```
> Modified <- c(1037, 1047, 1066, 1048, 1059, 1073, 1070, 1040)
> mean(Modified)
[1] 1055
> sd(Modified)
[1] 13.87701
> var(Modified)
[1] 192.5714
> plot(Modified, 1:8, main = "Sample Mean = 1,055", xlab =
"Tensile strength (psi)", ylab = "", type = "n", yaxt = "n", frame =
FALSE)
> points(Modified, rep(1, 8), pch = 16, col = "green")
> points(mean(Modified), 1, pch = 17)

> BatchYield <- c(61, 63, 64, 65, 65, 66, 70, 71, 71, 73, 75, 77, 78,
78, 79, 81, 83, 84, 84, 87, 88, 88, 92, 93, 95)/100
> stem(BatchYield)

> AluminumLithium <- c(105, 97, 245, 163, 207, 134, 218, 199,
160, 196, 221, 154, 228, 131, 180, 178, 157, 151, 175, 201, 183,
153, 174, 154, 190, 76, 101, 142, 149, 200, 186, 174, 199, 115, 193,
167, 171, 163, 87, 176, 121, 120, 181, 160, 194, 184, 165, 145, 160,
150, 181, 168, 158, 208, 133, 135, 172, 171, 237, 170, 180, 167,
176, 158, 156, 229, 158, 148 ,150, 118, 143, 141, 110, 133, 123,
146, 169, 158, 135, 149)
> stem(AluminumLithium)
```

```
> summary(AluminumLithium)
   Min. 1st Qu. Median    Mean 3rd Qu.    Max.
   76.0   144.5  161.5   162.7   181.0   245.0
> length(AluminumLithium)
[1] 80
> mean(AluminumLithium)
[1] 162.6625
> median(AluminumLithium)
[1] 161.5
> sd(AluminumLithium)
[1] 33.77324
> sd(AluminumLithium)/sqrt(length(AluminumLithium))
[1] 3.775963

> GolfBallDistance <- c(291.5, 269.6, 270.7, 277.5, 279.0, 267.8,
283.7, 271.0, 261.9, 282.6, 274.4, 266.6, 274.0, 278.0, 267.3, 272.1,
281.7, 271.5, 258.9, 270.0, 290.2, 283.6, 285.2, 272.5, 283.5, 269.7,
282.2, 289.7, 293.2, 265.2, 276.4, 269.6, 275.5, 271.7, 271.2, 278.5,
274.1, 271.1, 267.1, 277.7, 272.0, 277.8, 272.1, 280.8, 268.5, 277.3,
264.5, 256.9, 255.0, 275.5, 268.7, 287.8, 261.3, 265.6, 277.1, 280.5,
281.0, 274.5, 269.7, 272.2, 281.6, 267.6, 274.0, 260.1, 266.2, 270.8,
273.2, 286.2, 281.9, 270.0, 281.6, 292.6, 279.3, 272.5, 266.4, 267.7,
274.4, 273.9, 269.6, 271.0, 276.3, 273.4, 281.0, 281.3, 271.5, 255.1,
281.6, 268.5, 279.8, 284.3, 285.9, 284.4, 293.1, 263.0, 280.3, 276.4,
273.7, 262.6, 269.9, 268.4)
> hist(GolfBallDistance, col = "green")

> Strikeouts <- c(8, 12, 9, 5, 17, 10, 8, 8, 8, 10, 5, 4, 11, 8, 13, 11, 8,
6, 10, 5, 7, 9, 8, 15, 11, 14, 11, 12, 16, 6, 8, 7, 17, 9, 8)
> hist(Strikeouts, col = "green")
> table(Strikeouts)
Strikeouts
 4  5  6  7  8  9 10 11 12 13 14 15 16 17
 1  3  2  2  9  3  3  4  2  1  1  1  1  2
> hist(Strikeouts, breaks = 3.5:17.5, col = "green")
```

```
