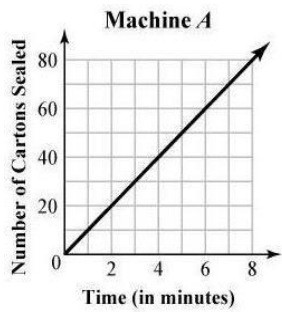


Comparing Functions

1. The graph and table show the number of cartons that two machines seal in different intervals of time.



Machine B

Time (in minutes)	Number of Cartons Sealed
3	39
4	52
5	65
6	78

Which statement is correct?

- a) Machine A and Machine B will seal the same number of cartons in 8 minutes.
- b) Machine A and Machine B will seal the same number of cartons in 10 minutes.
- c) The rate at which Machine A seals the cartons is less than the rate at which Machine B seals the cartons.
- d) The rate at which Machine A seals the cartons is greater than the rate at which Machine B seals the cartons.

2. In a certain nature preserve there are 6500 Eastern Meadowlarks, and every decade, the population in the preserve is halved. Does this represent a linear function, a quadratic function an exponential function, or other?

- a) linear
- b) exponential
- c) quadratic
- d) other

3. A fitness center requires its customers to pay an initial membership fee of \$50 plus a \$3 usage fee each time they use the facilities. Does this represent a linear function, a quadratic function an exponential function, or other?

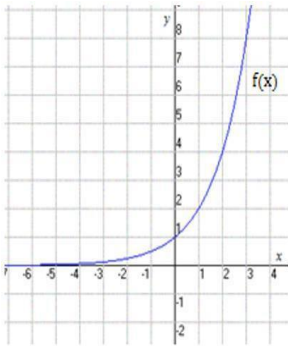
- a) Linear
- b) Quadratic
- c) Exponential
- d) Other

4. Decide whether the input-output data displayed in the table below indicates a linear or exponential relationship and write an equation to model the relationship.

x	f(x)
-1	-1
0	2
1	5
2	8
3	11

- a) Linear: $f(x) = 2x + 3$
- b) Linear: $f(x) = 3x + 2$
- c) Exponential: $f(x) = 2^x$
- d) Exponential: $f(x) = 3^x$

5. Which function, $f(x)$ or $g(x)$, has the greater rate of change over the interval $[0, 3]$?



x	g(x)
-1	-3
0	1
1	5
2	9
3	13
4	17

- a) $f(x)$
- b) $g(x)$
- c) They have the same rate of change.
- d) It is not possible to compare their rates of change.

6. A pond has a minnow population of 20,000 that is increasing at a rate of 5% per year. The minnows' algae food supply is decreasing so that it supports 750 less minnows each year. How is the population of minnows growing, and how is the supply of algae declining?

- a) The minnow population is growing exponentially, and the algae supply is declining linearly.
- b) Both the minnows' population growth and the algae supply's decline are exponential.
- c) The minnow population is increasing linearly, and the algae supply is declining exponentially.
- d) Both the minnows' population growth and the algae supply's decline are linear.

7. You are conducting a science experiment in which you measure at equal intervals the number of mold cells present on a piece of bread. At the start of the experiment, there are 20 mold cells. Each time a scheduled observation is made, the number of mold cells has tripled. Write an equation for the number of mold cells present, where x stands for the observation number.

- a) $y = 3x + 20$
- b) $y = 20(3)^x$
- c) $y = 3x^2 + 20$
- d) $y = 20x^3$