

## 2023 6<sup>th</sup> Grade Math Contest

1) Rima and Eric have earned a total of 135 tokens to buy items at the school store. The ratio of the number of tokens that Rima has to the number of tokens that Eric has is 8 to 7. How many tokens does Rima have?

- A) 8
- B) 15
- C) 56
- D) 72
- E) 120

2) We have 2022 numbers in a list. We know that the lowest number is four, the greatest is nine, and the median of them all is nine. What is the mode?

- A) 4
- B) 6
- C) 8
- D) 9
- E) We do not have enough information to know what the mode is

3) Evelyn, Verónica and Javier collect soccer stickers of the 2021-2022 season. Evelyn has managed to collect 66% of the stickers for her album. Verónica has collected 131 stickers. Javier's ratio of stickers he already has in his album to stickers he doesn't have is 13 to 7. If the complete album has a total of 200 stickers, who has more stickers?

- A) Evelyn
- B) Verónica
- C) Javier
- D) Evelyn and Verónica have the same amount, which is higher than Javier's
- E) Verónica and Javier have the same amount, which is higher than Evelyn's

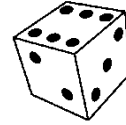
4) A number is called a palindrome if it is the same written forward and backwards. For example, 23032 is a palindrome, since it is 23032 written backwards. How many 5-digit palindromes are there?

- A) 729
- B) 900
- C) 81,000
- D) 90,000
- E) 100,000

## 2023 6<sup>th</sup> Grade Math Contest

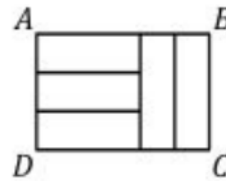
5) In a game of dice, Chioma calculates her score by multiplying the numbers on three of the faces of her choice. Then, she multiplies the numbers on the other three faces, and adds up the two products. What is the lowest score she can get?

- A) 52
- B) 54
- C) 55
- D) 56
- E) 58



6) In the figure below, all the small rectangles are identical. If  $\overline{BC} = 12$  units, what is the area of rectangle  $ABCD$ ?

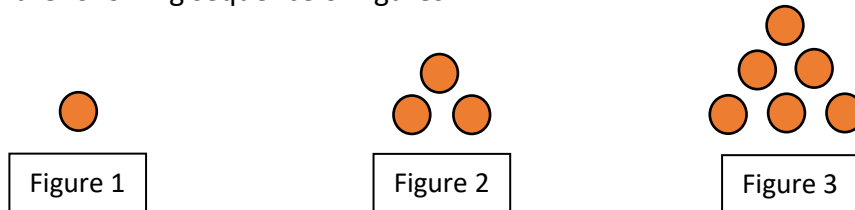
- A) 86.4 square units
- B) 144 square units
- C) 150 square units
- D) 240 square units
- E) Not enough information provided



7) We have a  $9 \times 9 \times 9$  cube divided in smaller  $1 \times 1 \times 1$  cubes. The small cubes are either black or white, and they never share an edge with another cube of the same color. If the cubes on the eight corners of the large cube are all black, how many total black cubes are there?

- A) 360
- B) 363
- C) 365
- D) 368
- E) 369

8) Consider the following sequence of figures:



How many dots will there be in *Figure 10*?

- A) 10
- B) 28
- C) 36
- D) 55
- E) 65

## 2023 6<sup>th</sup> Grade Math Contest

9) Oliver and Chloe find \$5 on the ground.

Oliver: "That's 25% of what I have."

Chloe: "Well, it is 10% of what I have."

After they pick up the \$5, how much money do they have now altogether?

- A) \$6.75
- B) \$17.5
- C) \$18
- D) \$70
- E) \$75

10) Which of the following expressions is equivalent to  $-3\text{⚙}(5\text{♥} - \text{🎵}) + 6\text{🎵}\text{⚙} - 2\text{⚙}$  ?

