**Exploring Exponential Growth and Decay**

For your experiment, toss your objects and remove the ones directed for that station. Record the number remaining. For each additional toss you will only toss the ones that remained the previous time after you removed the objects. Record the toss number and the number remaining in the table below. Stop once you have only 1 or two of the objects remaining.

|  |  |
| --- | --- |
| Toss Number | Number Remaining |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |

Use your calculator to create a scatter plot of the data.



Find an exponential regression for the data.

Graph the regression equation along with the scatter plot.

What does the equation predict for the start value?

How does the predicted start value compare to the number of items you actually started with? (You’ll need to count them.)

What is the decay factor? What is the decay rate?

What does the decay rate tell you?

How does the decay factor from the equation compare to the successive quotients?

What is the probability of your object landing up or down?

If you started with 1,000 of your objects, how many tosses would it take until you had only 200 remaining?

Spoons – Remove the ones that land “concave up”.

Thumbtacks – Remove the ones that land point up.

Color counters – Remove the ones that land red side up.

Google Eyes – Remove the ones that land eye up.

Cups – Remove the ones that land “flip cup” down.

Dice – Remove the ones that land on 1 or 6.

Beans – Remove the ones that land on the red portion of the plate.