

Directions: Answer each question to the best of your ability. **Show your reasoning** and/or process used to answer the question(s) where it is appropriate. A calculator will be necessary for this quiz. You are not permitted to use a device that has internet capability. There are 5 questions.

Section 5.1

1. (3 pts)

For the table below, could the table represent a function that is linear or exponential? Why? What is the justification for the choice of a model?

x	f(x)
0	240
1	120
2	60
3	30

Circle your choice:

 $f(x)$ is linear exponential

Provide reasoning for your choice:

2. (3 pts)

A population numbers 18,000 organisms initially and grows by 1.9% each year.

Suppose P represents population, and t the number of years of growth. An exponential model for the population can be written in the form $P = a \cdot b^t$. Write the model for this situation.

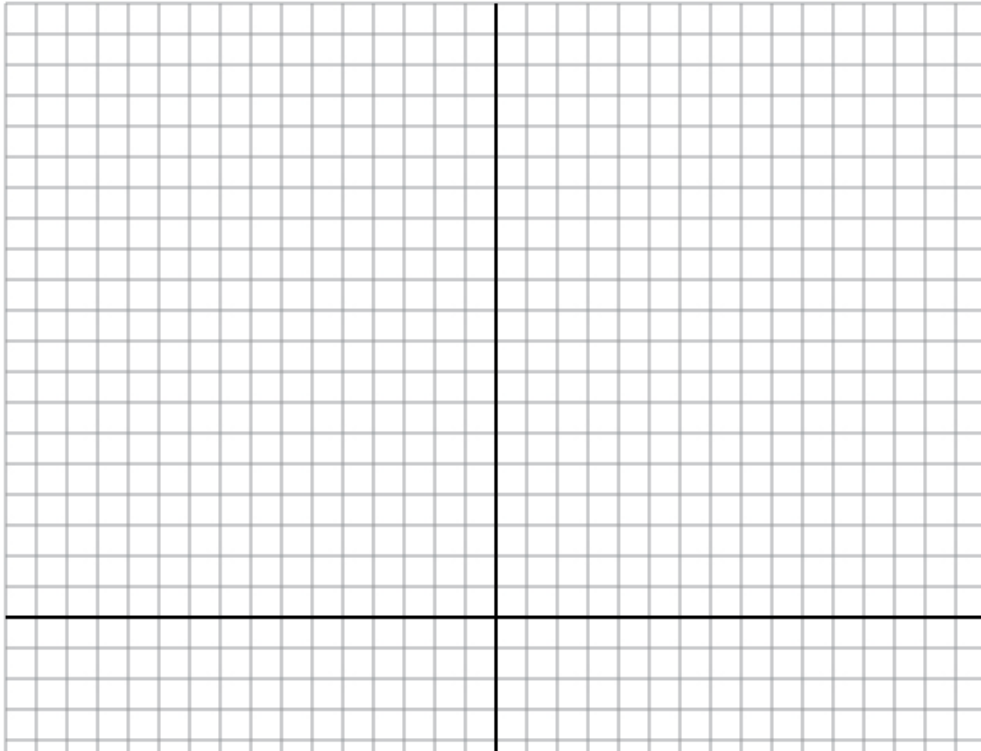
 $P =$

3. (3 pts)

A population numbers 16,000 organisms initially and decreases by 17.8% each year.

Suppose P represents population, and t the number of years of growth. An exponential model for the population can be written in the form $P = a \cdot b^t$ where $P = 16000 \cdot 0.822^t$

Construct a graph of this model (Please label the x and y axes, note $t = x$):



4. (3 pts)

The fox population in a certain region has an annual growth rate of 6 percent per year. It is estimated that the population in the year 2000 was 10600.

(a) Find a function that models the population t years after 2000 ($t = 0$ for 2000).
Your answer is $P(t) =$

(b) Use the function from part (a) to estimate the fox population in the year 2008.
Your answer is (the answer should be an integer)

5. (3 pts)

A vehicle purchased for \$25,000 depreciates at a constant rate of 8%. Determine the approximate value of the vehicle 15 years after purchase. Round to the nearest whole dollar.

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