> HullLossesMillionDepartures <- c(6.54, 6.46, 5.84, 3.94, 2.64,
2.57, 1.90, 1.40, 1.34, 1.29, 1.29, 1.23, 0.97, 0.96, 0.80, 0.77, 0.59,
0.49, 0.46, 0.43, 0.41, 0.39)
> plot(HullLossesMillionDepartures, type = "h", col = "green", lend
= 1, lwd = 15, main = "Aircraft Accident", xlab = "Aircraft type",
ylab = "Hull losses per million departures")

> bx <- boxplot(AluminumLithium)
> bxp(bx, boxfill = "green", main = "Aluminum-Lithium Alloy",
xlab = "Box-and-whisker plot", ylab = "Compressive strength (psi)")

> Original <- c(1030, 1035, 1020, 1049, 1028, 1026, 1019, 1010)
> Modified <- c(1037, 1047, 1066, 1048, 1059, 1073, 1070, 1040)
> RubberCompounds <- c(Original, Modified)
> Factor <- c(rep("Original", 8), rep("Modified", 8))
> bx <- boxplot(RubberCompounds ~ Factor)
> bxp(bx, boxfill = "green", main = "O-Rings", xlab = "Rubber
Compounds", ylab = "Tensile strength (psi)")

> plot(AluminumLithium, type = "b", pch = 16, col = "green", main
= "Aluminum-Lithium Alloy", ylab = "Compressive strength (psi)")
> stem(AluminumLithium)

> WolferSunspot <- c(101, 82, 66, 35, 31, 7, 20, 92, 154, 125, 85,
68, 38, 23, 10, 24, 83, 132, 131, 118, 90, 67, 60, 47, 41, 21, 16, 6, 4,
7, 14, 34, 45, 43, 48, 42, 28, 10, 8, 2, 0, 1, 5, 12, 14, 35, 46, 41, 30,
24, 16, 7, 4, 2, 8, 17, 36, 50, 62, 67, 71, 48, 28, 8, 13, 57, 122, 138,
103, 86, 63, 37, 24, 11, 15, 40, 62, 98, 124, 96, 66, 64, 54, 39, 21, 7,
4, 23, 55, 94, 96, 77, 59, 44, 47, 30, 16, 7, 37, 74)
> plot(1770:1869, WolferSunspot, type = "b", pch = 16, col =
"green", main = "Wolfer Sunspot", xlab = "Year", ylab = "Number")
> stem(WolferSunspot)
```

```
> UnitedKingdomAirline <- 10^6*c(7.269, 6.775, 7.819, 8.371,
9.069, 10.248, 11.030, 10.882, 10.333, 9.109, 7.685, 7.682, 8.350,
7.829, 8.829, 9.948, 10.638, 11.253, 11.424, 11.391, 10.665, 9.396,
7.775, 7.933, 8.186, 7.444, 8.484, 9.864, 10.252, 12.282, 11.637,
11.577, 12.417, 9.637, 8.094, 9.280, 8.334, 7.899, 9.994, 10.078,
10.801, 12.953, 12.222, 12.246, 13.281, 10.366, 8.730, 9.614, 8.639,
8.772, 10.894, 10.455, 11.179, 10.588, 10.794, 12.770, 13.812,
10.857, 9.290, 10.925, 9.491, 8.919, 11.607, 8.852, 12.537, 14.759,
13.667, 13.731, 15.110, 12.185, 10.645, 12.161, 10.840, 10.436,
13.589, 13.402, 13.103, 14.933, 14.147, 14.057, 16.234, 12.389,
11.594, 12.772)
> plot(1:84, UnitedKingdomAirline, type = "b", pch = 16, col =
"green", main = "United Kingdom Airline", xlab = "Month", ylab =
"Miles")
