

## Can Bush Bean Seeds Grow Under Crowded Conditions?

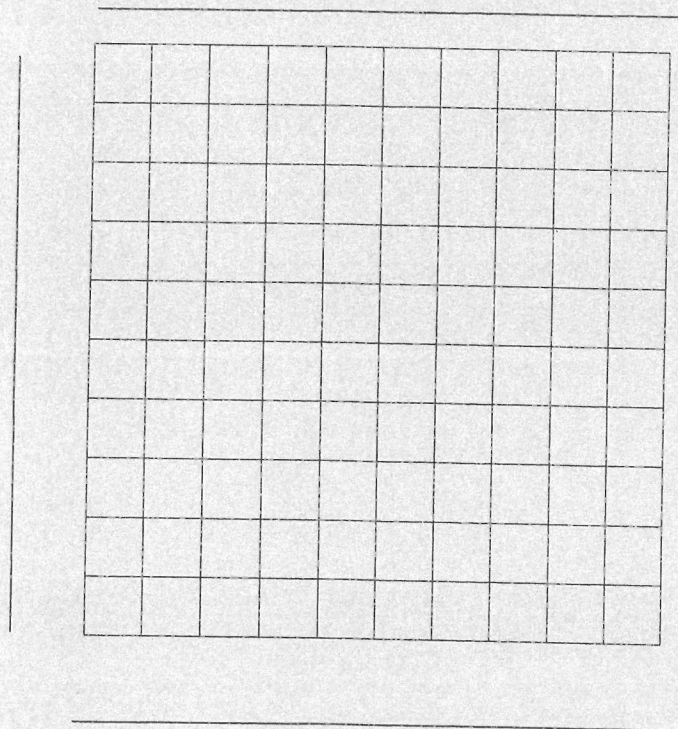
The Missouri Agricultural Society wanted to determine if crowding plants like bush bean seeds effected their growth. Several scientists decided to perform a field test in Kansas City. Data Table 1 below shows the results from the field test.

Data Table 1													
Distance between Seeds (cm)	Height of Plants (cm) Trials											Mean Height (cm)	Range
	1	2	3	4	5	6	7	8	9	10	11		
0	4	5	5	3	4	4	5	6	4	1	0	4	6
0.5	6	8	5	7	7	6	8	5	4	6	7	6	3
1	15	14	13	12	16	12	11	13	12	14	13	13	4
2	17	18	16	15	15	17	16	16	15	15	15	16	3
4	18	17	17	18	16	15	19	16	18	17	17	17	3

1. What is a testable question or problem that is the basis for this investigation?
2. Write an appropriate hypothesis for this investigation.
3. Identify the independent variable and dependent variable for this investigation.
4. Use the data from Data Table 1 to construct a single line graph on the grid below.

Be sure to provide:

- an appropriate title
- labeled axes with appropriate units
- appropriate number scales
- correctly plotted data



5. Using the data, what would the height of plants, in centimeters, if the seeds were placed 1.5 centimeters apart?

6. If each scientist measured the plant height from the top of the plant to the lowest leaf on the stalk, have they used collected the most accurate data possible? Explain.
7. A class wanted to do another experiment to see if the type of soil makes a difference in how much bush bean seeds grow. They set up the experiment with three different types of soil and planted the bush bean seeds. Identify two factors that will need to be measured during the experiment. Next to each one, identify the tool they will need to use.

**Factor to be measured**

**Tool needed for measure**

1.

2.

8. Identify two factors that should be held constant for this investigation.

1.

2.

9. Identify three steps that are important to perform this experiment.

1.

2.

3.