

SATPREP

Assignment – No Calculator

1. The population, P , of Town Y since 1995 can be estimated by the equation $P = 1.0635x + 3,250$, where x is the number of years since 1995 and $0 \leq x \leq 20$. In the context of this equation, what does the number 1.0635 most likely represent?

- A. The estimated population of town Y in 1995
- B. The estimated population of town Y in 2015
- C. The factor by which the population of town Y increased yearly
- D. The factor by which the population of town Y decreased yearly

2. If $x + 12x = 64$ and $x > 0$, what is the value of x ?

- A. 2
- B. 4
- C. 8
- D. 16

3. Sai is ordering new shelving units for his store. Each unit is 7 feet in length and extends from floor to ceiling. Sai's store has 119 feet of wall space that includes 21 feet of windows along the walls. If the shelving units cannot be placed in front of the windows, which of the

following inequalities includes all possible values of r , the number of shelving units that Sai could use?

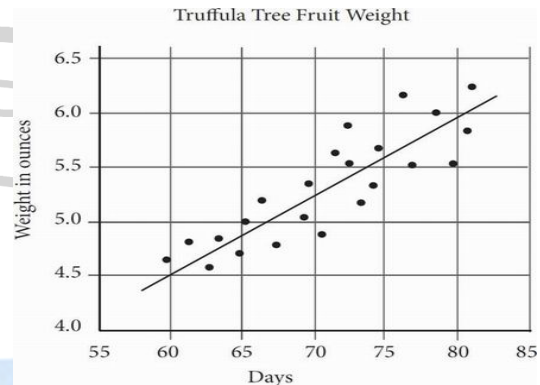
A. $r \leq \frac{119 - 21}{7}$

B. $r \geq \frac{119 + 21}{7}$

C. $r \leq 119 - 21 + 7r$

D. $r \geq 119 + 21 - 7r$

4.



The scatterplot above shows the weight, in ounces, of the fruits on a certain truffula tree from days 55 to 85 after flowering. According to the line of best fit in the scatterplot above, which of the following is the closest approximation of the number of days after flowering of a truffula fruit that weighs 5.75 ounces?

- A. 63
- B. 65
- C. 77
- D. 81

5. Hannah placed an online order for shirts that cost \$24.50 per shirt. A tax of 7% is added to the cost of the shirts, before a flat, untaxed shipping rate of \$6 is charged. Which of the

following represents Hannah's total cost for s shirts, in dollars?

- A. $0.07(24.50s + 6)$
- B. $1.07(24.50 + 6)s$
- C. $1.07(24.50s) + 6$
- D. $1.07(24.50 + s) + 6$

6. Once a certain plant begins to grow, its height increases at a linear rate. After six weeks, the plant is 54 centimeters tall. Which of the following functions best models the relationship between $h(w)$, the height, in centimeters, of the plant, and w , the number of weeks that the plant has been growing?

- A. $h(w) = 6w$
- B. $h(w) = 9w$
- C. $h(w) = 54w$
- D. $h(w) = 54 + w$

7. Which of the following is equivalent to $(12x + 4x + 5y) + (3x - 2x + 3y)$?

- A. $2x - 2x + 8y$
- B. $2x + 15x + 8y$
- C. $15x - 2x + 8y$
- D. $15x + 2x + 8y$

8. An advertisement for Royal Rat Rations states: "7 out of 8 veterinarians recommend Royal Rat Rations for your fancy rat." No other information about the data is provided by the company.

Based on this data, which of the following inferences is most valid?

- A. Royal Rat Rations provides the best nutrition for fancy rats.

B. If you do not feed your rat Royal Rat Rations, your rat will be unhealthy.

C. Only one veterinarian does not recommend Royal Rat Rations for your fancy rat.

D. Of the veterinarians surveyed by Royal Rat Rations, the majority recommend Royal Rat Rations for your fancy rat.

9.
$$\frac{1}{2}t + 4 = \frac{3}{4}t - 5$$

In the equation above, what is the value of t ?

- A. 4
- B. 9
- C. 18
- D. 36

10. Dogs need 8.5 to 17 ounces of water each day for every 10 pounds of their weight. Everett has two dogs-Ringo is a 35-pound black lab mix, and Elvis is a 55-pound beagle. Which of the following ranges represents the approximate total number of ounces of water, w , that Elvis and Ringo need in a week?