- A)  $-8\text{⚙}\text{♥} + 10\text{⚙}\text{🎵} - 2\text{⚙}$
- B)  $-8\text{⚙}\text{♥} + 4\text{⚙}\text{🎵} + 6\text{🎵}\text{⚙} - 2\text{⚙}$
- C)  $9\text{🎵}\text{⚙} - 2\text{⚙} - 15\text{⚙}\text{♥}$
- D)  $3\text{⚙}\text{🎵} - 15\text{⚙}\text{♥} - 2\text{⚙}$
- E)  $-15\text{⚙}\text{♥} + 4\text{⚙}\text{🎵} + 6\text{🎵}\text{⚙} - 2\text{⚙}$

11) What is the area of the triangle with vertices  $A(0, -3)$ ,  $B(0, 6)$ , and  $C(8, 2)$ ?

- A) 9 square units
- B) 12 square units
- C) 24 square units
- D) 36 square units
- E) 72 square units

12) In a different country, car license plates consist of three different digits (the first one cannot be 0), followed by two letters. Only the first ten letters of the alphabet can be used. For example, 120-AB would be valid, but 012-DQ would not because it starts with 0 and contains a letter that is not among the first 10 of the alphabet. How many different license plates can they make with that system?

- A) 50,400
- B) 64,800
- C) 81,000
- D) 90,000
- E) 100,000

## 2023 6<sup>th</sup> Grade Math Contest

13) We have a four-digit number such that the product of its digits is 105. What is the sum of its digits?

- A) 16
- B) 15
- C) 11
- D) 7
- E) 6

14) Qinghua, a psychology student, was interested in studying her dreaming patterns. Last month, she recorded 28 total dreams. Of the 28, 15 involved dogs, 16 involved cats, and four involved no animals. What is the minimum number of Qinghua's dreams that involved both cats and dogs?

- A) 4
- B) 7
- C) 8
- D) 9
- E) 15

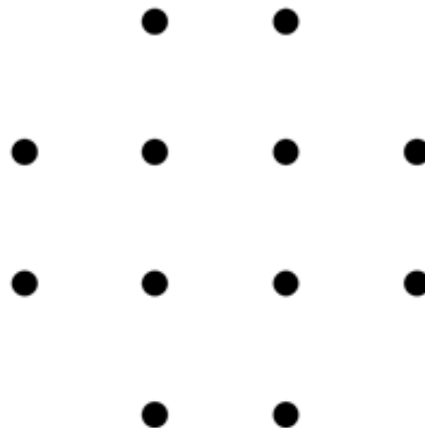
15) If we remove one-half of two-thirds of the total squares that make up the figure below, how many squares are we left with?

- A) 10
- B) 8
- C) 6
- D) 4
- E) 2



16) How many squares can we draw using the points on the grid as vertices?

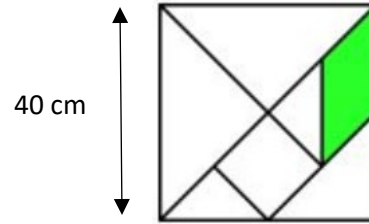
- A) 4
- B) 5
- C) 9
- D) 10
- E) 11



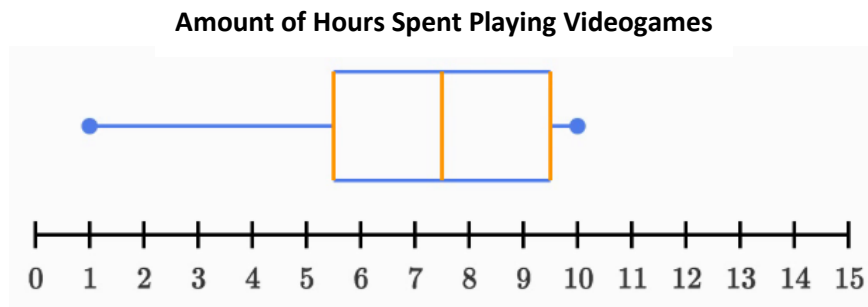
## 2023 6<sup>th</sup> Grade Math Contest

17) The side of the large square in the following figure is 40 cm long. What is the area of the shaded quadrilateral?

