

*The name of the dataset.*

**data one;**  
**input BOX;**  
**cards;**

**8**  
**4**  
**10**  
**5**  
**1**  
**8**  
**1**  
**8**  
**3**  
**3**  
**;**

*The name of the **variable** (BOX) in the order in which they will be read.*

*The data. Each row has one **entry** for each observation of the variable named in the input line. That is, there is one row for each **record** or **observation** in the dataset. (e.g., 10 sampled box areas)*

*“proc” stands for procedure. We will use many SAS procedures this semester. Here we use a procedure (or “proc”) called “means”*

```
proc means data=one mean std stderr  
          clm t probt alpha=0.05;  
var BOX;  
run;
```

*“run” tells SAS to execute the commands*

*These commands tell SAS to use the “means” procedure on the variable (var) “BOX” in the dataset called “one” to compute the sample mean, sample standard deviation, standard error of the sample mean, 95% confidence limits for the population mean (a 95% confidence interval), and a t-statistic and p-value for the two-sided test whose null hypothesis says that the population mean is zero.*

# The MEANS Procedure

Analysis Variable : BOX

Mean	Std Dev	Std Error	Lower 95% CL for Mean	Upper 95% CL for Mean	t Value	Pr >  t
5.1000000	3.2128215	1.0159834	2.8016859	7.3983141	5.02	0.0007

$$\bar{Y}$$

$$s$$

$$\frac{s}{\sqrt{n}}$$

$$t = \frac{\bar{Y} - 0}{s / \sqrt{n}}$$

confidence interval for  
population mean

two-sided  
 $p$ -value

To make SAS test the null hypothesis  $H_0: \mu=3$

```
data two; set one;  
  NEWBOX=BOX-3;  
run;
```

*These commands ask SAS to*

- (1) make a new dataset called "two,"*
- (2) put into the new dataset the contents of the old dataset called "one," and*
- (3) add the variable "NEWBOX" to the new dataset "two".*

*Re-run "proc means" with variable NEWBOX*

```
proc means data=two mean std stderr  
  clm t probt alpha=0.05;  
  var NEWBOX;  
run;
```

# The MEANS Procedure

Analysis Variable : NEWBOX

Mean	Std Dev	Std Error	Lower 95% CL for Mean	Upper 95% CL for Mean	t Value	Pr >  t
2.1000000	3.2128215	1.0159834	-0.1983141	4.3983141	2.07	0.0687

