

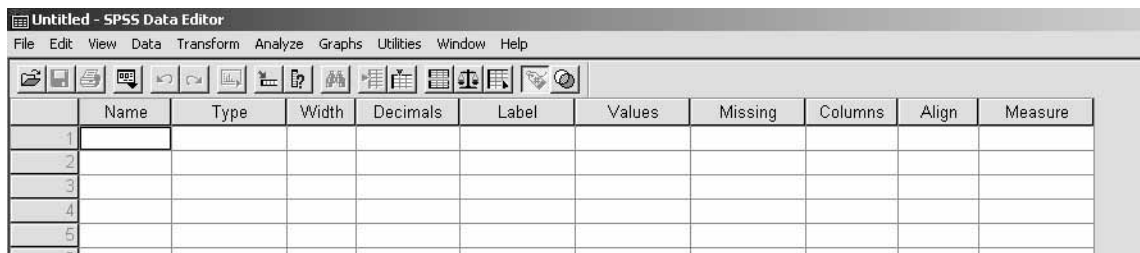
7.5. Parametric one-way ANOVA with equal numbers of replicates

EXAMPLE 7.4. The effectiveness of weaning plantlets of *Lobelia* 'Hannah' from tissue culture onto one of four composts

BOX 7.6. How to carry out a one-way parametric ANOVA with equal replicates

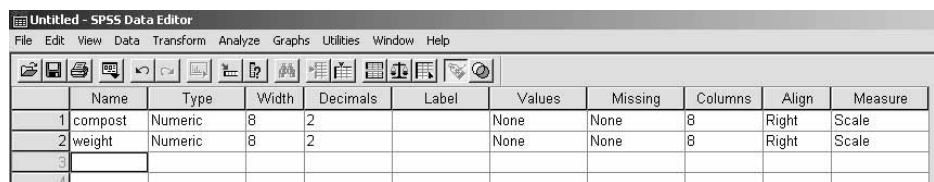
Step 1. Set up the variables

When SPSS starts up, select 'Variable View' using the tabs at the bottom left. You should get something like this:



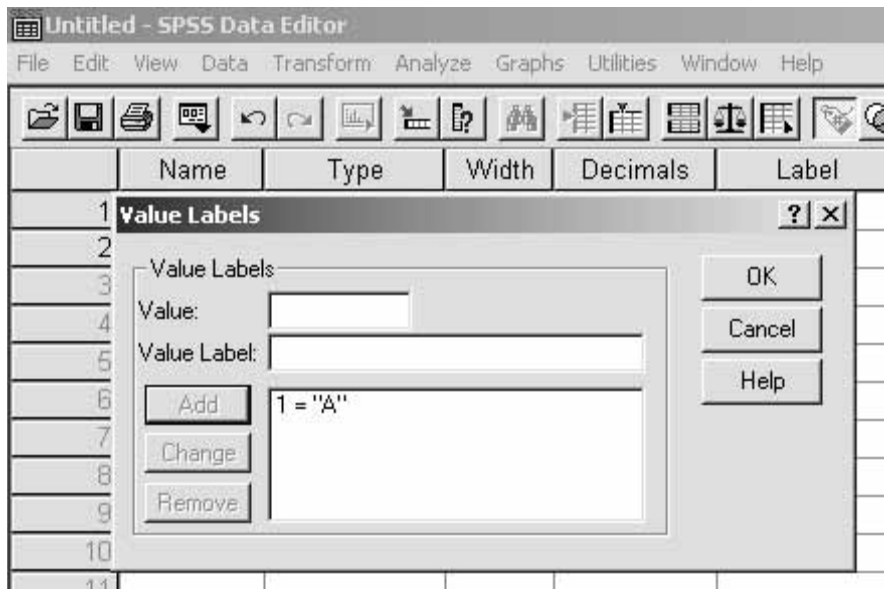
	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1										
2										
3										
4										
5										
6										
7										

For the first variable name, type in 'compost', and for the second 'weight'. Default properties are set for each variable.