- A)  $16 \text{ cm}^2$
- B)  $20 \text{ cm}^2$
- C)  $200 \text{ cm}^2$
- D)  $228.57 \text{ cm}^2$
- E)  $320 \text{ cm}^2$



18) The following box plot represents the amount of hours Mr. Mario's students spent playing videogames last weekend.

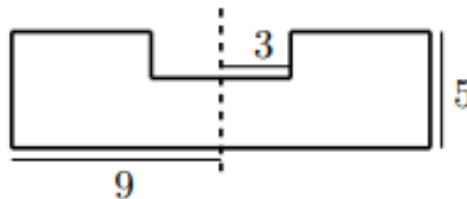


What was the mean amount of hours that Mr. Mario's students spent playing videogames over the weekend?

- A) 5.5
- B) 7
- C) 7.5
- D) 9.5
- E) We cannot know the answer from the box plot provided

19) The figure below is symmetrical about the dotted line. If its perimeter is 50 cm, what is its area?

- A)  $50 \text{ cm}^2$
- B)  $72 \text{ cm}^2$
- C)  $78 \text{ cm}^2$
- D)  $90 \text{ cm}^2$
- E)  $135 \text{ cm}^2$



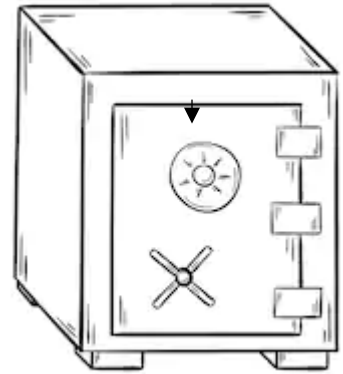
## 2023 6<sup>th</sup> Grade Math Contest

20) Ms. Trust just bought a new safe that uses a combination lock with the ten numerical digits (ordered clockwise) and a mark right over the lock. Some instructions to open it for the first time were included with it:

- Start with number 5 on the mark
- Turn 3 numbers in the clockwise direction
- Turn 2 numbers counterclockwise
- Turn 6 numbers counterclockwise
- Turn 9 numbers to the clockwise
- You should hear a click and be able to open your new safe now!

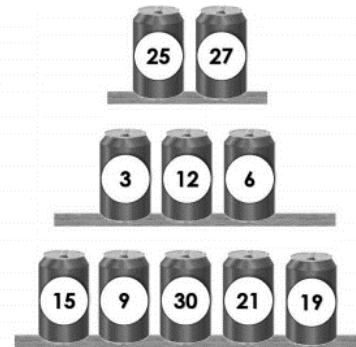
What is the sum of the numbers that make up the combination to open the safe?

- A) 10
- B) 12
- C) 15
- D) 20
- E) 28



21) At a funfair game, you win a prize if you score exactly 50 points by throwing baseballs at some numbered cans (the numbers indicate the amount of points you earn by hitting each can). How many cans do you have to hit in order to win a prize?

