

```

# code snippets for R

# anything after # is a comment and does nothing except provide a way to
document your code

# Under the Environment tab in the upper right window, import SampleData.xlsx

# Display the Toss and Roll data
SampleData[["Toss"]]
SampleData[["Roll"]]

# Find the number of "H" and "T" entries in Rolls
tosses = SampleData$Toss
tosses.freq = table(tosses)
tosses.freq

# Find quantitative measures
rolls = SampleData$Roll
mean(rolls)
median(rolls)
sd(rolls)

# Hypothesis testing  $H_0: p_0 = 0.5$ ,  $H_a: p_0 \geq 0.5$ 
pbar = 9/16
p0 = 0.5
n = 16
z = (pbar - p0) / sqrt(p0 * (1 - p0) / n)
pval = pnorm(z, lower.tail=FALSE) # use pnorm(z) for upper tail

# Hypothesis testing  $H_0: p_0 = 0.5$ ,  $H_a: p_0 < 0.5$ 
pbar = 9/16
p0 = 0.5
n = 16
z = (pbar - p0) / sqrt(p0 * (1 - p0) / n)
pval = 2 * pnorm(z, lower.tail=FALSE) # upper tail

# Confidence intervals for a proportion
# change alpha for other confidence levels
alpha = .05
z.half.alpha = qnorm(1 - alpha/2)
confint = pbar + c(-z.half.alpha, z.half.alpha) * sqrt(pbar * (1 - pbar) / n)

# Hypothesis testing  $H_0: \mu_0 = 15.4$ ,  $H_a: \mu_0 \leq 15.4$ 
xbar = 14.6
mu0 = 15.4
s = 2.5
n = 35
t = (xbar - mu0) / (s / sqrt(n))
pval = pt(t, df=n-1)
# use pval = pt(t, df=n-1, lower.tail=FALSE) for upper tail

# Confidence intervals for a mean
# change alpha for other confidence levels
alpha = .05
t.half.alpha = qt(1 - alpha/2, df=n-1)
confint = xbar + c(-t.half.alpha, t.half.alpha) * (s / sqrt(n))

```