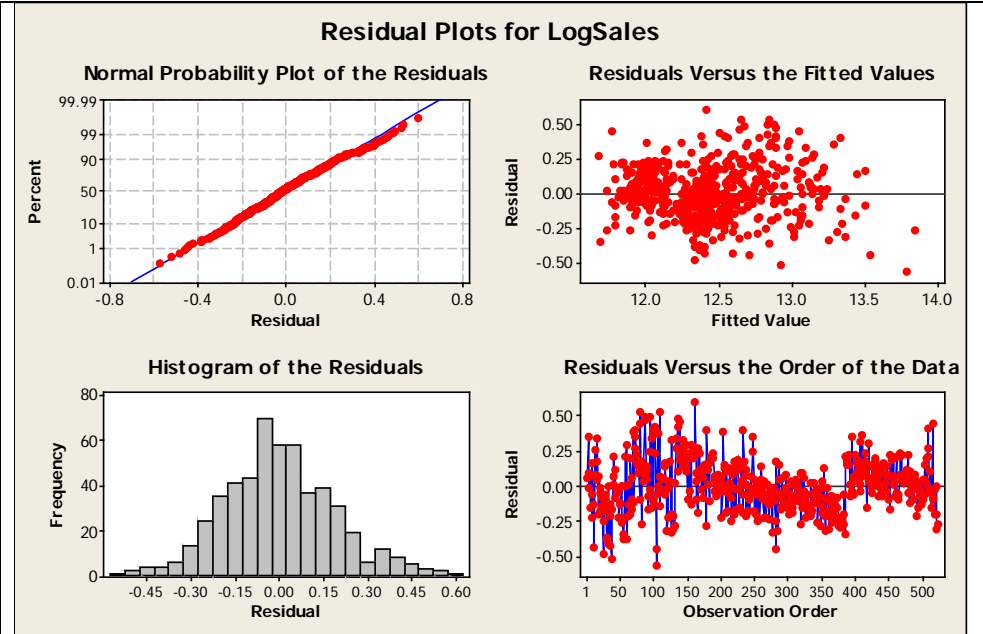


EXAMPLE OF “BEST SUBSETS” REGRESSION: Response = Log sales price of house; 9 possible explanatory variables

Best Subsets Regression: LogSales versus SqFt/100, AC, ...
Response is LogSales

Vars	R-Sq	R-Sq(adj)	Mallows C-p	S	0	A	m	m	z	a	z	o	t
1	70.5	70.4	285.5	0.23472	X								
1	62.0	61.9	517.3	0.26644									X
2	78.5	78.4	69.5	0.20056	X								X
2	73.6	73.5	203.7	0.22235	X						X		X
3	79.7	79.6	39.3	0.19515	X		X						X
3	79.5	79.3	45.5	0.19624	X			X		X			X
4	80.5	80.3	19.7	0.19149	X		X	X		X			X
4	80.2	80.1	26.8	0.19276	X		X	X		X			X
5	80.9	80.7	9.3	0.18942	X		X	X	X	X			X
5	80.7	80.5	15.3	0.19051	X	X		X	X	X			X
6	81.1	80.9	6.4	0.18871	X	X		X	X	X			X
6	81.0	80.8	9.5	0.18928	X		X	X	X	X			X
7	81.2	80.9	6.8	0.18861	X	X		X	X	X	X		X
7	81.1	80.9	7.8	0.18879	X	X		X	X	X	X		X
8	81.2	80.9	8.3	0.18869	X	X		X	X	X	X	X	X
8	81.2	80.9	8.5	0.18873	X	X	X	X	X	X	X		X
9	81.2	80.9	10.0	0.18882	X	X	X	X	X	X	X	X	X



Above are the diagnostic plots for the model chosen, which is the one shown in bold on the left. The “residuals versus order of the data” plot isn’t useful in this example, but the other three plots are. See note #3 below.

NOTES:

1. All of the highlighted models have acceptable Mallows’s Cp. I chose the model (in bold) with good Cp and smallest number of variables to get best R-Sq(adj), which stays the same for the rest of the models, at 80.9%.
2. That model has the variables in bold as predictors. They include SqFt/100, AC, Bathrooms, Lot size, Garage size and Quality. Bedrooms, near highway and pool are not included.
3. The diagnostic plots for the chosen model are shown on the right. They look good. The normal probability plot and the histogram of residuals show that the residuals are approximately normal, and the plot of residuals versus fitted values looks like random scatter, as it should.
4. The final model is:

$$\text{LogSales} = 11.9 + 0.0283 \text{ SqFt/100} + 0.0552 \text{ AC} + 0.0418 \text{ Bathrooms} + 0.000004 \text{ LotSize} + 0.0643 \text{ GarageSize} - 0.206 \text{ Quality}$$