

## MATH 1530 Elements of Statistics Ellen Smyth

CALCULATOR TIPS  
TI-83 OR TI-84

## Random Numbers Ch 1

To compute 10 random numbers between 1 and 400, do the following:

1. Math
2. PRB
3. 5:randInt
4. randInt (1, 400, 10)

## 1-Var Stats Ch 3

Use 1-Var Stats to compute the

- Mean (sample and population are  $\bar{x}$ )
- Standard deviation (sample =  $s_x$  and population =  $\sigma$ )
- Five Number Summary (min, Q1, med, Q2, max)
- $\Sigma x$  and  $\Sigma x^2$
- Sample size,  $n$

## 1-Var Stats Ch 3

- Enter the following list of data into your calculator (Stat < Edit): 78.8, 76.6, 72.9, 72.7, 71.9, 70.2, 70.1, 69.1, 68.9, 68.8
- Stat < Calc < Enter < 2<sup>nd</sup> < 1 < Enter
- This will put "1-Var Stats L1" on your calculator and then give you a long list of statistics

## Linear Regression Equation, $r$ and $r^2$ Ch4

- Stat > Edit
- Enter x values in L1
- Enter y values in L2
- Stat > Calc > 8
- LinReg(a+bx) L1, L2 > Enter

Be sure to turn your diagnostic on:  
Catalog > Diagnostic On > Enter

## Mean and Standard Deviation of DRV in Probability Distributions Ch 5

1. Enter y (or x) values into  $L_1$  and  $P(Y=y)$  (or  $P(X=x)$ ) values into  $L_2$
2. Stat < Calc < 1-Var Stats  $L_1, L_2$   
Enter
3. is your  $\mu$  and  $s_x$  is your  $\sigma$

## Factorials Ch 5

**100!**

Using the calculator:

- Type "100"
- Math > Prb > 4: !
- Enter

## Binomial Coefficients Ch 5

$$\binom{10}{2} = \frac{10!}{2!(10-2)!} = \frac{10!}{2!8!} = \frac{10 \cdot 9 \cdot 8!}{2 \cdot 8!} = \frac{10 \cdot 9}{2} = 45$$

Using the calculator:

- Type "10"
- Math > Prb > 3: nCr
- Type "2"
- Enter

## Given z-score(s), find area Ch 6

To find the area between two given z-scores, do

1. 2<sup>nd</sup> > Dist > 2
2. normalcdf(min z, max z) > Enter

\*Use min=-5 for  $-\infty$  and max=5 for  $\infty$

Find the area:

- a) to the left of  $z=1.23 \Rightarrow \text{normalcdf}(-5, 1.23)$
- b) To the right of  $z=-0.67 \Rightarrow \text{normalcdf}(-0.67, 5)$
- c) Between  $z=-1.54$  and  $z=3.18 \Rightarrow \text{normalcdf}(-1.54, 3.18)$

## Given area, find z-score Ch 6

To find the z-score that has a set area to its left,

1. 2<sup>nd</sup> > Dist > 4
2. invNorm(area) > Enter

Find the z-score where the area:

- a) to the left of z is 0.9586  
(invNorm(0.9586)=1.73)
- b) to the right of z is 0.8721 (invNorm(1-0.8721)=-1.14)

## One Sample z-Interval (Text # 8.22) Ch 8

Using the calculator, you still must interpret your results!

- STAT < TESTS < 7:ZInterval
- Stats < ENTER
- Fill in sigma, xbar, n, and C-Level (**not %**)
- Calculate < ENTER

EDIT	CALC	TESTS	ZInterval
1:Z-Test...	Inpt:Data	(18.848, 47.952)	
2:T-Test...	σ:42	x̄=33.4	
3:2-SampZTest...	x̄:33.4	n=32	
4:2-SampTTest...	n:32	C-Level: .95	
5:1-PropZTest...	Calculate		
6:2-PropZTest...			
7:ZInterval...			

## One Sample t-Interval w/o Knowing s and xbar (Text #8.63) Ch 8

- Enter data in L1 (Stat < Edit)
- Stat < Tests < 8:TInterval
- Inpt: Choose "Data"
- List: L1
- Freq:1
- C-Level: 0.95
- Calculate < Enter

122	166	171	148	135
173	137	163	119	144
164	153	162	140	142
158	130	167	173	186
92	170	126	163	172

Using the calculator, you still must interpret your results!

## One Sample t-Interval Knowing $s$ and $\bar{x}$ (Text #8.63) Ch 8

- STAT < TESTS < 8:TInterval
- Inpt: Stats < Enter
- $\bar{x}$ : 151.04 < Enter
- $S_x$ : 22.01 < Enter
- $n$ : 25 < Enter
- C-Level: 0.95 < Enter
- Calculate < Enter

122	166	171	148	135
173	137	163	119	144
164	153	162	140	142
158	130	167	173	186
92	170	126	163	172

Using the calculator, you still must interpret your results!

