

CH 5: DISCRETE PROBABILITY DISTRIBUTIONS

Binomial probabilities are calculated in Minitab using the function:

Calc → **Probability Distributions** → **Binomial**

- The **Probability** choice calculates $P(X = k)$
- The **Cumulative probability** calculates $P(X \leq k)$
- The **Inverse cumulative probability** finds X if you know the cumulative probability.
- Always required are the **Number of trials** and **Probability of success**.
- Choose **Input column** if you want the calculations done on all elements of a column. In that case, you may specify a column to receive the results
- Choose **Input constant** if you want to calculate the binomial probability for a single value

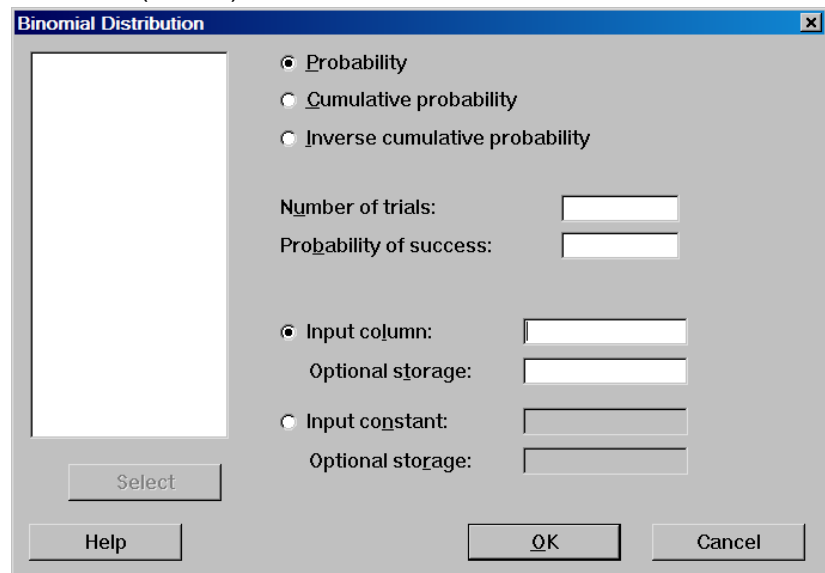


Figure 5.1

One can create a Binomial Distribution table and then graph the resulting probabilities to verify the approximate normality of the distribution. We will create such a table and graph for 30 trials with probability of success 0.4.

- **Calc** → **Make Patterned Data** → **Simple Set of Numbers**
- Store data in C1 and enter 0 for the 1st value and 30 for the last. Click OK
- **Calc** → **Probability Distributions** → **Binomial**
- Choose **Probability** for the function and enter 30 for **Number of trials** and 0.4 for **Probability of success**.
- Place C1 in **Input column** box
- Enter C2 for Optional storage and click OK
- **Graph** → **Scatterplot**, select **Simple**, then click OK
- Place C2 for **Y-variables** and C1 for **X-variables**.
- Click on **Labels** and enter a Title for the graph
- Click on **Data View** and check ONLY the **Connect line** option
- Click OK twice.

The generated output is shown in Figure 5.2

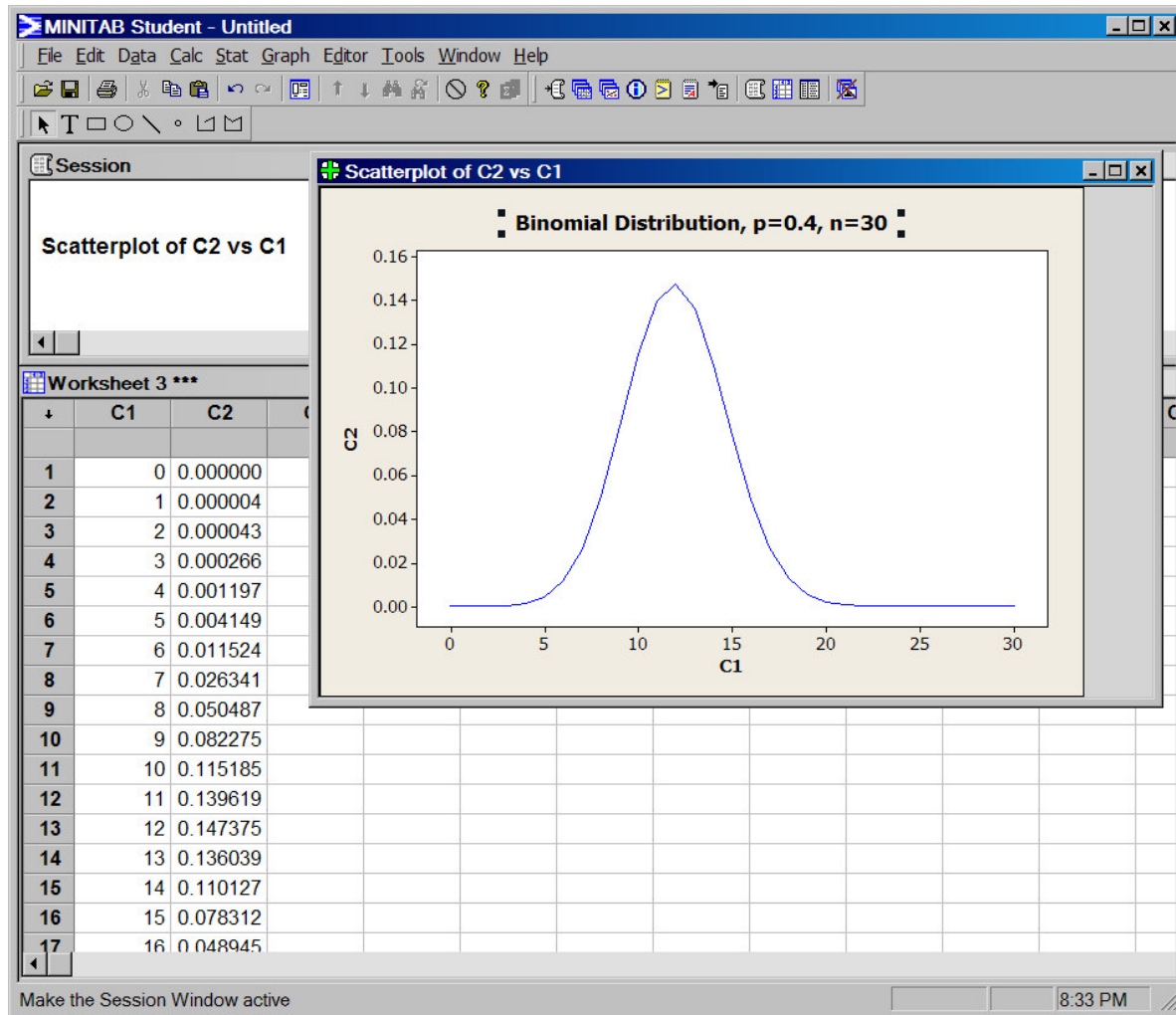


Figure 5.2