

Interpreting Linear Equations

Multiple Choice

1. While training for a bike race, Morgan created a training schedule in which the distance of her longest ride every increased by a constant amount. The equation $72 = 6w + 18$ relates the number of weeks, w , it takes for Morgan to reach the actual race length of 72 miles. What is the meaning of 6 in the context of the problem?
- A) The distance of Morgan's initial bike ride
 - B) The distance of Morgan's bike ride after w weeks
 - C) The number of miles Morgan increases her longest ride per week
 - D) The number of miles Morgan increases her longest ride in w weeks

2.

Exercise Per Day (minutes)	0	20	40	60	80
Resting Heart Rate (beats per minute)	119	102	85	68	51

Bob is trying to improve his health. Over the course of 5 years, Bob increases his daily exercise by 20 minutes every year, as shown in the table above. His physician monitors Bob's resting heart rate at his physical appointment each year and finds a constant decrease in Bob's resting heartrate, indicating an improvement in his cardiovascular health. In this context, which of the following describes the meaning of the ordered pair $(40, 85)$?

- A) Bob's heart rate of 85 causes him to exercise 40 minutes per day.
- B) When Bob exercises 40 minutes per day, his resting heartrate is 85 beats per minute.
- C) Bob's heart rate is 2.125 times the number of minutes that he exercises daily in year 3.
- D) While Bob is exercising, his heart rate is 85 beats per minute for 40 minutes.

3. $p = 12.5h + 20$

The equation above is used by a kayak rental office to determine the total cost p , in dollars, that kayak renters owe at the end of the day. The total cost consists of a flat fee for checking out a kayak plus an hourly fee. In the context of the problem, what does the number 12.5 represent?

- A) The flat fee for checking out the kayak.
- B) The total cost of renting the kayak for the day.
- C) The hourly fee for renting the kayak.
- D) The number of hours that customers can rent the kayak.

4. Lauren is strength training for track season. One of the requirements for running hurdles on Lauren's track team is to be able to squat 120 pounds. She can currently squat 75 pounds, and her coach would like her to add 10 pounds per month to her squat weight until season begins. If Lauren sticks to her coach's plan, which of the following represents the number of pounds that Lauren will be able to squat m months from now?

- A) $75 + 10m$
- B) $120 + 10m$
- C) $10 + 75m$
- D) $120 - 75m$

5. $h = 0.5x + 48$

Beginning in January, Esme measures her height once per month over the course of a year and determines that the above equation effectively models her constant rate of growth through the year, where h is Esme's height in inches and x is the number of months after January. Which of the following is the best interpretation of 48 in this context?

- A) Esme grew 48 inches over the course of the year.
- B) Esme's height in January was 48 inches.
- C) Esme grew 48 inches per month.
- D) Esme's height at the end of year is 48 inches.

6. John's new year's resolution is to do more push-ups. He can currently do 30 push-ups without resting and believes that he can increase this number by 6 push-ups per week. If John sticks to his plan, which of the following represents the number of push-ups he will be able to do m months from now?
- A) $y = 6m + 30$
 - B) $y = 30m + 6$
 - C) $y = 24m + 6$
 - D) $y = 24m + 30$

7. $d = 4w + 200$

Anna, a wildlife biologist, uses the equation above to determine the total number of deer, d , that have been tagged since the start of her research project. Anna's research started one year ago. If w represents the number of weeks since the start of the second year of research, which of the following is the best interpretation of 200 in this context?

- A) The total number of deer tagged at the start of her research project.
- B) The total number of deer is predicted to increase each week.
- C) The total number of deer tagged in the first year of her project.
- D) The total number of deer tagged in the research project.

8. $C(x) = 400 + 50x$

The equation above models the total cost, C , in dollars, that a company charges a customer to rent a venue for x hours. The total cost consists of a flat fee plus a charge per hour. Which of the following is the best interpretation of the statement " $C(24)$ is approximately equal to 1600 in this context?"

- A) A customer that rents a venue for 24 hours is charged 1600 dollars total.
- B) A customer that rents a venue for 24 hours is charged a flat fee of 1600 dollars.
- C) For every 24 hours a customer rents the venue, the cost increases by 1600 dollars.
- D) For every 24 hours a customer rents the venue, the flat fee increases by 1600 dollars.

9. At a cafe, c cups of coffee are made by adding g tablespoons of ground coffee beans to hot water. If $g = \frac{1}{4}c + 1$, how many additional cups of coffee can be made by adding one tablespoon of ground coffee beans?
- A) $\frac{1}{4}$
B) 1
C) 2
D) 4
10. The boiling point of water at sea level is 100 degrees Celsius ($^{\circ}\text{C}$). For every increase of 1,000 meters above sea level, the boiling point of water drops approximately 3.33°C . Which of the following equations gives the approximate boiling point B , in $^{\circ}\text{C}$, at h meters above sea level?
- A) $B = 100 - 3.33h$
B) $B = 100 - (.0033)h$
C) $B = 100h$
D) $B = 3.33h(100) - 1,000h$