## One Sample z-Test Ch 9

Your calculator can compute z-score and p-value

Enter data in L1

Stat < Tests < 1

Inpt: Data

Fill in  $\mu_0$ ,  $\sigma$ , list (L1), freq (1), and alternative type

Calculate < Enter

1. State  $H_0$ ,  $H_a$ ,  $\alpha$ ,  $p$
2. Tell whether  $p \leq \alpha$  or not
3. Rejection decision statement
4. Interpret

## One Sample t-Test Ch 9

Your calculator can compute t-score and p-value

Enter data in L1

Stat < Test < 2

Inpt: Data

Fill in  $\mu_0$ , list (L1), freq (1), and alternative type

Calculate < Enter

1. State  $H_0$ ,  $H_a$ ,  $\alpha$ ,  $p$
2. Tell whether  $p \leq \alpha$  or not
3. Rejection decision statement
4. Interpret

## Two Sample t-Test Ch 10

- Stat < Tests < 4:2-SampleTTest
- Choose "Stats", " $\bar{x}$ 1", " $S_x$ 1", " $n$ 1", " $\bar{x}$ 2", " $S_x$ 2", " $n$ 2", the appropriate alternative hypothesis, and "yes" or "no" for pooled
- Calculate < Enter

**If  $\sigma$ s are equal, do pooled. If not, do unpooled.**

1. State  $H_0$ ,  $H_a$ ,  $\alpha$ ,  $p$
2. Tell whether  $p \leq \alpha$  or not
3. Rejection decision statement
4. Interpret

## Two Sample t-Interval Ch 10

- Stat < Tests < 0:2-SampleTInt
- Choose "Stats", " $\bar{x}$ 1", " $S_x$ 1", " $n$ 1", " $\bar{x}$ 2", " $S_x$ 2", " $n$ 2", the appropriate confidence level, and "yes" for pooled
- Calculate < Enter

**If  $\sigma$ s are equal, do pooled. If not, do unpooled.**

Using the calculator, you still must interpret your results!

## Paired t-Test Ch10

- Enter data in L1 and L2
- $L1 - L2 > \text{"STO"} > L3 > \text{Enter}$
- Stat > Tests > 2:T-Test...
- Choose "Data", "o" for  $\mu_0$ , L3, 1, and the appropriate alternative hypothesis
- Calculate < Enter

1. State  $H_0$ ,  $H_a$ ,  $\alpha$ ,  $p$
2. Tell whether  $p \leq \alpha$  or not
3. Rejection decision statement
4. Interpret

## Paired t-Interval Ch 10

- Enter data in L1 and L2
- L1-L2 > "STO>" > L3 > Enter
- Stat < Tests < 8:TInterval...
- Choose "Data", "L3", "1", and the appropriate confidence level
- Calculate < Enter

Using the calculator, you still must interpret your results!

## One Sample Proportion z-Interval Ch 11

- Stat < Tests < ALPHA-A (1-PropZInt)
- Type x (the number of successes = 202 for Ex 11.3), n (sample size = 1010 for Ex 11.3), and C-level (=0.95 for Ex 11.3)
- Calculate < Enter

Using the calculator, you still must interpret your results!

## One Sample Proportion z-Test Ch 11

- Stat < Tests < 5 (1-PropZTest...)
- Type p\_0 (postulated population proportion), x (the number of successes), n (sample size = 1010 for Ex 11.3), and the appropriate alternative hypothesis
- Calculate < Enter

1. State  $H_0$ ,  $H_a$ ,  $\alpha$ , p
2. Tell whether  $p \leq \alpha$  or not
3. Rejection decision statement
4. Interpret

## 2 Sample Proportion t-Test Ch 11

- Stat < Tests < 6 (1-PropZTest...)
- Type x1 (the number of successes = 276 men for Ex 11.9), n1 (sample size = 747 men), x2 (the number of successes = 195 women), n2 (sample size = 434 women), and the appropriate alternative hypothesis (<p\_2)
- Calculate < Enter

1. State  $H_0$ ,  $H_a$ ,  $\alpha$ , p
2. Tell whether  $p \leq \alpha$  or not
3. Rejection decision statement
4. Interpret

## 2 Sample Proportion t-Interval Ch 11

- Stat < Tests < ALPHA-B (2-PropZInt)
- Type x1 (the number of successes = 276 men for Ex 11.10), n1 (sample size = 747 men), x2 (the number of successes = 195 women), n2 (sample size = 434 women), and C-level (=0.90)
- Calculate < Enter

Using the calculator, you still must interpret your results!

## Chi-Square Independence Test Ch 12

- 2<sup>nd</sup>-Matrix < Edit, and select [A]
- Type the number of rows in the contingency table, and press enter
- Type the number of columns in the contingency table, and press enter
- Type in the data from the contingency table, hitting "Enter" after each value
- Stat < Tests < Alpha-C
- Choose [A] for "Observed:" and [B] for "Expected:"
- Calculate

1. State  $H_0$ ,  $H_a$ ,  $\alpha$ , p
2. Tell whether  $p \leq \alpha$  or not
3. Rejection decision statement
4. Interpret