Logistic Modeling
Elaborate

Directions: Given the following scenarios plot the data on either DESMOS or a graphing calculator to see what model would fit the data best. Describe the scatter plots shape then create (by hand) a model for the data given the shape of the data and answer the given questions.

Problem 1:

The percentage of a corn crop (on a 200-acre farm) affected by a fungal blight over several weeks. The maximum percentage affected is 100%. The time, t, is measured in days.

a. Plot the data and explain the shape of the data. What function could model this data?

b. Write the model for this data. Explain what the constants means within the context of the problem.

Time (Days)	Percentage of Crop Infected (%)
0	1
7	3
14	10
21	35
28	70
35	90
42	98
49	99.5

c. Compare your model to the data points. Are they exact? Justify your model?

d. Use a graphing calculator to run logistic regression for the data points. Compare the equations to your model. If there are differences explain why there could be differences.

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Problem 2:

The following table gives the number of people infected with a new highly contagious virus on an isolated community of 1000 people.

a. Plot the data and explain the shape of the data. What function could model this data?

b. Write the model for this data. Explain what the constants means within the context of the problem.

Time (Days)	Number Infected
0	5
5	20
10	100
15	400
20	800
25	950
30	985
35	995

c. Compare your model to the data points. Are they exact? Justify your model?

d. Use a graphing calculator to run logistic regression for the data points. Compare the equations to your model.