2nd Rochester Area Math Competition 2020

12 September 2020

Elementary I Individual

1. The time is 9:00 am. Kat just set her orbeez in a bowl to grow. It takes 4 hours for the orbeez to grow to full size. What time will it be once the orbeez grow to full size? Express your answer as abcd, where ab:cd is the time since midnight. For instance, 10:00 AM is 1000 and 5:30 PM is 1730.

2. Let a, b, and c be the next 3 terms in the following sequence in that order.

$$9, 10, 12, 15, 19, 24, ...$$

For reference, the first 9 terms of the sequence are $9, 10, 12, 15, 19, 24, a, b, c$. Find $a + b + c$.

3. Alex writes 10, 11, and 12 on a whiteboard. If he erases one of the numbers, what is the largest possible sum of the remaining numbers?

4. Sunny Farms Market stand sells apples in bags with the same price per bag. If 10 bags cost 20 dollars, how many dollars do 5 bags cost?
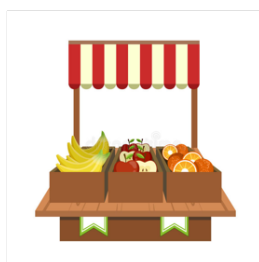
5. Molly arrived at work at 8 : 00 AM. Her morning routine that day only consisted of taking 30 minutes to get out of bed, 20 minutes to get ready, 35 minutes to eat breakfast, and 50 minutes to drive to work. How many minutes after midnight is the latest possible time she could have woken up?

6. At a party hosted by Elias, there were 4 pizzas with each pizza cut into 8 slices. After Elias and all his guests each took a slice of pizza, there were still 5 slices left. How many guests came to Elias's party?

7. How many different segments pass through at least 3 of the 16 points in the grid below?
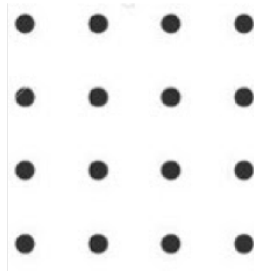
8. Toby, Sparky and Dexter share 20 dog biscuits. Toby ends up eating the same number of dog biscuits as Sparky and Dexter combined. If Sparky eats two more dog biscuits than Dexter, then how many dog biscuits does Dexter eat?

9. Chris is mowing his tiny rectangular lawn. The perimeter of his lawn is 88 feet and the length of the shorter side is 20 feet. If Chris can mow 10 square feet in 1 minute, how many minutes will it take for Chris to mow his entire lawn?

10. In a faraway place called Flanway, the money used can be divided into floops, flops, and flips. One floop is worth 3 flops and 4 flops are worth 5 flips. If you are buying a fan worth 12 floops but you only had flips, how many flips would you have to pay?

11. What is the smallest possible positive difference between any two of these values?

    (a) 5x9x0x8
    (b) 2x3x1
    (c) 1x9x3
    (d) 1x3x5

12. A square rug has a side length of 2 yards. What is the area of the rug in feet? Note that 1 yard is equal to 3 feet.

13. Amelia has 89 cents left to pay at the candy store after using a gift card. She has quarters, nickels, and pennies. What is the smallest number of coins she can use to pay the 89 cents?

14. Candice chooses a piece of candy from her teacher's prize bucket. In the bucket, there are 7 caramels, 3 lollipops, and 5 truffles. She randomly picks one candy. The probability she chooses a lollipop can be expressed as a fraction in the simplest form, $\frac{m}{n}$, where m and n are positive integers with no common divisors other than 1. What is m+n?

15. A band director is figuring out how he wants to place the chairs in the audience. The number of chairs he has is fewer than 100 and greater than 15. When he puts the chairs into rows of 2, there is one left over. When he puts the chairs into rows of 5, there are two left over. Finally, when he puts the chairs into rows of 7, there are none left over. How many chairs does the band director have?