- A) 2
- B) 3
- C) 4
- D) 5
- E) It is impossible to win this game

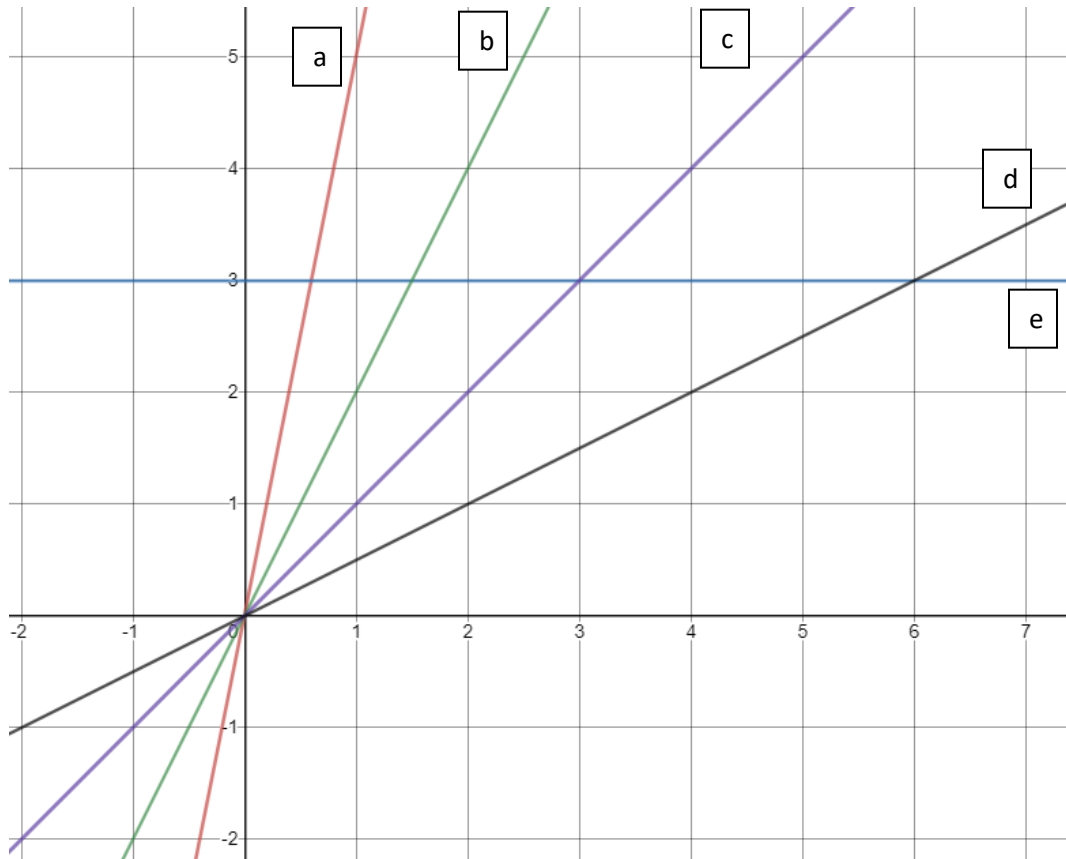


22) In a Spartan mud run, the ratio of participants who finished to those who did not was five to eight. If a total of 65 runners finished, how many participated?

- A) 88
- B) 104
- C) 135
- D) 153
- E) 169

## 2023 6<sup>th</sup> Grade Math Contest

23) Which of the lines below contains the point  $(65\frac{2}{3}, 131\frac{1}{3})$ ?



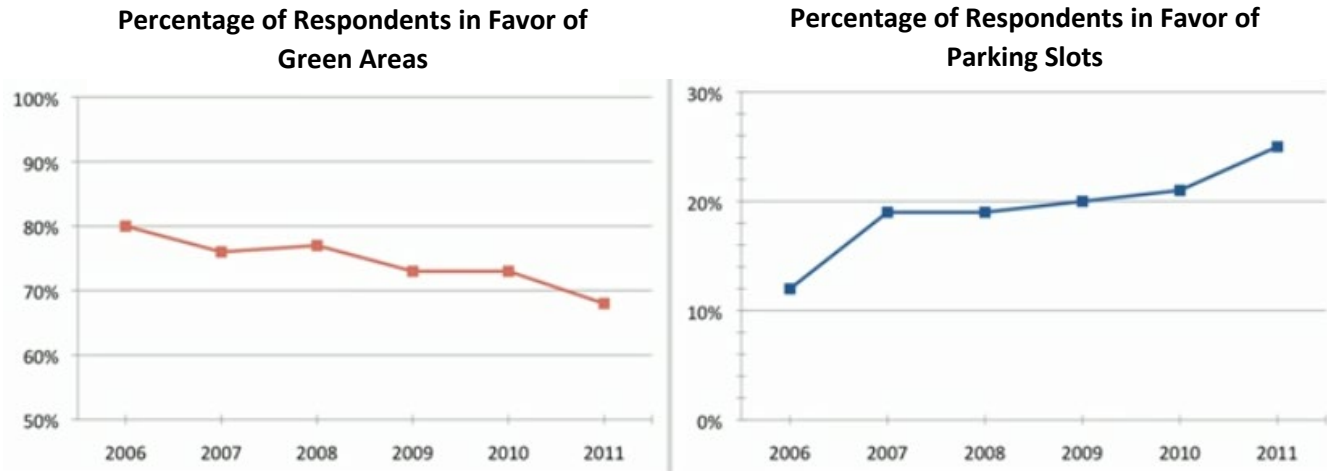
- A) Line a
- B) Line b
- C) Line c
- D) Line d
- E) Line e