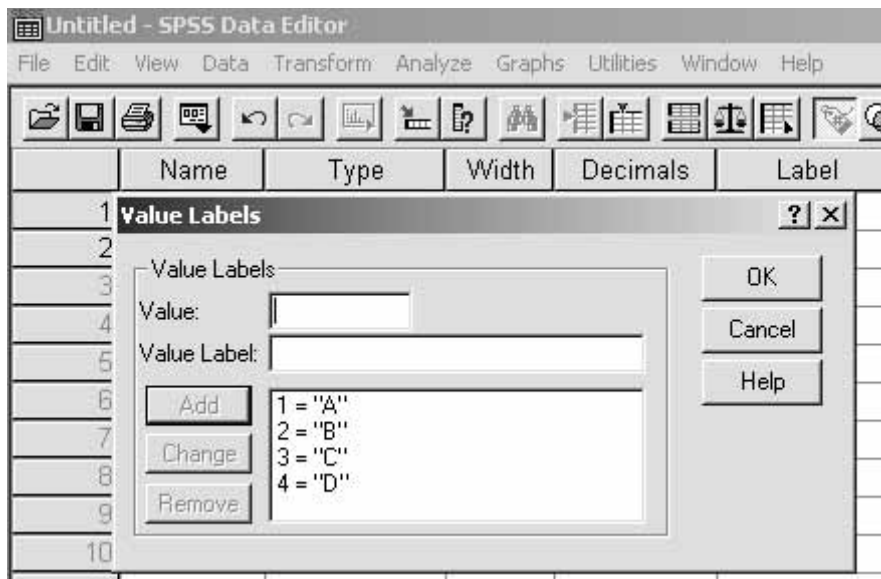


	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	compost	Numeric	8	2		None	None	8	Right	Scale
2	weight	Numeric	8	2		None	None	8	Right	Scale
3										
4										

'Compost' is a text variable (a letter), so we need to use value labels to convert this into something that SPSS can use in its ANOVA routines. Click in the 'Values' cell of row 1, and then click in the grey area that appears at the right-hand side of the cell. You will get a dialogue box to input value labels. Put '1' in the 'Value' window, and 'A' in the 'Value Label' window. Click on 'Add' to enter this pair into the system.



Repeat for 2 and B, 3 and C, 4 and D.

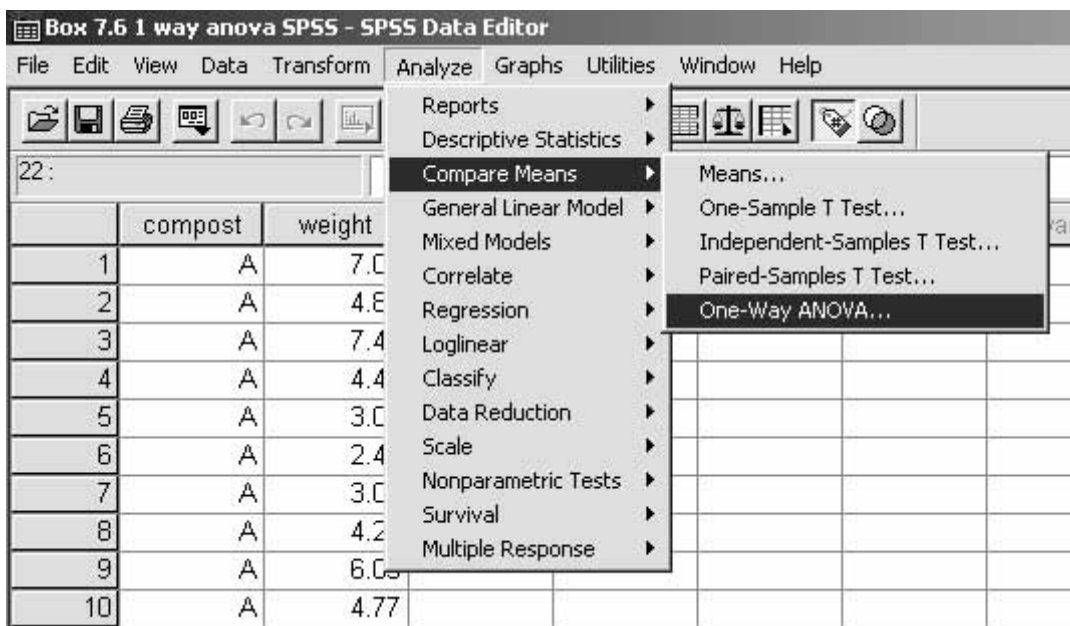


Click on 'OK'. The settings for weight (numeric; two decimal places) are perfect. Transfer to 'Data View' using the tabs at the bottom left, and enter the data.

