

User Manual - Growth Program

Introduction :

Welcome to the User Manual for Exponentials Simulation: Exploring Growth with Blocks and Graph. This manual is designed to provide teachers with a comprehensive understanding of how to use and administer the Growth Program for their students. The Growth Program aims to demonstrate linear and exponential growth concepts through interactive visualizations.

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1. Program Overview

- Welcome to the User Manual for Exponential Simulation: Exploring Growth with Blocks and Graphs. This user guide is focused on providing educators with an in-depth understanding of how to use and implement the Growth Program alongside their students. The Growth Program demonstrates linear and exponential growth concepts through graphics that are interactive.
- The Growth Program is a tool that teaches students about linear and exponential growth. It includes graphics that show how the number of blocks changes over time.

2. Linear Growth

- The program shows how the number of blocks rises in a linear manner in the Linear Growth section. Based on that value, the program will show the stages of growth. Growth is calculated as $\text{blocks_stacked} = k * \text{stage}$.

3. Exponential Growth

- The Exponential Growth section illustrates exponential growth patterns. Instructors can select from three growth options: 2x, x2, or 3x. The program then displays the number of blocks at each step, using the exponential growth formula $\text{blocks_stacked} = \text{base} ^ \text{stage}$.

4. Choosing Growth Type and Graphs

- For teachers working with students in grades 3-5, the program offers the option to choose between linear and exponential growth. Teachers can select one of the three growth options: '2x', 'x2', or '3x'. The program will display graphs comparing the chosen exponential growth with linear growth for better visualization.

5. Running the Program

Follow these steps to run the program:

- Run the program using your preferred Python environment.
- The program will present the linear growth section. Input the single-digit number 'k' when prompted. This number determines the growth rate for linear growth.
- Next, the program will show the exponential growth section. Choose one of the growth options: '2x', 'x2', or '3x'. The program will display exponential growth based on your choice.
- After viewing the growth stages, the program will present a graph comparing linear and exponential growth. This graph provides a visual representation of the growth patterns.
- If you wish to run the program again, enter 'y' when prompted. Otherwise, enter 'n' to exit the program.

Conclusion :

- The development program is a fun educational tool that helps teachers present linear and exponential concepts of growth to their students. One can easily use the program's capabilities and deliver excellent insights to the learners you teach if you follow this user manual.