24) Emily and Tolu go to the gym together. When they train push-ups, Tolu does a fixed number plus as many as the day of the month they are on. Emily always does five more push-ups than Tolu. On February 22, Emily did 42 push-ups. What is the fixed amount of push-ups that Tolu does?

- A) 10
- B) 15
- C) 22
- D) 37
- E) 79

## 2023 6<sup>th</sup> Grade Math Contest

25) For six consecutive years, a survey was conducted to identify the locals' opinion about whether they thought their city needed more green areas or more parking slots. The following graphs represent the results of the survey.

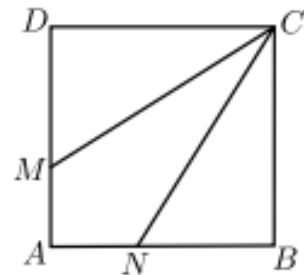


Which of the following statements is true about the results?

- A) Every year, more people were in favor of green areas than in favor of parking slots.
- B) Every year, more people were in favor of parking slots than in favor of green areas.
- C) More people were in favor of green areas than in favor of parking slots in 2006, but this changed the following years.
- D) In 2011, more people were in favor of parking slots than in favor of green areas.
- E) It is impossible to know whether any of the previous statements is correct without knowing the actual amount of respondents.

26) The square  $ABCD$  is divided in three sections with the same area. If  $\overline{DA}$  is 3cm long, what is the length of  $\overline{NB}$  ?

- A) 0.5 cm
- B) 1 cm
- C) 1.5 cm
- D) 2 cm
- E) 2.5 cm





## 2023 6<sup>th</sup> Grade Math Contest

27) When a barrel of water is missing 30% of its content, it contains 30 liters more than when it is 30% full. What is the total capacity of the barrel?

- A) 40 liters
- B) 50 liters
- C) 65 liters
- D) 75 liters
- E) 100 liters

28) Your classmate Tom Riddle is throwing a birthday party. In the invitation, it says that he lives in Privet Drive, but the house number is not listed. However, he did include the following clues for you to find it:

- The house number is prime
- It is also between 10 and 30
- When you divide it by 6, the remainder is 1
- When you divide it by 4, the remainder is 3

What is the number of Tom Riddle's house?

- A) 11
- B) 13
- C) 19
- D) 23
- E) 25

29) We want to split a wheel of cheese that weighs  $\frac{3}{4}$  of a kilogram in portions of  $\frac{1}{8}$  of a kilogram. How many portions will we have?

- A) 4
- B) 6
- C) 8
- D) 12
- E) 24



30) Mei walked for 15 minutes from her house to Ralf's house. She spent 25 minutes at Ralf's house. She walked 10 minutes to the store. She bought groceries at the store. She walked 10 more minutes to get home. What one additional piece of information is needed to find how many minutes Mei was gone from her house?

- A) How long she was at the store
- B) At what time she left
- C) How fast she walked
- D) How far apart the Mei and Ralf's houses are
- E) Something not listed in the previous options