

4. What rule relating NOW and NEXT shows how to calculate the rebound height for any bounce from the height of the preceding bounce? _____

5. What rule beginning with "y = " show how to calculate the rebound height after any number of bounces? _____

Exponential : $y = a_1 \cdot r^x$ if the common ratio r falls between 0 and 1 ($0 < r < 1$). In other words if the ratio is less than 1, it is decay and more than 1 is growth.

Tell whether each example is growth or decay.

1. $y = 0.25(5/4)^t$ _____ 3. $y = 7(3)^t$ _____
 2. $y = 0.50(1/3)^t$ _____ 4. $y = 0.5(2/5)^t$ _____

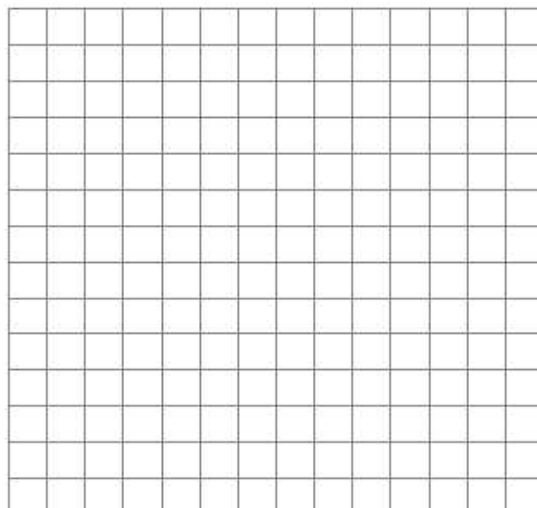
Independent Practice: Killer Plants

Ghost Lake is a popular site for fishermen, campers, and boaters. In recent years, a certain water plant has been growing on the lake at an alarming rate. The surface area of Ghost Lake is 25,000,000 square feet. At present, 1,000 square feet are covered by the plant. The Department of Natural Resources estimates that the area is doubling every month.

1. Complete the table below.

Number of Months	0	1	2	3	4
Area Covered in Square Feet	1,000				

2. Use the data to graph the situation. Be sure to label your axes and title your graph.



3. Write 2 equations (NOW-NEXT and $y =$) to represent the growth pattern of the plant on Ghost Lake.

Now- Next Rule _____

Function Rule _____

4. How much of the lake's surface will be covered with the water plant by the end of a year? _____

5. In how many months will the plant completely cover the surface of the lake? _____

Loon Lake has a "killer plant" problem similar to Ghost Lake. Currently, 5,000 square feet of the lake is covered with the plant. The area covered is growing by a factor of 1.5 each year.

6. Complete the table to show the area covered by the plant for the next 5 years.

Number of Years	0	1	2	3	4
Area Covered in Square Feet	5,000				

7. Graph the data. Be sure to label your axes and title your graph.



8. Write 2 equations (NOW-NEXT and $y =$) to represent the growth pattern of the plant on Ghost Lake.

Now- Next Rule _____

Function Rule _____

9. Explain what information the variables and numbers in your equation represent.

Function Rule

$y =$ _____

$x =$ _____

$r =$ _____

$a_1 =$ _____

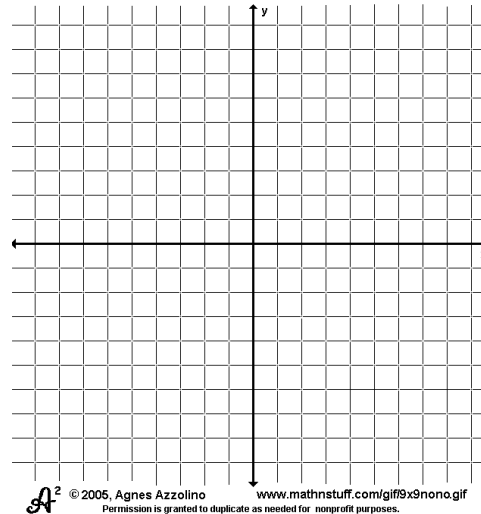
10. How much of the lake's surface will be covered with the plant by the end of 7 years? _____
11. The surface area of the lake is approximately 200,000 square feet. How long will it take before the lake is completely covered?

12. How will the data table, plot, and rules for calculating rebound height change if the ball drops first from only 27 feet? Use a drop height of 27 feet ($r=1/3$). (round to the nearest hundredth (two decimal places)).

Bounce Number	0	1	2	3	4	5	6
Rebound Height (in feet)	27	9					

Plot the graph. Go up by 3's on the y-axis

13. How does the rebound height change from one bounce to the next? How is that pattern shown by the shape of the data plot?



14. What rule relating NOW and NEXT shows how to calculate the rebound height for any bounce from the height of the preceding bounce?

15. What rule beginning with "y = " show how to calculate the rebound height after any number of bounces?