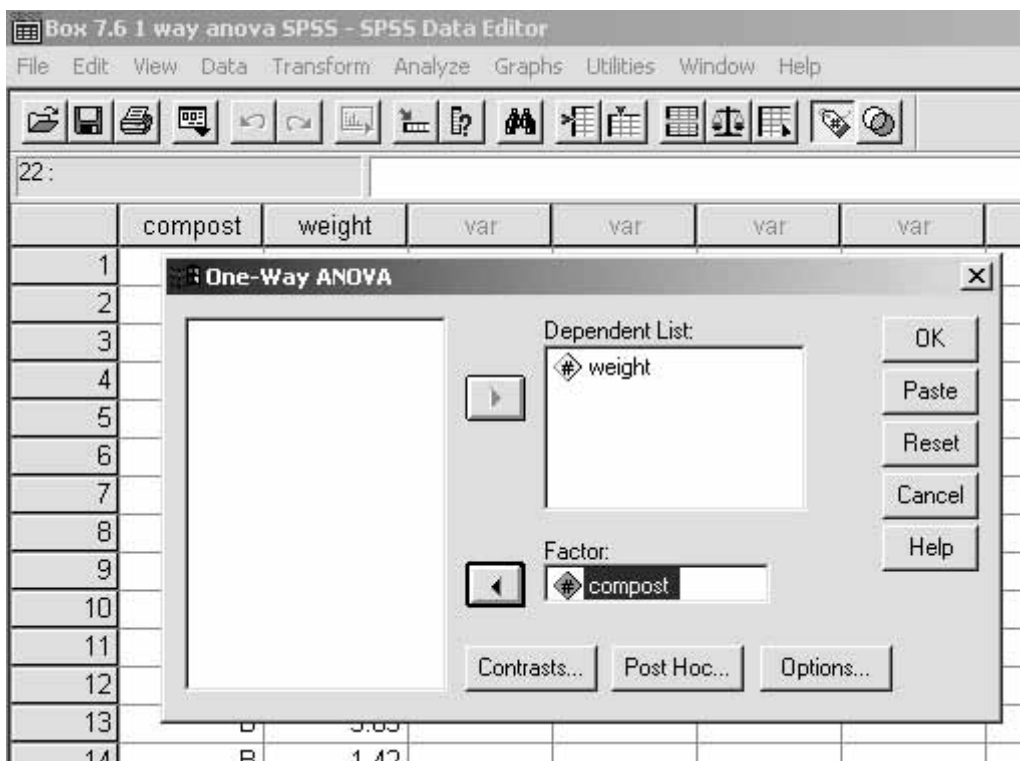
	compost	weight	var
1	A	7.04	
2	A	4.86	
3	A	7.47	
4	A	4.49	
5	A	3.06	
6	A	2.48	
7	A	3.03	
8	A	4.21	
9	A	6.03	
10	A	4.77	
11	B	3.18	
12	B	1.52	
13	B	3.85	

Step 2. Perform the test.

Go to 'Analyze', 'Compare Means', 'One-Way ANOVA'.



In this analysis, the dependent variable is the weight of the plantlets, so highlight 'weight' by clicking on it, then transfer it to the 'Dependent List' window by clicking on the appropriate arrow. The factor causing variation in the dependent variable is the compost type, so, in the same way, transfer 'compost' to the 'Factor' window.



Click on 'OK'. The output will appear in a separate window.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26.876	3	8.959	5.755	.003
Within Groups	56.039	36	1.557		
Total	82.914	39			

Step 3. Decide what the result means.

The value of F in this case is 5.755, and the 'Sig.' column gives the p value, which is 0.003. The p value is less than 0.05, so we conclude that there is a highly significant difference ($F = 5.76$, $p = 0.01$) between the mean fresh weight (g) of *Lobelia* 'Hannah' when weaned on four different composts.