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SAT数学

张斯乐

2.Problem Solving & Data Analysis

2.4 Linear and Exponential Growth

1. linear equation:

Increase by A (A is a constant).

Constant rate.

2.Problem Solving & Data Analysis

2.4 Linear and Exponential Growth

2. exponential equation:

Increase by A percent. (A is a constant).

Decrease by a factor of A.

Double every year.

2.4 Linear and Exponential Growth

1. The Downtown Business Association (D B A) in a certain city plans to increase its membership by a total of n businesses per year. There were b businesses in the D B A at the beginning of this year. Which function best models the total number of businesses, y, the D B A plans to have as members x years from now?

2.4 Linear and Exponential Growth

2.

x	1	2	3	4	5
y	11/4	25/4	39/4	53/4	67/4

Which of the following equations relates y to x for the values in the preceding table?

2.4 Linear and Exponential Growth

3. The world’ s population has grown at an average rate of 1.9 percent per year since 1945. There were approximately 4 billion people in the world in 1975. Which of the following functions represents the world’ s population P, in billions of people, t years since 1975? (1 billion equals 1,000,000,000.)

2.4 Linear and Exponential Growth

4. $M=1,800(1.02)^t$
The preceding equation models the number of members, M, of a gym t years after the gym opens. Of the following, which equation models the number of members of the gym q quarter years after the gym opens?

2.4 Linear and Exponential Growth

5. A photocopy machine is initially loaded with 5,000 sheets of paper. The machine starts a large job and copies at a constant rate. After 20 minutes, it has used 30% of the paper. Which of the following equations models the number of sheets of paper, p, remaining in the machine m minutes after the machine started printing?

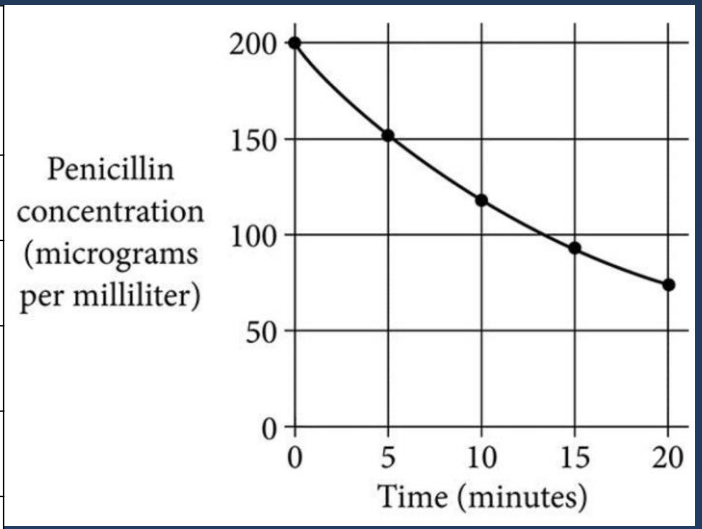
2.4 Linear and Exponential Growth

作业讲解-第6题到第13题

2.4 Linear and Exponential Growth

6.

Minutes after injection	Penicillin concentration
0	200
5	152
10	118
15	93
20	74



2.4 Linear and Exponential Growth

7.Which of the following examples would exhibit linear growth over time?

A.The height of a plant that doubles in height every two months.
B.The value of a home that is increasing in value by 5% every year
C.The number of books read by someone who reads 3 books every month
D.The number of birds in an area where the population of birds is decreasing by 30% every year

2.4 Linear and Exponential Growth

8. Jim has a savings account into which he made an initial deposit of a dollars and has made no deposits or withdrawals since then. The amount of money, P, in the account t years after the initial deposit is given by the equation below.
$P=a(1.01)^t$
By what precent did the amount of money in the account grow from the beginning of years 2 to the beginning of year 4?

2.4 Linear and Exponential Growth

9.In 2015. XYZ Railroad made a plan to reduce the number of railroad cars in service by 12 cars per year for each of the next 15 years. Which of the following types of expressions could be used to model the number of cars XYZ Railroad has in service n years after 2015, where n is an integer from 1 to 15?

2.4 Linear and Exponential Growth

10.A piece of jewelry is initially valued at $100. Every month the value of the piece of jewelry increases by 1% of its value the previous month. Which of the following represents the value Q(t), in dollars, of the piece of jewelry at the end of t months?

2.4 Linear and Exponential Growth

11.

Month	p, in dollars	A, in dollars
January	100,000	5,000
February	120,000	6,000
March	144,000	7,200
April	172,800	8,640

Which of the following equations represents the relationship between p and A, where k is a positive constant?

2.4 Linear and Exponential Growth

12.A biologist grows a culture of bacteria as part of an experiment. At the start of the experiment, there are 75 bacteria in the culture. The biologist observes that the population of bacteria doubles every 18 minutes. Which of the following equation best models the number, n, of the bacteria t hours after the start of the experiment?

2.4 Linear and Exponential Growth

13. Which of the following describes and exponential relationship between the pair of variables listed?

A.For every 3-millimeter increase m in the thickness of a piece of glass, the intensity of light I traveling through the glass decreases by 20%.

B.Each second s, a car’ s speed C decreases at a constant rate of 10 meters per second.

C.With every 33-foot increase in depth d below the surface of water, the pressure p on an object increase by 14.7 pounds per square inch.

D.The depth d of water remaining in a reservoir decreases by 15 inches each minute m as the water is pumped out at a constant rate.

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