

(SQC04-01E)

- A company purchased a machine valued at \$120,000. The value of the machine depreciates by the same amount each year so that after 10 years the value will be \$30,000. Which of the following equations gives the value, v , of the machine in dollars, t years after it was purchased for $0 \leq t \leq 10$?
 - A) $v = 30,000 - 9,000t$
 - B) $v = 120,000 - 9,000t$
 - C) $v = 120,000 + 9,000t$
 - D) $v = 120,000 - 30,000t$

(SQC04-02E)

- A television with a price of \$300 is to be purchased with an initial payment of \$60 and weekly payments of \$30. Which of the following equations can be used to find the number of weekly payments, w , required to complete the purchase, assuming there are no taxes or fees?
 - A) $300 = 30w - 60$
 - B) $300 = 30w$
 - C) $300 = 30w + 60$
 - D) $300 = 60w - 30$

(SQC04-03E)

- A helicopter, initially hovering 40 feet above the ground, begins to gain altitude at a rate of 21 feet per second. Which of the following functions represents the helicopter's altitude above the ground y , in feet, t seconds after the helicopter begins to gain altitude?
 - A) $y = 40 + 21$
 - B) $y = 40 + 21t$
 - C) $y = 40 - 21t$
 - D) $y = 40t + 21$

(SQC04-04E)

- Last week Salazar played 13 more tennis games than Perry. If they played a combined total of 53 games, how many games did Salazar play?
A) 20
B) 27
C) 33
D) 40

(SQC04-05E)

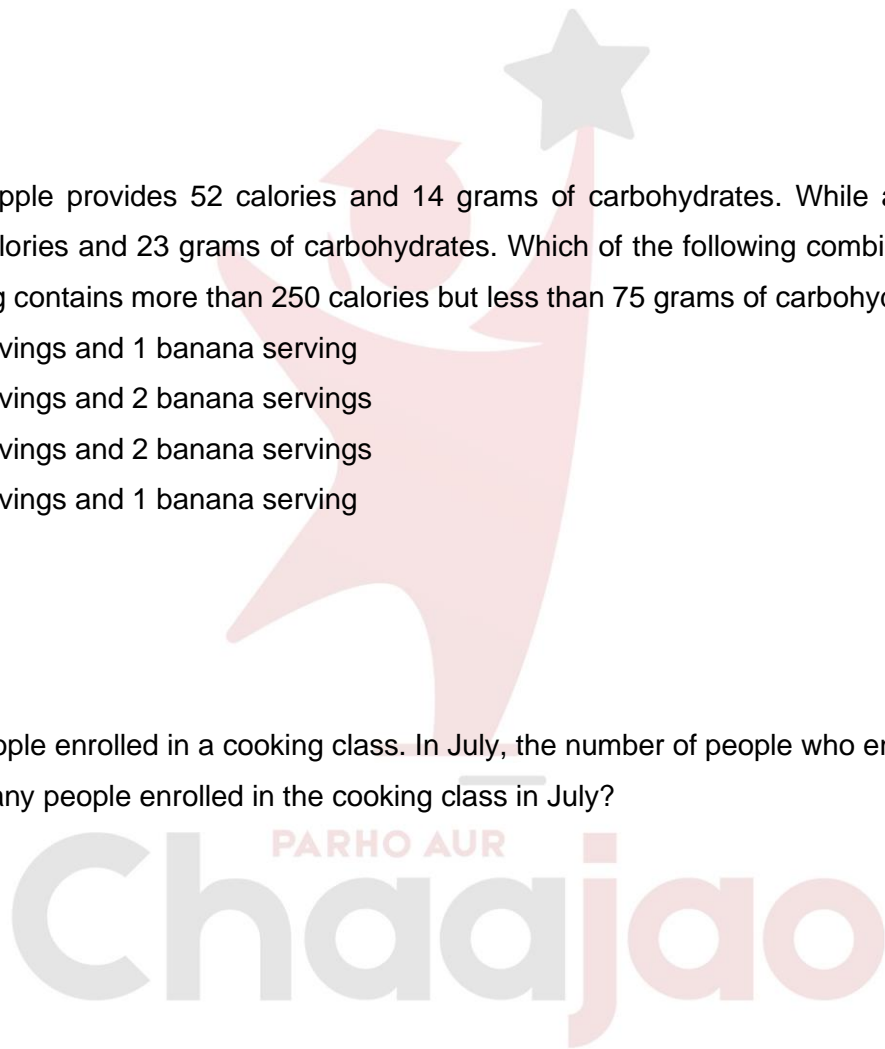
- A serving of apple provides 52 calories and 14 grams of carbohydrates. While a serving of banana provides 89 calories and 23 grams of carbohydrates. Which of the following combinations of apple and banana serving contains more than 250 calories but less than 75 grams of carbohydrates?
A) 2 apple servings and 1 banana serving
B) 2 apple servings and 2 banana servings
C) 3 apple servings and 2 banana servings
D) 4 apple servings and 1 banana serving

