Outbreak!

ID: XXXXX

Time required
15 minutes

Activity Overview

In this activity, students will explore a geometric sequence related to an outbreak of the flu, extrapolate to make predictions based on given data.

Topic: Sequences

- *Finding n^{th} term*

Teacher Preparation and Notes.

- ***To download the student and solution worksheet, go to education.ti.com/exchange and enter "XXXXX" in the quick search box.***

Associated Materials

- *TIMath_PC_Wk1_Outbreak_TI-84.doc*
- *TIMath_PC_Wk1_OutbreakT_TI-84.doc*

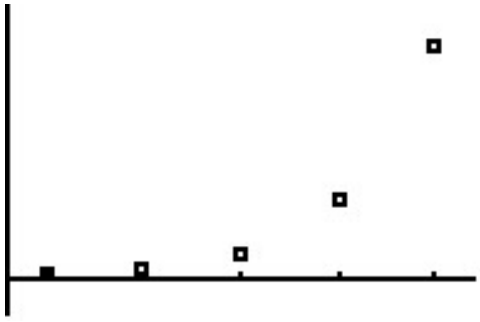
Suggested Related Activities

- *Geometric Sequences and Series Activity Number 8682*
- *Geometric Series (TI-89) Activity Number 10236*
- *Spreading Doom Activity Number 10073*

Step-by-step directions

Exploring the Data

The students will be given data for a flu epidemic and will use the data to create a scatter plot and answer questions about the data and associated graph.

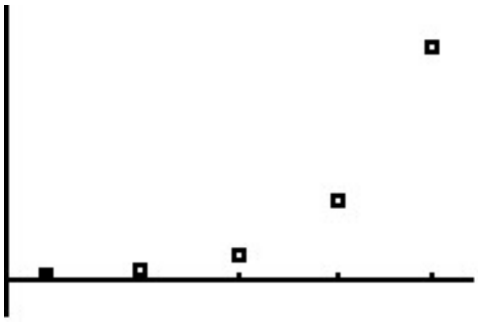


The health clinic at a large school district has become concerned. It is apparent that there is an outbreak of a flu epidemic. Given below is a table indicating the number of students that have come down with the illness according to health office records for the last five days.

Day	Students
1	2
2	6
3	18
4	54
5	162

Record this data in L_1 and L_2.

1. Construct a scatter plot and graph your data on the grid below.



Exploring the data

2. Describe the rate of change observed in the data and corresponding graph.

   increasing, geometric

3. What term describes the type of sequence displayed in the "students" data column?

   Geometric

4. Identify a term other than scatter plot which describes the type of graph?

   exponential

Extending the data

5. How many students would you expect to come down with the illness on day 6?

   486

6. Assuming that this pattern will continue, develop an equation* that will relate the number of students, *y*, to any day, *k*.

   $y = 2\ (3)^{k-1}$

Summarizing the data

7. How many students total will have been affected by day 5?

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