

1.5.4 Synthetic Yarn Example (from Box, Hunter & Hunter)

A study is setup to determine whether the *breaking strength* of an experimental synthetic fiber is affected by the **draw ratio**. Three **spinnerets** (1, 2, and 3) were used, each supplying yarn to a different bobbin. The three spinnerets and their corresponding bobbins were operating at three different draw ratios: the usual (*A*), 5% increase over usual (*B*), and 10% increase (*C*). When a bobbin was full, it was removed from the machine and replaced by a new one ('doffing' process). There were 12 **doffs** in all.

doff	spinneret head		
	1	2	3
1	<i>A</i> (19.56)	<i>B</i> (23.16)	<i>C</i> (29.72)
2	<i>B</i> (22.94)	<i>C</i> (27.51)	<i>A</i> (23.71)
3	<i>C</i> (25.06)	<i>A</i> (17.70)	<i>B</i> (22.32)
4	<i>B</i> (23.24)	<i>C</i> (23.54)	<i>A</i> (18.75)
5	<i>A</i> (16.28)	<i>B</i> (22.29)	<i>C</i> (28.09)
6	<i>C</i> (18.53)	<i>A</i> (19.89)	<i>B</i> (20.42)
7	<i>C</i> (23.98)	<i>A</i> (20.46)	<i>B</i> (19.28)
8	<i>A</i> (15.33)	<i>B</i> (23.02)	<i>C</i> (24.97)
9	<i>B</i> (24.41)	<i>C</i> (22.44)	<i>A</i> (19.23)
10	<i>A</i> (16.65)	<i>B</i> (22.69)	<i>C</i> (24.94)
11	<i>B</i> (18.96)	<i>C</i> (24.19)	<i>A</i> (21.95)
12	<i>C</i> (21.49)	<i>A</i> (15.78)	<i>B</i> (24.65)

See online computer example for the analysis of the data.