

F.LE.B.5: Modeling Linear Functions

- 1 A car leaves Albany, NY, and travels west toward Buffalo, NY. The equation $D = 280 - 59t$ can be used to represent the distance, D , from Buffalo after t hours. In this equation, the 59 represents the
 - 1) car's distance from Albany
 - 2) speed of the car
 - 3) distance between Buffalo and Albany
 - 4) number of hours driving

- 2 When babysitting, Nicole charges an hourly rate and an additional charge for gas. She uses the function $C(h) = 6h + 5$ to determine how much to charge for babysitting. The constant term of this function represents
 - 1) the additional charge for gas
 - 2) the hourly rate Nicole charges
 - 3) the number of hours Nicole babysits
 - 4) the total Nicole earns from babysitting

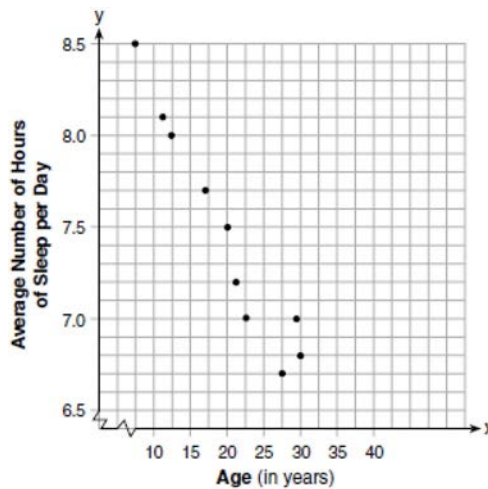
- 3 A company that manufactures radios first pays a start-up cost, and then spends a certain amount of money to manufacture each radio. If the cost of manufacturing r radios is given by the function $c(r) = 5.25r + 125$, then the value 5.25 best represents
 - 1) the start-up cost
 - 2) the profit earned from the sale of one radio
 - 3) the amount spent to manufacture each radio
 - 4) the average number of radios manufactured

- 4 The owner of a small computer repair business has one employee, who is paid an hourly rate of \$22. The owner estimates his weekly profit using the function $P(x) = 8600 - 22x$. In this function, x represents the number of
 - 1) computers repaired per week
 - 2) hours worked per week
 - 3) customers served per week
 - 4) days worked per week

- 5 The amount Mike gets paid weekly can be represented by the expression $2.50a + 290$, where a is the number of cell phone accessories he sells that week. What is the constant term in this expression and what does it represent?
 - 1) $2.50a$, the amount he is guaranteed to be paid each week
 - 2) $2.50a$, the amount he earns when he sells a accessories
 - 3) 290, the amount he is guaranteed to be paid each week
 - 4) 290, the amount he earns when he sells a accessories

- 6 The amount of money a plumber charges is represented by the function $p(h) = 45 + 90h$. The best interpretation of the y -intercept of this function is that the plumber charges
 - 1) \$45 to come to the house
 - 2) \$45 per hour that he works
 - 3) \$90 to come to the house
 - 4) \$90 per hour that he works

- 7 The cost of airing a commercial on television is modeled by the function $C(n) = 110n + 900$, where n is the number of times the commercial is aired. Based on this model, which statement is true?
- 1) The commercial costs \$0 to produce and \$110 per airing up to \$900.
 - 2) The commercial costs \$110 to produce and \$900 each time it is aired.
 - 3) The commercial costs \$900 to produce and \$110 each time it is aired.
 - 4) The commercial costs \$1010 to produce and can air an unlimited number of times.
- 8 A student plotted the data from a sleep study as shown in the graph below.



The student used the equation of the line $y = -0.09x + 9.24$ to model the data. What does the rate of change represent in terms of these data?