- A. $77 \leq w \leq 153$
- B. $109 \leq w \leq 218$
- C. $536 \leq w \leq 1,071$
- D. $765 \leq w \leq 1,530$

11. Priya is planning to send her favorite dry rub recipe to a friend who lives in France. Before sending the recipe, Priya wants to convert the American customary units in

the instructions into metric units so that her friend will easily be able to understand the measurements. If the recipe calls for a ratio of four ounces of paprika to every seven ounces of chili powder, and if Priya's friend is planning to make a large batch of dry rub with 91 total ounces of chili powder, approximately how many total grams of paprika and chili powder will the recipe require? (1 ounce = 28.3 grams)

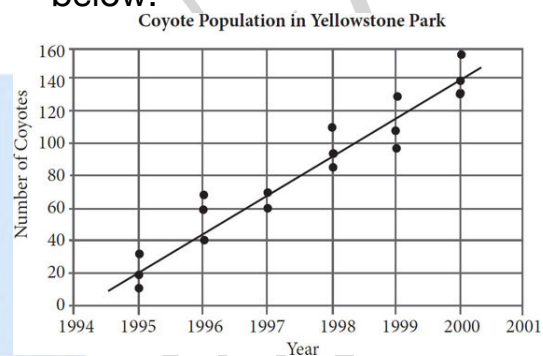
- A. 4,047 grams
- B. 4,521 grams
- C. 4,925 grams
- D. 5,149 grams

12. Luciano measured the amount of water that evaporated over a period of time from a container holding w ounces of water, where w is greater than 12. By the end of the first day, the cup had lost 2 ounces of water. By the end of the 7th day, the cup had lost an additional 8 ounces of water. By the end of the 11th day, the cup had lost half of the water that remained after the 7th day. Which of the following represents the remaining amount of water, in ounces, in Luciano's container at the end of the 11th day?

A. $\frac{w-2}{8}$

- B. $\frac{w-2}{2} - 10$
- C. $\frac{2w-10}{w-10}$
- D. $\frac{2}{w-10}$

13. In the 1990s, the park rangers at Yellowstone National Park implemented a program aimed at increasing the dwindling coyote population in Montana. Results of studies of the coyote population in the park are shown in the scatterplot below.

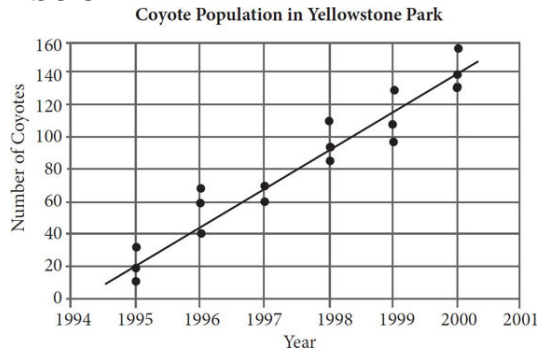


Based on the line of best fit in the scatterplot above, which of the following is the closest to the average annual increase in coyotes in Yellowstone Park between 1995 and 2000?

- A. 22
- B. 24
- C. 26
- D. 28

14. In the 1990s, the park rangers at Yellowstone National Park implemented a program aimed at increasing the dwindling coyote population in Montana. Results of studies of the coyote population in the park

are shown in the scatterplot below.



According to the data in the scatterplot, which of the following best represents the percent increase between the median of the results of the studies from 1995 and the median of the results of the studies from 1996 ?

- A. 50%
- B. 100%
- C. 150%
- D. 200%

15. Bailey's Boutique Clothing is having a 20% off sale during which shirts cost \$30.00 and pants cost \$60.00. On the day of the sale, Bailey's sells $\frac{2}{3}$ a total of 60 shirts and pants and earned a total of \$2,250. On a regular day, Bailey's sells the number of shirts and pants sold during the sale and earns a total of \$1,875. Solving which of the following systems of equations yields the number of shirts, s , and the number of pants, p , sold during a regular day?

- A. $s + p = 40$
 $37.5s + 75p = 1,875$
- B. $s + p = 40$
 $30s + 60p = 2,250$

C. $s + p = 60$

$30s + 60p = 2,250$

D. $s + p = 2,250$

$30s + 60p = 60$

16. A rectangular box has sides 3, 4, and x and a volume of 18. What is the value of x ?

17. Jeanne babysits Chuy one day each week. Jeanne charges a \$20 fee for the day, plus \$5.50 for every 30 minutes of babysitting. How much has Jeanne earned after three hours of babysitting? (Disregard the \$ sign when gridding your answer.)

18. The parabola $y = -x^2 + 5x + 6$ is intersected by the line $y = -\frac{1}{2}x + 12$. What is the y -coordinate of the intersection closest to the x -axis?

19. $13r + 8v = 47$
 $22v = 63 - 17r$

Based on the system of equations above, what is the sum of r and v ?

20. A gardener has a cultivated plot that measures 4 feet by 6 feet. Next year, she wants to double the area of her plot by increasing the length and width by x feet. What is the value of x ?

