

R Notebook

This is an [R Markdown](#) Notebook. When you execute code within the notebook, the results appear beneath the code.

Try executing this chunk by clicking the *Run* button within the chunk or by placing your cursor inside it and pressing *Cmd+Shift+Enter*.

```
congruent = c(12.079, 16.791, 9.564, 8.63, 14.669, 12.238, 14.692, 8.987, 9.401, 14.48, 22.328, 15.298, 15.073, 16.929, 18.2, 12.13, 18.495, 10.639, 11.344, 12.369, 12.944, 14.233, 19.71, 16.004)
```

```
# Congruent Data Summary
cat("-----\n")
```

```
-----
```

```
cat("Congruent Details\n")
```

```
Congruent Details
```

```
cat("-----\n")
```

```
-----
```

```
c_mean = mean(congruent)
c_median = median(congruent)
c_IQR = IQR(congruent)
c_SD = sd(congruent)
cat("Mean -- ", c_mean)
```

```
Mean -- 14.05113
```

```
cat("\nMedian -- ", c_median)
```

```
Median -- 14.3565
```

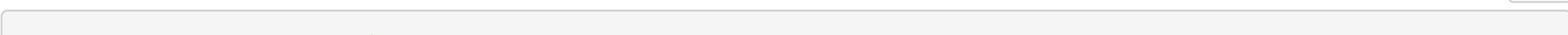
```
cat("\nIQR -- ", c_IQR)
```

```
IQR -- 4.3055
```

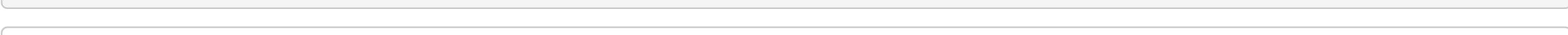
```
cat("\nSD -- ", c_SD)
```

```
SD -- 3.559358
```

```
boxplot(congruent)
```



```
plot(congruent)
```



Add a new chunk by clicking the *Insert Chunk* button on the toolbar or by pressing *Cmd+Option+I*.

```
incongruent = c(19.278, 18.741, 21.214, 15.687, 22.803, 20.878, 24.572, 17.394, 20.762, 26.282, 24.524, 18.644, 17.51, 20.33, 35.255, 22.158, 25.139, 20.429, 17.425, 34.288, 23.894, 17.96, 22.058, 21.157)
```

```
# Incongruent Data Summary
cat("-----\n")
```

```
-----
```

```
cat("\nIncongruent Details\n")
```

```
Incongruent Details
```

```
cat("-----\n")
```

```
-----
```

```
ic_mean = mean(incongruent)
ic_median = median(incongruent)
ic_IQR = IQR(incongruent)
ic_SD = sd(incongruent)
cat("Mean -- ", ic_mean)
```

```
Mean -- 22.01592
```

```
cat("\nMedian -- ", ic_median)
```

```
Median -- 21.0175
```

```
cat("\nIQR -- ", ic_IQR)
```

```
IQR -- 5.33475
```

```
cat("\nSD -- ", ic_SD)
```

```
SD -- 4.797057
```

```
boxplot(incongruent)
```



```
plot(incongruent)
```



```
# Difference between congruent and incongruent
difference = incongruent - congruent
difference
```

```
[1] 7.199 1.950 11.650 7.057 8.134 8.640 9.880 8.407 11.361 11.802
[11] 2.196 3.346 2.437 3.401 17.055 10.028 6.644 9.790 6.081 21.919
[21] 10.950 3.727 2.348 5.153
```

```
# Difference Summary
cat("-----\n")
```

```
-----
```

```
cat("\nDifference Details\n")
```

```
Difference Details
```

```
cat("-----\n")
```

```
-----
```

```
d_mean = mean(difference)
d_median = median(difference)
d_IQR = IQR(difference)
d_SD = sd(difference)
cat("Mean -- ", d_mean)
```

```
Mean -- 7.964792
```

```
cat("\nMedian -- ", d_median)
```

```
Median -- 7.6665
```

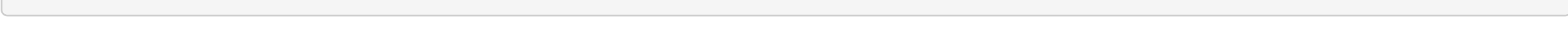
```
cat("\nIQR -- ", d_IQR)
```

```
IQR -- 6.613
```

```
cat("\nSD -- ", d_SD)
```

```
SD -- 4.864827
```

```
plot(difference)
```



```
boxplot(difference)
```



```
# Standard Error
SE = sqrt((c_SD ** 2 + ic_SD ** 2) / 24)
SE
```

```
[1] 1.219303
```

```
t_statistic = ic_mean - c_mean
t_statistic
```

```
[1] 7.964792
```

```
(22.02 - 14.05)/1.22
```

```
[1] 6.532787
```

```
# P-value = 0.05, 0.01, 0.005, 0.0001
t_critical_95 = 1.687
t_critical_99 = 2.410
t_critical_995 = 2.687
t_critical_999 = 4.042
margin_of_error_95 = t_critical_95 * SE
cat("Margin of Error :: ", margin_of_error_95)
```

```
Margin of Error :: 2.845969
```

```
CI_95 = c((ic_mean - c_mean) - margin_of_error_95, (ic_mean - c_mean) + margin_of_error_95)
cat("\n95% confidence interval :: ", CI_95)
```

```
95% confidence interval :: 5.118823 10.81076
```

```
a = c(9, 10, 7, 5, 7, 5, 9, 6, 8, 7)
b = c(7, 6, 5, 4, 4, 6, 7, 5, 5, 7)
temp = c(2, 4, 2, 1, 3, -1, 2, 1, 3, 0)
cat("Mean of Temp :: ", mean(b))
```

```
Mean of Temp :: 5.6
```

```
cat("\nSD of Temp :: ", sd(b))
```

```
SD of Temp :: 1.173788
```

```
plot(b)
```



```
hist(b)
```

