

# EPPS 6313 : Recitation Session #3

## Problem 1

In our factory, the measurement machine was out of order. So, it got repaired.  
After that, we use the machine, and we could get 5 measurement results 78, 83, 68, 72, 88.  
Before the trouble, the mean of the measurements was 70. Can we conclude the machine has no problem after the repair ?

## Problem 2

The # of birth defect of Dallas was 68 among 36,000 in 2010. The birth defect rate of Texas was 0.0016.  
Can we say the rate of birth defect in Dallas was the average level of Texas ?

## Problem 3

Discuss how the concept of Type I and Type II errors might apply in thinking about the issue of airport security.

# EPPS 6316 : Recitation Session #3

## Problem 1

For the simple regression  $Y_i = \beta_1 + \beta_2 X_i + u_i$ , verify the following numerical properties of the OLS estimators :

$$\hat{y} = \hat{\beta}_2 x_i$$

$$\text{Show } R^2 = r_{xy}^2 ; \text{ Pearson's } r_{xy}^2 = \frac{(\sum xy)^2}{(\sum x^2)(\sum y^2)}$$

## Problem 2

Given the data on the variables X and Y.

X	0	7	1	3	4	-1
Y	0	14	0	5	7	-1

(1) Calculate standard error of the coefficient estimates :

(2) Calculate  $R^2$  :