

Date Completed: \_\_\_\_\_  
Mentor Initials: \_\_\_\_\_

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## Interpreting Equations

### Non-Calculator: Multiple Choice

1. While training for a century bike race, Morgan created a training schedule in which the distance of her longest ride every week increased by a constant amount. If Morgan's training schedule requires that her longest ride in week 6 is a distance of 48 miles and her longest ride in week 10 is a distance of 72 miles, which of the following best describes how the distance Morgan bikes changes between week 6 and week 10 of her training schedule?
  - A) Morgan increases the distance of her longest bike ride by 1.5 miles per week.
  - B) Morgan increases the distance of her longest bike ride by 6 miles per week.
  - C) Morgan increases the distance of her longest bike ride by 6 miles every 2 weeks.
  - D) Morgan increases the distance of her longest bike ride by 9 miles every 2 weeks.

$$p = 12.5h + 20$$

2. The equation above is used by a kayak rental office to determine the price,  $p$ , in dollars that kayak renters owe at the end of the day. The rental price consists of a flat fee for checking out a kayak plus an hourly fee for using it. Based on the information given, what does the slope of line  $p$  represent?
  - A) The flat fee for checking out a kayak
  - B) The total cost renting the kayak for the day
  - C) The hourly fee for renting a kayak
  - D) The number of hours that customers rent the kayaks

3. 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)  $120 - 75m$
4. Esme measures her height once per month over the course of a year. On January 1<sup>st</sup>, she is 48" tall. On April 1<sup>st</sup>, she is 49.5" tall. If Esme grows at a constant rate throughout the year, which of the following represents Esme's height,  $h$ , in inches, on September 1<sup>st</sup>?
- A)  $h = 0.5(8)$
  - B)  $h = 0.375(9) + 48$
  - C)  $h = 0.5(8) + 48$
  - D)  $h = 0.375(8)$
5. 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)  $y = 24m + 30$

$$d = 4w + 200$$

6. 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 terms in the equation represents the number of deer that were tagged last year?
- A) 4
  - B)  $4w$
  - C) 200
  - D)  $50d$

$$P = 200(1 + .06)^4$$

7. Which of the following scenarios can be represented by the equation above?
- A) Jeff releases 200 ladybugs in his garden. The ladybug population increases at a rate of 6% for 4 months.
  - B) Jeff releases 200 ladybugs in his garden. The ladybug population increases at a rate of 106% for 4 months.
  - C) Jeff releases 212 ladybugs in his garden. The ladybug population increases at a rate of 4%.
  - D) Jeff releases 212 ladybugs in his garden. The ladybug population increases at a rate of 1.06% for 4 months.

Exercise Per Day (minutes)	0	20	40	60	80
Resting Heart Rate (beats per minute)	120	102	85	62	50

8. 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 decrease in Bob's resting heart rate, indicating an improvement in his cardiovascular health. 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 heart rate 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.

$$y = 400 + 50x$$

9. The equation above models the total cost,  $y$ , 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. When the equation is graphed in the  $xy$ -plane, what does the  $y$ -intercept of the graph represent in terms of the model?
- A) A flat fee of \$400
  - B) A flat fee of \$50
  - C) A charge per hour of \$50
  - D) The total cost of renting the venue