(SQC04-06E)

- In June, 20 people enrolled in a cooking class. In July, the number of people who enrolled increased by 150%. How many people enrolled in the cooking class in July?
A) 30
B) 50
C) 70
D) 170

(SQC04-07E)

- The sum of three numbers is 855. One of the numbers, x , is 50% more than the sum of the other two numbers. What is the value of x ?
A) 570
B) 513
C) 214
D) 155



(SQC04-08E)

- A customer's monthly water bill was \$75.74. Due to a rate increase, her monthly bill is now \$79.86. To the nearest tenth of a percent, by what percent did the amount of the customer's water bill increase?
A) 4.1%
B) 5.1%
C) 5.2%
D) 5.4%

(SQC04-09E)

- $C(t) = 1.870(1.025)^t$

The function above models the number of capybaras, $c(t)$ living in a section of tropical forest in Brazil, where t is the number of years since 2010.

Which of the following is the best interpretation of the value 1.025 in this context?

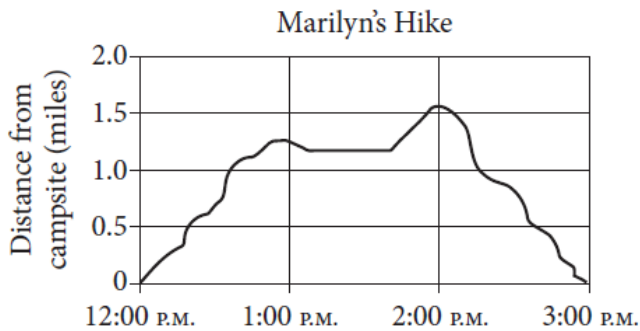
- A) Each year, the number of capybaras is increasing by approximately 1 from the preceding year.
- B) Each year, the number of capybaras is increasing by approximately 25 from the preceding year.
- C) Each year, the number of capybaras is increasing by approximately 2.5% from the preceding year.
- D) Each year, the number of capybaras is increasing by approximately 125% from the preceding year.

(SQC04-10E)

- A piece of jewelry is initially valued at \$100. Every month the value of the piece of jewelry increases by 1% of its value in the previous month. Which of the following represents the value $Q(t)$, in dollars, of the piece of jewelry at the end of t months?
A) $Q(t) = 100\left(1 + \frac{t}{100}\right)$
B) $Q(t) = 100(1 + .01)^t$
C) $Q(t) = 100\left(1 + \frac{.01}{12}\right)^t$
D) $Q(t) = 100(1 + (0.1)^t)$

(SQC04-11E)

-



The graph above shows Marilyn's distance from her campsite during a 3-hour hike. She stopped for 30 minutes during her hike to have lunch. Based on the graph, which of the following is closest to the time she finished lunch and continued her hike?

- A) 12:40PM
- B) 1:10PM
- C) 1:40PM
- D) 2:00PM

(SQC04-12E)

- For their practical exam in binary fission, a biology class at Central High School placed 50 bacteria cells in a culture dish in their laboratory. The number of cells of these bacteria doubles every 20 minutes. How many bacteria cells will be in the culture dish when 1 hour has passed?
- A) 800
 - B) 400
 - C) 200
 - D) 150

(SQC04-13E)

- In 2015, XYZ Railroad made a plan to reduce the number of railroad cars in service by 12 cars per year for each of the next 15 years. Which of the following types of expressions could be used to model the number of cars XYZ Railroad has in service n years after 2015, where n is an integer from 1 to 15?
 - $a + bn$, where a is a positive constant and b is a negative constant
 - $a + bn$, where a is negative constant and b is a positive constant
 - $a(b)^n$, where a is positive constant and b is a constant such that $b > 1$
 - $a(b)^n$, where a is a positive constant and b is a constant such that $0 < b < 1$

(SQC04-14E)

- One brand of a commercial ice machine can produce a maximum of 263 pounds of ice each day. If 1 cubic foot of ice weights about 57.2 pounds, which of the following best approximates the maximum number of cubic feet of ice the machine can produce in one day?
 - 0.2
 - 4.6
 - 206
 - 320

(SQC04-15E)

- Vitruvius, a Roman architect of the first century BCE, set guidelines in his writings for the relationship between the height (rise) and tread (run) of stairs in a building. He wrote that the rise should be between 9 and 10 inches, inclusive, per step, and the run should be between 18 and 24 inches, inclusive. Which of the following could NOT be the ratio of rise to run for a set of stairs that follows this guideline?
 - $\frac{1}{3}$
 - $\frac{5}{12}$
 - $\frac{3}{8}$
 - $\frac{5}{9}$

Answer Key	
1	B
2	C
3	B
4	C
5	B
6	B
7	B
8	D
9	C
10	B
11	C
12	B
13	A
14	B
15	A

Chaaajao