

Exploring Rate of Change

5622

Introduction

In this activity, students will explore rates of change by analyzing a graph with some interesting rate of change characteristics.

Grades 9-12

NCTM Algebra Standards

- Analyze change in various contexts
- Approximate and interpret rates of change from graphical and numerical data

Files/Materials Needed

logistic1.act

1

- Launch TI-Navigator™ on the computer and start the session.
- Have each student log into NavNet on their calculator.

2

- On the computer, click on the **Classroom** tab and select **Seating Chart**.
- Assign each student a unique counting number, starting with 1 and ending with the total number of students in the class. For example, a class of 30 students will have numbers 1 through 30.
- Assign one student to enter the activity data in L1 (round number) and L2 (number of students selected).
- Select two students and drag their icons to an open area in the classroom window. This will be considered “round 1” with 2 students.
- From the calculator home screen, have these two students press **MATH** **▾** **5** **▾** **1** **▾** **max** **▾** **ENTER** **ENTER** (where “max” represents the highest number in the classroom). This will generate two random numbers.



- Highlight the two student icons and use **Screen Capture** to display the screens of these two students only. If another student’s number comes up, drag their icon to where the first two student icons are located. This will be considered “round 2” with up to a maximum of 6 students (depending on the results of the numbers generated.)
- In each successive round, those students whose numbers have previously come up will generate new random numbers following part e to add new students.
- Use **Screen Capture** on all the selected students each round for the purpose of displaying which students get added.
- Carefully keep track of the round and the number of students selected. Repeat these steps until every student in the class has had their number come up.

3

- Load the activity settings file *logistic1.act*.
- Press the **List-Graph** tab and have the student responsible for recording the activity data in L1 and L2 send their lists to Activity Center.
- Click on the **Stat Plot** icon to set the appropriate window and view the scatter plot of the class data.
- Click on the **Graph-Equation** tab in the Activity Center window and enter the equation $y = b$, where b equals the total number of students in the classroom.

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Use **Quick Poll** (with Open Response) to ask:

- *If there were additional rounds, would the scatter plot ever cross the horizontal line shown on the graph?*
- *In which round does the rate at which students are being added seem to be increasing most rapidly?*
- *Between which two rounds does the rate at which students are being added seem to be increasing?*
- *Between which two rounds does the rate at which students are being added seem to be decreasing?*