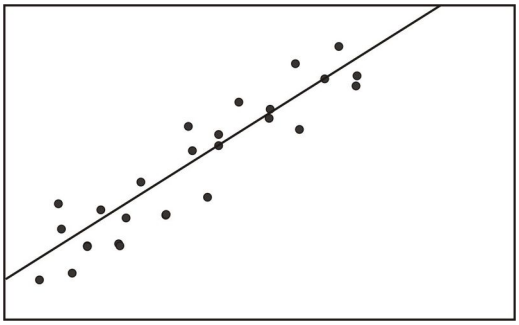
Correlation, Regression & TI



Tips & Notations:

1. Working with a set of ordered–pairs.
2. Do the following only once: [2nd] [0] , scroll down to [DiagnosticOn] , followed by pressing [ENTER] twice.
3. Preparation:
   (a) Enter x values in list L_1 .
   (b) Enter corresponding y values in list L_2 .

Finding

- **Equation of the regression line** $y = a + bx$
- **Correlation coefficient** r
- **Coefficient of determination** r^2

1. Without menu: [STAT] > [CALC] > 8:LinReg(a+bx)> L_1 [,] L_2 > [ENTER]
2. With menu: [STAT] > [CALC] > 8:LinReg(a+bx)
   - **Xlist:** L_1
   - **Ylist:** L_2
   - **FreqList:** **blank**
   - **Store RegEQ:** **blank**
   - **Calculate** **Choose to execute**

Testing correlation coefficient r:

$H_0 : \rho = 0 \Rightarrow$ **Linear Correlation is not significant**

$H_1 : \rho \neq 0 \Rightarrow$ **Linear Correlation is significant**

Method I: Using Pearson Correlation Coefficient Metthod

1. **Find PCC–CV Using TI:**
   PRGM > **RVAL** > **ENTER** (Twice) > **2: 2 TAIL TEST** ,
   now follow on display instructions.
2. **Conclusion:**
   - **When** $|r| >$ **PCC–CV, then Linear Correlation is significant**
   - **When** $|r| \leq$ **PCC–CV, then Linear Correlation is not significant**

Method II: Using Traditional or P–Value Method

1. **Find C.T.S. and P–Value Using TI:**
   STAT > **TESTS** > **LinRegTTest**
   - **Xlist:** L_1
   - **Ylist:** L_2
   - **Freq:** 1
   - β **&** ρ **:** $\neq 0$ < 0 > 0
   - **RegEQ:** blank
   - **Calculate** Choose to execute
2. **Find C.V. Using TI:**
   PRGM > **TVAL**, **using** **2: 2 TAIL TEST** **with** **df** $= n - 2$
3. **Conclusion: Use testing chart**

Predicting y value for a given x value:

- **Use** $y = a + bx$ **when linear correlation is significant**
- **Use** $\overline{y}$ **when linear correlation is not significant**
