

$$\sum (\hat{y}_i - \bar{y})^2 = \text{explained}$$

Harvey's

$$s = \sqrt{s^2} \text{ where } s^2 = \frac{SSE}{n-2}$$

Regression Analysis

r^2 0.903
 r 0.950
 Std. Error 13.829
 n 10
 k 1
 Dep. Var. Monthly Sales (y)

$$F(\text{model}) = \frac{\text{expl. var}}{\text{unexpl. var}/(n-2)}$$

$$= \frac{14200}{1530/8}$$

| Source | SS | df | MS | F | p-value |
|------------|-------------|----|-------------|-------|----------|
| Regression | 14,200.0000 | 1 | 14,200.0000 | 74.25 | 2.55E-05 |
| Residual | 1,530.0000 | 8 | 191.2500 | | |
| Total | 15,730.0000 | 9 | | | |

| variables | coefficients | std. error | t (df=8) | p-value | 95% lower | 95% upper |
|------------------|--------------|------------|----------|----------|-----------|-----------|
| Intercept | 60.0000 | 9.2260 | 6.503 | .0002 | 38.7247 | 81.2753 |
| t Population (x) | 5.0000 | 0.5803 | 8.617 | 2.55E-05 | 3.6619 | 6.3381 |

b_0
 $SSE = \sum (y_i - \hat{y}_i)^2$: unexplained
 b_1
 S_{b_1}
 $t = \frac{b_1 - 0}{S_{b_1}}$

| Observation | Monthly Sales (y) | Predicted | Residual |
|-------------|-------------------|-----------|----------|
| 1 | 58.0 | 70.0 | -12.0 |
| 2 | 105.0 | 90.0 | 15.0 |
| 3 | 88.0 | 100.0 | -12.0 |
| 4 | 118.0 | 100.0 | 18.0 |
| 5 | 117.0 | 120.0 | -3.0 |
| 6 | 137.0 | 140.0 | -3.0 |
| 7 | 157.0 | 160.0 | 9.0 |
| 8 | 169.0 | 160.0 | 9.0 |
| 9 | 149.0 | 170.0 | -21.0 |
| 10 | 202.0 | 190.0 | 12.0 |

$$e_i = y_i - \hat{y}_i$$

$$[110 \pm (2.306)(13.83)\sqrt{.128}]$$

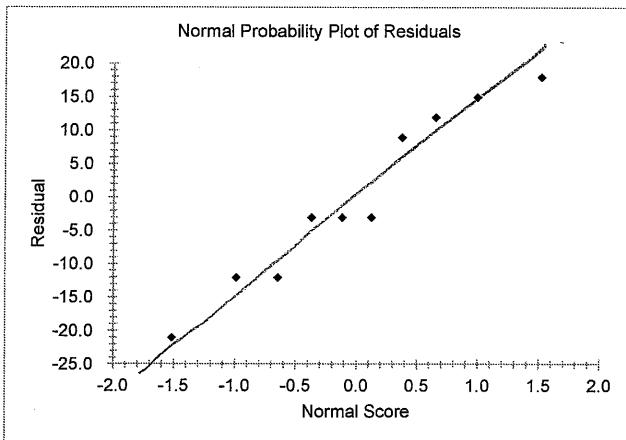
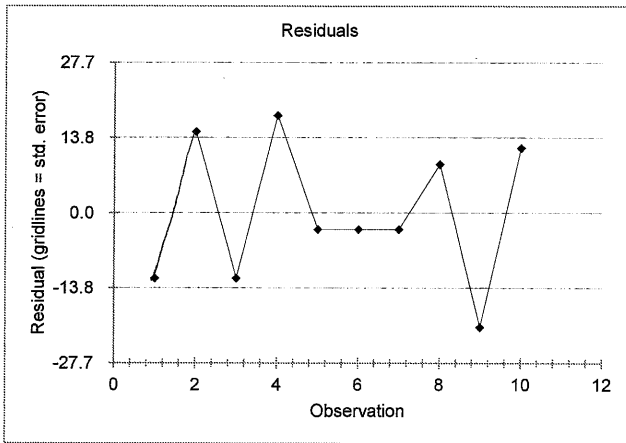
Predicted values for: Monthly Sales (y)

| t Population (x) | Predicted | 95% Confidence Interval | | 95% Prediction Interval | | Leverage |
|------------------|-----------|-------------------------|---------|-------------------------|---------|----------|
| | | lower | upper | lower | upper | |
| 10 | 110.000 | 98.583 | 121.417 | 76.127 | 143.873 | 0.128 |

$$DV = \frac{1}{10} + \frac{(10-1)^2}{568}$$

$$[110 \pm (2.306)(13.83)\sqrt{1+.128}]$$

Residuals should fluctuate around zero.



Almost linear. Residuals appear normal.