

Unit 5 Lesson 5: Representing Exponential Decay

1 Two Other Tables (Warm up)

Student Task Statement

Use the patterns you notice to complete the tables. Show your reasoning.

Table A

x	0	1	2	3	4	25
y	2.5	10	17.5	25		

Table B

x	0	1	2	3	4	25
y	2.5	10	40	160		

2 The Algae Bloom

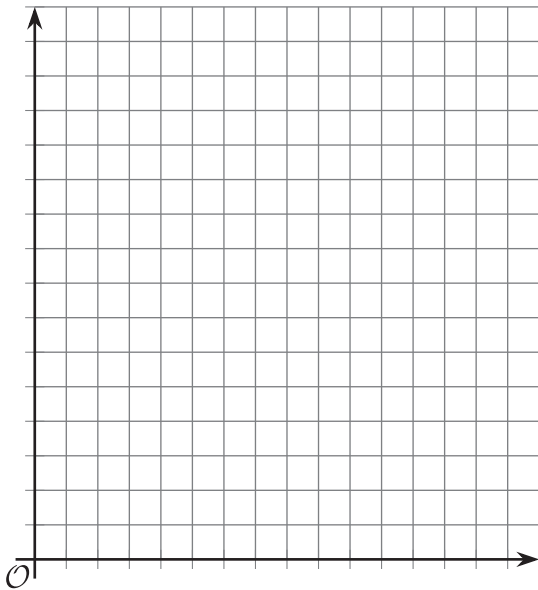
Student Task Statement

In order to control an algae bloom in a lake, scientists introduce some treatment products.

Once the treatment begins, the area covered by algae A , in square yards, is given by the equation $A = 240 \cdot \left(\frac{1}{3}\right)^t$. Time, t , is measured in weeks.



1. In the equation, what does the 240 tell us about the algae? What does the $\frac{1}{3}$ tell us?
2. Create a graph to represent $A = 240 \cdot \left(\frac{1}{3}\right)^t$ when t is 0, 1, 2, 3, and 4. Think carefully about how you choose the scale for the axes. If you get stuck, consider creating a table of values.

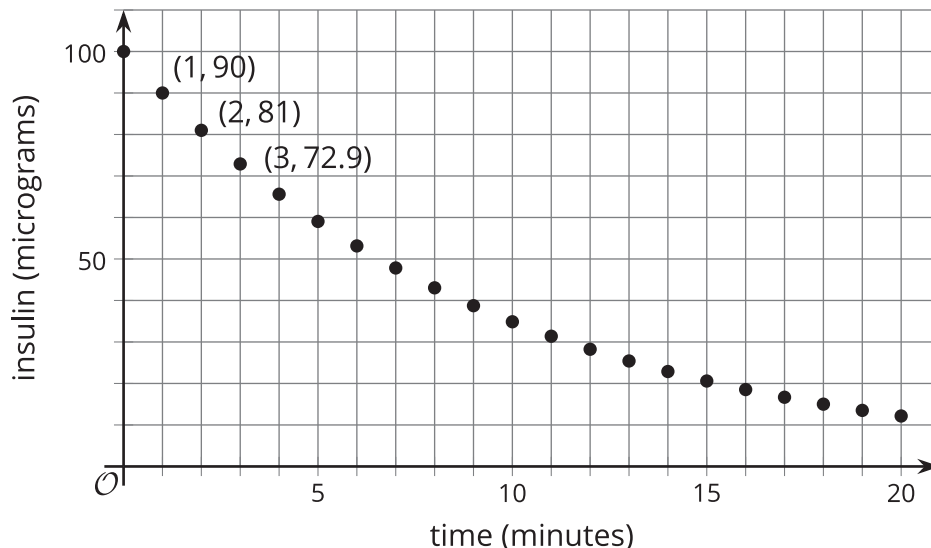


3. About how many square yards will the algae cover after 2.5 weeks? Explain your reasoning.

3 Insulin in the Body

Student Task Statement

A patient who is diabetic receives 100 micrograms of insulin. The graph shows the amount of insulin, in micrograms, remaining in his bloodstream over time, in minutes.



1. Scientists have found that the amount of insulin in a patient's body changes exponentially. How can you check if the graph supports the scientists' claim?
2. How much insulin broke down in the first minute? What fraction of the original insulin is that?
3. How much insulin broke down in the second minute? What fraction is that of the amount one minute earlier?
4. What fraction of insulin remains in the bloodstream for each minute that passes? Explain your reasoning.
5. Complete the table to show the predicted amount of insulin 4 and 5 minutes after injection.

time after injection (minutes)	0	1	2	3	4	5
insulin in the bloodstream (micrograms)	100	90	81	72.9		

6. Describe how you would find how many micrograms of insulin remain in his bloodstream after 10 minutes. After m minutes?

Images for Activity Synthesis

