

For questions 3 - 5, calculate the average ratio between successive y -values.

3.

x	y
0	425.6
1	766.08
2	1225.73
3	2083.74
4	3750.73

4.

x	0	1	2	3	4	5	6
y	2300.6	1173.31	586.65	287.46	137.98	70.37	36.59

5.

x	0	1	2	3	4
y	1810.4	2172	2389.2	3105.96	3727.15

For questions 6 – 8, identify whether the data shows exponential growth or exponential decay. Then, determine an exponential function to model the situation.



SCIENCE

6. The population of gray squirrels in a local park has been recorded every year since 2005.

1-YEAR INTERVAL, x	YEAR	SQUIRREL POPULATION, y
0	2005	62
1	2006	87
2	2007	113
3	2008	170
4	2009	204
5	2010	265



FINANCE

7. Kristal noticed that her favorite painting in a museum has been increasing in value over the years. The changing value of the painting is shown in the table.

10-YEAR INTERVAL, x	YEAR	VALUE OF THE PAINTING, $f(x)$
0	1960	\$2200
1	1970	\$7500
2	1980	\$25,000
3	1990	\$86,000
4	2000	\$292,000
5	2010	\$992,000



SCIENCE

8. Mrs. Montgomery's class is doing an experiment with pennies. They empty a cup of pennies onto a table, and remove all the pennies that landed "heads-up." Then, they put the other pennies back in the cup, and repeat the process four more times.

TRIAL NUMBER, x	NUMBER OF PENNIES REMAINING, $f(x)$
0	61
1	28
2	16
3	9
4	7
5	2

For questions 9 – 12 use the following situation.



FINANCE

Most cars decrease in value over time. The table below shows the value of Carla's car from the time of its purchase.

1-YEAR INTERVAL, x	YEAR	VALUE OF CAR, $f(x)$
0	2007	\$29,870
1	2008	\$24,180
2	2009	\$20,480
3	2010	\$17,420
4	2011	\$14,585
5	2012	\$12,124

- Use the data set to generate an exponential model.
- What do the y -intercept and base from your function rule mean in context of the situation?
- In what year will the car be worth about \$5900?
- Use your model to predict the value of Carla's car in the year 2020.

For questions 13 – 16 use the following situation.



FINANCE

Ella sells hair ribbons and decided to start marketing them on the internet hoping to increase her sales. The table shows the total number of ribbons she has sold.

NUMBER OF WEEKS SINCE MARKETING ON THE INTERNET, x	TOTAL NUMBER OF RIBBONS SOLD, $f(x)$
0	310
1	336
2	365
3	388
4	425
5	445
6	496

- Use the data set to determine an exponential function that models the situation.
- What is the y -intercept of this function, and what does it mean in context of the problem?
- Use your function model to determine approximately how many weeks it will take to sell 1,000 ribbons.
- Use your function model to predict how many ribbons Ella will sell in a year.

For questions 17 – 20 use the following situation.



SCIENCE

A biologist is recording the population of a certain bacteria in a petri dish. He determines the number of bacteria in the dish every 2 hours, as shown in the table below.

- Does this data show exponential growth or exponential decay? Explain.

2-HR INTERVAL, x	NUMBER OF HOURS	NUMBER OF BACTERIA, $f(x)$
0	0	8
1	2	12
2	4	17
3	6	24
4	8	34
5	10	50