Command	Explanation	Abbreviation
`correlate y x`	gives correlation of x and y	`corr`
`regression y x`	regresses y on x	`reg`
`predict yhat`	creates vector of predicted values *yhat* after `reg`	
`predict e, resid`	creates vector of residuals e after `reg`	
`test x = c`	tests $H_0 : x = c$ against $H_a : x \neq c$	

The following regresses the price of an automobile on its mileage-per-gallon.

```
. sysuse auto
(1978 Automobile Data)

. regress price mpg

------------------------------------------------------------------------------
       price |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mpg |  -238.8943   53.07669    -4.50   0.000    -344.7008   -133.0879
       _cons |   11253.06   1170.813     9.61   0.000     8919.088    13587.03
------------------------------------------------------------------------------
```

You test the claim that one more mile per gallon is associated with a lower price by \$400. Specifically, $H_0 : \beta_2 = -400$ against $H_a : \beta_2 \neq -400$.

```
. test mpg = -400

 ( 1)  mpg = -400

       F(  1,    72) =    9.21
            Prob > F =    0.0033
```

When there is only one regressor, then $F(1,72) = t^2$, so the t-statistic is $\sqrt{9.21} = 3.035$, which can be confirmed by manually calculating

$$t = \frac{-238.8943 - (-400)}{53.07669} = 3.035.$$

The p-value is 0.0033, so reject the null hypothesis at any conventional significance level.

Note that the residual has mean zero, as it always will.

```
. predict e, resid

. sum e

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
           e |         74   -6.29e-06    2605.621  -3184.174   9669.721
```