

Bean There

You need ★ a computer spreadsheet/graphing program ★ a classmate

Activity

For a science fair project, Jyoti decides to track the growth of beans, using two different plant foods: GrowSmart and GardenBest.

She fills four pots with soil, labels them (GS1, GS2, GB1, and GB2), plants a bean in each, pokes in a bamboo stick, and sets them out in a sheltered spot on the deck. She then makes up solutions of the two plant foods.

She waters GS1 and GS2 with GrowSmart and GB1 and GB2 with GardenBest. Every 2 days for a month, she measures and records their height:

Day	Height of Beans (centimetres)			
	GrowSmart		GardenBest	
	GS1	GS2	GB1	GB2
0	0	0	0	0
2	0	0	0	0
4	4	1	2	0
6	7	3	4	1
8	10	5	5	3
10	14	8	6	4
12	16	12	10	8
14	16	13	10	9
16	18	14	12	10
18	21	16	15	12
20	24	17	17	16
22	28	20	21	18
24	30	23	23	20
26	32	24	24	21
28	33	27	26	24
30	36	32	30	29

At the end of the experiment, Jyoti puts her data into a time-series graph.

1. Enter Jyoti's data into a computer spreadsheet and use it to create a clearly labelled time-series graph. Discuss with a classmate why this is the best type of graph to use.
2. With your classmate, discuss each of the following statements made by Jyoti's friends. Decide whether you agree with what they say and why.

There's a big difference between the growth of GS1 and GB2.

For steady growth, GrowSmart seems better.

i.

ii.

iii.

If you look at the GS2 and GB1 beans, you can see that there is no difference between the two plant foods.



iv.

The GB2 bean started 2 days later than the others, so it's not fair to compare its height with the other three.

v.

You could estimate the height of GB2 after 2 more days.



vi.

It would have been best to keep the experiment going longer.

vii.

Four beans is not enough to make an experiment.



viii.

All the beans would grow at the same rate if treated exactly the same.

ix.

To prove anything, you'd need to water some beans with plain water.



x.

It looks as if there may have been a couple of very cold days.

Investigation

Design your own experiment to test how effective a particular plant food is. Write down the details. Carry out the experiment. Keep a log of the data. Analyse the data with the help of a time-series graph.

What does the data tell you? How certain can you be of your conclusions?

Focus

Interpreting and comparing time-series data