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   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

3   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

4   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.

5   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.

6   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
2)   I and III, only
3)   II and III, only
4)   I, II, and III

7   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.

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

1 ANS: 2   REF: 011709ai
2 ANS: 3   REF: 061407ai
3 ANS: 2   REF: 011501ai
4 ANS: 3   REF: 061501ai
5 ANS: 2   REF: 081402ai
6 ANS: 4   REF: 081709ai
7 ANS:
   The slope represents the amount paid each month and the y-intercept represents the initial cost of membership.

   REF: 011629ai