- 1) The average number of hours of sleep per day increases 0.09 hour per year of age.
 - 2) The average number of hours of sleep per day decreases 0.09 hour per year of age.
 - 3) The average number of hours of sleep per day increases 9.24 hours per year of age.
 - 4) The average number of hours of sleep per day decreases 9.24 hours per year of age.
- 9 A satellite television company charges a one-time installation fee and a monthly service charge. The total cost is modeled by the function $y = 40 + 90x$. Which statement represents the meaning of each part of the function?
- 1) y is the total cost, x is the number of months of service, \$90 is the installation fee, and \$40 is the service charge per month.
 - 2) y is the total cost, x is the number of months of service, \$40 is the installation fee, and \$90 is the service charge per month.
 - 3) x is the total cost, y is the number of months of service, \$40 is the installation fee, and \$90 is the service charge per month.
 - 4) x is the total cost, y is the number of months of service, \$90 is the installation fee, and \$40 is the service charge per month.

- 10 A plumber has a set fee for a house call and charges by the hour for repairs. The total cost of her services can be modeled by $c(t) = 125t + 95$. Which statements about this function are true?
- I. A house call fee costs \$95.
 - II. The plumber charges \$125 per hour.
 - III. The number of hours the job takes is represented by t .
- 1) I and II, only 3) II and III, only
 2) I and III, only 4) I, II, and III
- 11 The Speedy Jet Ski Rental Company charges an insurance fee and an hourly rental rate. The total cost is modeled by the function $R(x) = 30 + 40x$. Based on this model, which statements are true?
- I. $R(x)$ represents the total cost.
 - II. x is the number of hours rented.
 - III. \$40 is the insurance fee.
 - IV. \$30 is the hourly rental rate.
- 1) I, only 3) I, III, and IV, only
 2) I and II, only 4) I, II, III, and IV
- 12 Each day, a local dog shelter spends an average of \$2.40 on food per dog. The manager estimates the shelter's daily expenses, assuming there is at least one dog in the shelter, using the function $E(x) = 30 + 2.40x$. Which statements regarding the function $E(x)$ are correct?
- I. x represents the number of dogs at the shelter per day.
 - II. x represents the number of volunteers at the shelter per day.
 - III. 30 represents the shelter's total expenses per day.
 - IV. 30 represents the shelter's nonfood expenses per day.
- 1) I and III 3) II and III
 2) I and IV 4) II and IV
- 13 The cost of belonging to a gym can be modeled by $C(m) = 50m + 79.50$, where $C(m)$ is the total cost for m months of membership. State the meaning of the slope and y -intercept of this function with respect to the costs associated with the gym membership.
- 14 During a recent snowstorm in Red Hook, NY, Jaime noted that there were 4 inches of snow on the ground at 3:00 p.m., and there were 6 inches of snow on the ground at 7:00 p.m. If she were to graph these data, what does the slope of the line connecting these two points represent in the context of this problem?
- 15 The table below shows the height in feet, $h(t)$, of a hot-air balloon and the number of minutes, t , the balloon is in the air.

Time (min)	2	5	7	10	12
Height (ft)	64	168	222	318	369

The function $h(t) = 30.5t + 8.7$ can be used to model this data table. Explain the meaning of the slope in the context of the problem. Explain the meaning of the y -intercept in the context of the problem.

F.LE.B.5: Modeling Linear Functions**Answer Section**

1 ANS: 2 REF: 011709ai

2 ANS: 1 REF: 062421ai

3 ANS: 3 REF: 061407ai

4 ANS: 2 REF: 011501ai

5 ANS: 3 REF: 061817ai

6 ANS: 1 REF: 082412ai

7 ANS: 3 REF: 061501ai

8 ANS: 2 REF: 061704ai

9 ANS: 2 REF: 081402ai

10 ANS: 4 REF: 081709ai

11 ANS: 2 REF: 012403ai

12 ANS: 2 REF: 081817ai

13 ANS:

The slope represents the amount paid each month and the y -intercept represents the initial cost of membership.

REF: 011629ai

14 ANS:

There is 2 inches of snow every 4 hours.

REF: 061630ai

15 ANS:

The height of the balloon increases 30.5 ft per min. The balloon starts at a height of 8.7 ft.

REF: 062127ai