

Using Minitab to predict y for a given x -value.

For the data in exercise 5.3, I want to predict “days” when Distance = 2.

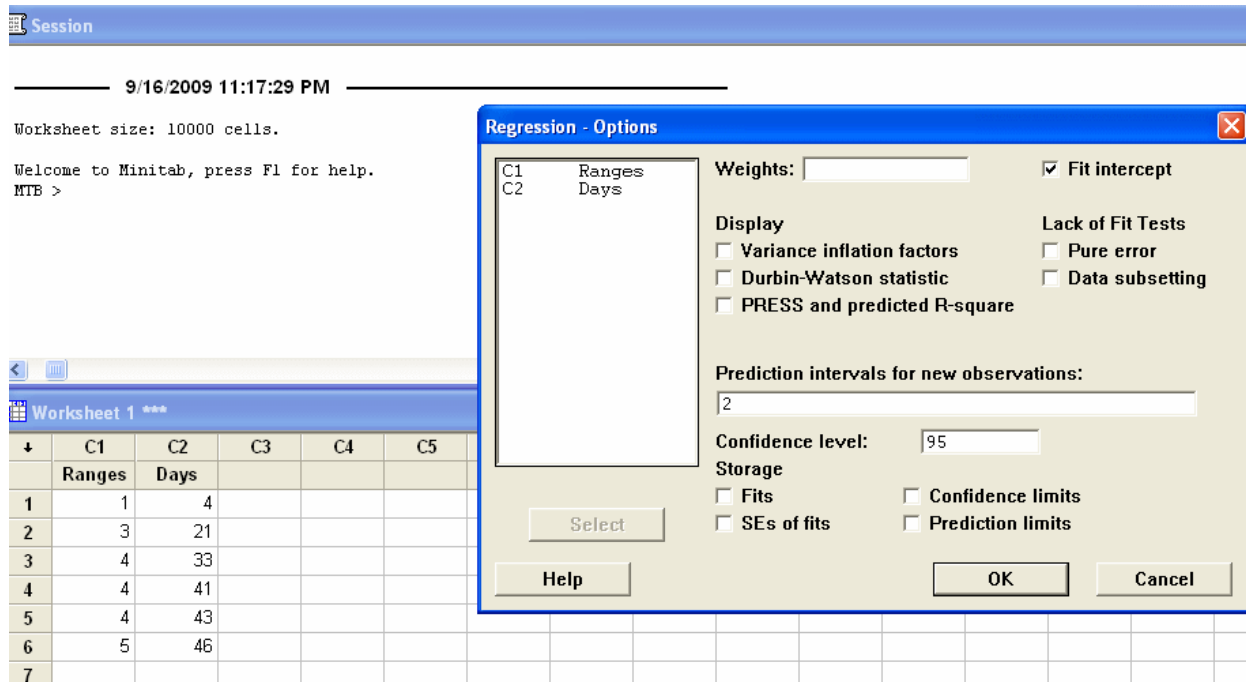
Stat > Regression > Regression and then choose “Options” and then put 2 in the box labeled “Prediction intervals for new observations.” The resulting output in the session window has that prediction. You can check it by plugging in 2 to the regression equation and seeing that it gives the same \hat{y} .

The screenshot shows the Minitab interface. The Session window at the top displays the date and time (9/16/2009 11:17:29 PM) and the worksheet size (10000 cells). Below this, the Regression dialog box is open, showing the following settings:

- Response: c2
- Predictors: c1
- Buttons: Graphs..., Options..., Results..., Storage..., OK, Cancel, Help, Select

The Worksheet 1 window shows the following data:

	C1	C2	C3	C4	C5
	Ranges	Days			
1	1	4			
2	3	21			
3	4	33			
4	4	41			
5	4	43			
6	5	46			



Just below is the output from the Session Window.

Notice the predicted value for \hat{y} of 14.44 when $x = 2$.

```
New
Obs   Fit  SE Fit      95% CI      95% PI
  1 14.44   3.11  (5.79, 23.09) (-1.69, 30.57)
```

Values of Predictors for New Observations

```
New
Obs  Ranges
  1    2.00
```

When you see the output on your screen, it will look like the output in the Appendix here. See this almost at the end of the output, called Fit. It's called the fitted value, since it is the predicted value – which is the value on the regression line.

You can check it by hand, using $\hat{y} = -8.09 + 11.3 \cdot 2 = -8.09 + 22.6 = 14.51$

(There's a difference in the answer from Minitab because Minitab used many more decimal places in the calculations. Their values for the coefficients for the equation are quite rounded from what they actually use in their calculations.)

Appendix

9/16/2009 11:17:29 PM

Worksheet size: 10000 cells.

Welcome to Minitab, press F1 for help.

MTB > Regress c2 1 c1;

SUBC> Constant;

SUBC> Predict 2;

SUBC> Brief 2.

Regression Analysis: Days versus Ranges

The regression equation is
Days = - 8.09 + 11.3 Ranges

Predictor	Coef	SE Coef	T	P
Constant	-8.088	5.917	-1.37	0.243
Ranges	11.263	1.591	7.08	0.002

S = 4.90345 R-Sq = 92.6% R-Sq(adj) = 90.8%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	1205.2	1205.2	50.12	0.002
Residual Error	4	96.2	24.0		
Total	5	1301.3			

Predicted Values for New Observations

New Obs	Fit	SE Fit	95% CI	95% PI
1	14.44	3.11	(5.79, 23.09)	(-1.69, 30.57)

Values of Predictors for New Observations

New Obs	Ranges
1	2.00

MTB >