 Modelling exponential growth using dice

Resources required:

* 1 to 2 classes of students
* 1 die per student
* Grid paper for graphing

Activity:

1. Start with 1 student to represent the initial population.
2. The student(s) which represent the population roll their die.
3. Each student who rolls an even (or other condition to represent growth) invites another student to join the population.
4. Record the population into the table after each time period (each roll of the dice)

| Roll (time period) | Population |
| --- | --- |
| 0 | (starting population) |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| And so on |  |

1. Repeat steps 2 to 4 until it is no longer practical to continue
2. Graph the population (dependant variable – y axis) verse time (independent variable – x axis)

The activity can be repeated for various conditions to represent growth.

Alternate individual activity:

1. The student starts with 1 die to represent the initial population.
2. The student rolls the die or dice when the population has grown.
3. For each even (or other condition to represent growth) rolled, they take an additional die to be included in their population.
4. Record the population into the table after each time period. (roll)

| Roll (time period) | Population |
| --- | --- |
| 0 | (starting population) |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| And so on |  |

1. Repeat steps 2 to 4 until it is no longer practical to continue
2. Graph the population (dependant variable – y axis) verse time (independent variable – x axis)

Sample data for the activity:

This was conducted with a total of 40 students and an even being the condition for population growth.

| Roll (time period) | Population |
| --- | --- |
| 0 | 1 |
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 5 |
| 5 | 8 |
| 6 | 12 |
| 7 | 17 |
| 8 | 24 |
| 9 | 36 |