> stem(UnitedKingdomAirline)

> PullStrength <- c(9.95, 24.45, 31.75, 35.00, 25.02, 16.86, 14.38,
9.60, 24.35, 27.50, 17.08, 37.00, 41.95, 11.66, 21.65, 17.89, 69.00,
10.30, 34.93, 46.59, 44.88, 54.12, 56.63, 22.13, 21.15)
> WireLength <- c(2, 8, 11, 10, 8, 4, 2, 2, 9, 8, 4, 11, 12, 2, 4, 4, 20,
1, 10, 15, 15, 16, 17, 6, 5)
> DieHeight <- c(50, 110, 120, 550, 295, 200, 375, 52, 100, 300,
412, 400, 500, 360, 205, 400, 600, 585, 540, 250, 290, 510, 590,
100, 400)
> WireBond <- cbind(PullStrength, WireLength, DieHeight)
> WireBond

> bx <- boxplot(PullStrength)
> bxp(bx, boxfill = "green", main = "Box-and-Whisker Plot", ylab =
"Pull strength (Y)")
> bx <- boxplot(WireLength)
> bxp(bx, boxfill = "green", main = "Box-and-Whisker Plot", ylab =
"Wire length (X1)")
> bx <- boxplot(DieHeight)
> bxp(bx, boxfill = "green", main = "Box-and-Whisker Plot", ylab =
"Die height (X2)")
```

```
> plot(WireLength, PullStrength, main = "lowess(WireLength, PullStrength)", xlab = "Wire length (X1)", ylab = "Pull strength (Y)", pch = 16, col = "green")
> lines(lowess(WireLength, PullStrength), col = 2)
> plot(DieHeight, PullStrength, main = "lowess(DieHeight, PullStrength)", xlab = "Die height (X2)", ylab = "Pull strength (Y)", pch = 16, col = "green")
> lines(lowess(DieHeight, PullStrength), col = 2)

> pairs(WireBond, main = "Scatterplot Matrix for the Wire Bond Data", pch = 16, col = "green")

> cor(WireBond)

> Anomaly <- c(-0.11, -0.13, -0.01, -0.04, -0.42, -0.23, -0.25, -0.45, -0.23, 0.04, -0.22, -0.55, -0.40, -0.39, -0.32, -0.32, -0.27, -0.15, -0.21, -0.25, -0.05, -0.05, -0.30, -0.35, -0.42, -0.25, -0.15, -0.41, -0.30, -0.31, -0.21, -0.25, -0.33, -0.28, -0.02, 0.06, -0.20, -0.46, -0.33, -0.09, -0.15, -0.04, -0.09, -0.16, -0.11, -0.15, 0.04, -0.05, 0.01, -0.22, -0.03, 0.03, 0.04, -0.11, 0.05, -0.08, 0.01, 0.12, 0.15, -0.02, 0.14, 0.11, 0.10, 0.06, 0.10, -0.01, 0.01, 0.12, -0.03, -0.09, -0.17, -0.02, 0.03, 0.12, -0.09, -0.09, -0.18, 0.08, 0.10, 0.05, -0.02, 0.10, 0.05, 0.03, -0.25, -0.15, -0.07, -0.02, -0.09, 0.00, 0.04, -0.10, -0.05, 0.18, -0.06, -0.02, -0.21, 0.16, 0.07, 0.13, 0.27, 0.40, 0.10, 0.34, 0.16, 0.13, 0.19, 0.35, 0.42, 0.28, 0.49, 0.44, 0.16, 0.18, 0.31, 0.47, 0.36, 0.40, 0.71, 0.43, 0.41, 0.56, 0.70, 0.66, 0.60)
```

```
> CO2Conc <- c(290.7, 291.2, 291.7, 292.1, 292.6, 293.0, 293.3,
293.6, 293.8, 294.0, 294.2, 294.3, 294.5, 294.6, 294.7, 294.8, 294.9,
