```
data ex6_9 ;
 input student achieve final @@ ;
 cards ;
 1 39 65   2 43 78    3 21 52
 4 64 82   5 57 92    6 47 89
 7 28 73   8 75 98    9 34 56
 10 52 75
  ;
proc plot ;
 plot final*achieve ; run ;
proc means ;
 var final achieve ; run ;

proc reg data = ex6_9 ;
  model final = achieve ;
  output out = ex6_9res  p = pred  r = res ;
  run ;
 proc plot data = ex6_9res ;
  plot res*pred / vref = 0 ;
  run ;
```

Regression estimation Example 6.9

N = 486 n = 10 $\mu_x = 52$

y mean = 76 x mean = 46

pred μ_{yL} = y mean + b (μ_x - x mean) = 76 + .766 (52 - 46) = 80.6

pred Var = ((N –n)/N) MSE/n

= (476/486) (75.75/10) = 7.42

B = 5.45

```
%include 'c:\temp\regr' ;
%regr(sample=ex6_9,npop=488,response=final,param=mean,x=achieve,mu_x=52) ;
```

The REG Procedure
Model: MODEL1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1449.97413	1449.97413	19.14	0.0024
Error	8	606.02587	75.75323		
Corrected Total	9	2056.00000			

Root MSE	8.70363	R-Square	0.7052
Dependent Mean	76.00000	Adj R-Sq	0.6684
Coeff Var	11.45215		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	40.78416	8.50686	4.79	0.0014
achieve	1	0.76556	0.17498	4.38	0.0024

Regression Estimate of Mean
Simple Random Sample Design
Response Variable = final
(Auxiliary Variable = achieve)

Estimate	Standard Error	Bound	MSE	Slope	Intercept	Sample Size
80.5934	2.72398	5.44797	75.7532	0.76556	40.7842	10