  
## [29] 0.1764837 0.6418426

sapply(x2, function(elt)elt[1])

## a b c   
## -1.0000000 0.1707276 0.9265635