295.0, 295.2, 295.5, 295.8, 296.1, 296.5, 296.8, 297.2, 297.6, 298.1,
298.5, 298.9, 299.3, 299.7, 300.1, 300.4, 300.8, 301.1, 301.4, 301.7,
302.1, 302.4, 302.7, 303.0, 303.4, 303.8, 304.1, 304.5, 305.0, 305.4,
305.8, 306.3, 306.8, 307.2, 307.7, 308.2, 308.6, 309.0, 309.4, 309.8,
310.0, 310.2, 310.3, 310.4, 310.4, 310.3, 310.2, 310.1, 310.1, 310.1,
310.2, 310.3, 310.5, 310.7, 311.1, 311.5, 311.9, 312.4, 313.0, 313.6,
314.2, 314.9, 315.8, 316.6, 317.3, 318.1, 318.7, 319.2, 320.0, 321.1,
322.0, 322.9, 324.2, 325.2, 326.1, 327.2, 328.8, 329.7, 330.7, 331.8,
333.3, 334.6, 336.9, 338.7, 339.9, 341.1, 342.8, 344.4, 345.9, 347.2,
348.9, 351.5, 352.9, 354.2, 355.6, 356.4, 357.0, 358.9, 360.9, 362.6,
363.8, 366.6, 368.3, 369.5, 371.0, 373.1, 375.6, 377.4)

> plot(1880:2004, Anomaly, type = "b", pch = 16, col = "green",
main = "Global Mean Air Temperature Anomaly", xlab = "Year",
ylab = "Temperature anomaly")
> plot(1880:2004, CO2Conc, type = "b", pch = 16, col = "green",
main = "Global CO2 Concentration", xlab = "Year", ylab = "CO2
concentration")

> plot(CO2Conc, Anomaly, main = "lowess(CO2Conc, Anomaly)",
xlab = "CO2 concentration", ylab = "Temperature anomaly", pch =
16, col = "green")
> lines(lowess(CO2Conc, Anomaly), col = 2)
> cor(CO2Conc, Anomaly)
[1] 0.8523341
```

```
> Foam <- c(6.3, 4.4, 3.9, 5.1, 5.6, 4.6, 4.8, 6.5, 8.7, 8.3, 5.1, 3.3,
5.9, 7.7, 7.1, 5.5, 6.3, 4.3, 4.6, 3.4, 6.4, 5.5, 4.7, 4.1)
> Scent <- c(5.3, 4.9, 5.3, 4.2, 5.1, 4.7, 4.8, 4.5, 4.3, 3.9, 4.3, 5.4,
5.7, 6.6, 4.4, 5.6, 5.4, 5.5, 4.1, 5.0, 5.4, 5.3, 4.1, 4.0)
> Color <- c(4.8, 3.5, 4.8, 3.1, 5.5, 5.1, 4.8, 4.3, 3.9, 4.7, 4.5, 4.3,
7.2, 6.7, 5.8, 5.6, 4.8, 5.5, 4.3, 3.4, 6.6, 5.3, 5.0, 4.1)
> Residue <- c(3.1, 3.9, 4.7, 3.6, 5.1, 4.1, 3.3, 5.2, 2.9, 3.9, 3.6, 3.6,
4.1, 5.6, 4.1, 4.4, 4.6, 4.1, 3.1, 3.4, 4.8, 3.8, 3.7, 4.0)
> Region <- c(rep(1, 12), rep(2, 12))
> Quality <- c(91, 87, 82, 83, 83, 84, 90, 84, 97, 93, 82, 84, 87, 80,
84, 84, 82, 79, 81, 83, 81, 84, 83, 80)
> Shampoo <- cbind(Foam, Scent, Color, Residue, Region, Quality)
> Shampoo

> pairs(Shampoo, main = "Scatterplot Matrix for the Shampoo
Data", pch = 16, col = "green")

> cor(Shampoo)

> plot(Foam, Quality, main = "Scatter Diagram", xlab = "Foam",
ylab = "Quality", type = "n")
> points(Foam[1:12], Quality[1:12], pch = 16, col = "green")
> points(Foam[13:24], Quality[13:24], pch = 3)
> legend(3.3, 97, c("Eastern", "Western"), pch = c(16, 3), col =
c("green", "black"))
```