Interpreting Linear Functions

1. $P = 250 + 39.99m$

   Jamie has signed a contract that lays out the total cost, P, in dollars, to acquire and maintain a new fridge. What is the best interpretation of 250 as shown in the equation above? *(no calculator)*

   A) Jamie pays an initial 250 dollars to acquire the fridge.
   B) Jamie must pay 250 dollars a month.
   C) Jamie must pay 289.99 at the end of the each of month.
   D) The total of all payments is 250 dollars. The total of all payments is 250 dollars.

2. $A = 3T + 35.4$

   A professor has a feeling that less students show up to her class when the temperature is low. So, every day for a month, she keeps track of the daily temperature and her total class attendance. She then develops the above model to approximate the number of students that will attend class, A, as a function of temperature, T. Based on the model, what is the estimated increase in attendance when the temperature raises by one degree? *(no calculator)*

   A) 3
   B) 11.8
   C) 35.4
   D) 44.4

3. $C = 1,000 + 3,500h$

   A group of workers is hired to improve the quality of an exit ramp of a freeway. The total cost, *C*, in dollars, incurred by the government for *h* hours of work is given by the equation above. What is the best interpretation of 3,500 in the equation? *(no calculator)*

   A) The total cost can be at most $3,500.
   B) It takes the team 3,500 hours to improve the quality of the exit ramp.
   C) Each additional hour of working on the exit ramp costs $3,500.
   D) $3,500 is the base cost regardless of how many hours it takes to improve the exit ramp.

4. During a final, a professor put bonus questions on every test that added 0.5 points to the student's final grade. The equation below models Steve's current grade, G, after the amount of extra credit questions answered correctly, q. What does the 88 mean in this equation? *(no calculator)*

   $$G = 0.5q + 88$$

   A) Steve must get a grade of 88 or higher to pass
   B) Steve's grade is an 88 before adding the extra credit
   C) Steve's grade is an 88 after adding the extra credit
   D) The professor offered 88 opportunities for extra credit this semester

5. $y = 2.99 + 1.50x$

   The equation above models the total cost *y*, in dollars, that a ride-sharing company charges a customer to arrive at their desired destination based on *x* miles. The total cost consists of a flat fee plus a charge per mile driven. When the equation is graphed in the xy-plane, what does the *y-intercept* of the graph represent in terms of the model? *(no calculator)*

   A) A flat fee of $2.99
   B) A charge per mile of $1.50
   C) A charge per mile of $2.99
   D) Total daily charge of $4.49

6. James is a transmission specialist for a car company. Each week, he receives a certain number of a cars that need repairs. The number of cars that he has left to fix at the end of each day can be approximated with the equation $T = 24 - 12d$, where T is the number of transmissions left and d is the number of days he has worked that week. What is the meaning of the value 24 in this equation? *(no calculator)*

   A) James will complete the repairs within 24 days.
   B) James repairs transmissions at a rate of 24 per hour.
   C) James starts each week with 24 transmissions to fix.
   D) James repairs transmissions at a rate of 24 per day.

7. $V = 7(13 - s)$

   The velocity, V, in meters per second heading east, of a car s seconds after merging on the interstate highway is given by the equation above. What is the best interpretation of 7 as shown in the equation above? *(no calculator)*

   A) The velocity changes by $7\,{}^m\!/_s$ every second.

   B) The plane takes 7 seconds to stop.

   C) The velocity of the plane just as it lands is $7\,{}^m\!/_s$

   D) The position of the car changes $7\,{}^m\!/_s$.

8. $C = 475 + 75m$

   The total cost, C, in dollars to purchase a stationed ATM machine and use it for m months is given by the equation above. What is the best interpretation of 75 as shown in the equation above? *(no calculator)*

   A) The cost to purchase the machine and not use it is 75 dollars.

   B) After purchase, the machine can be used for up to 75 months.

   C) The average cost per month to purchase and use the machine is 75 dollars.

   D) The total cost increases by 75 dollars for each additional month of use.

9. $25s + 32.8p = 100$

   A bottle contains 100 milliliters of a solution of soda and oil at room temperature. The equation above shows the possible amounts of soda, s, and oil, p, in ounces. What is the volume of 1 ounce of soda at room temperature in milliliters? *(no calculator)*

   A) 0.25

   B) 4

   C) 32.8

   D) 25