

2nd Rochester Area Math Competition 2020

12 September 2020

Elementary I Team

1. The school supplies store distributes pencils equally among the classes at RMC Academy. How many pencils are left over when 54 boxes of 36 pencils each are distributed among the 52 classes?
2. The arithmetic mean of 25 different numbers is 100. One of the numbers, 24, is removed from the set. What is the arithmetic mean of the new set of numbers, rounded to the nearest whole number?
3. Amy went to a department store to buy jackets. The department store has a sale of 20% off all orders above \$50. If she buys 5 jackets that originally cost \$23 each, then sells them on qBay for \$34 each, how much money will Amy make, assuming there was no tax at the department store?
4. Lucas starts driving from his house at 1:00 and drives at a constant speed of 60 mph without stopping. He arrives at Costco at 1:20. How many miles did he drive from his house to Costco?
5. Melissa always goes to the library on only numbered dates that are multiples of 3 or 5. From September 7 to November 28, how many days does Melissa go to the library?
6. 400 students are attending an Art of Sciences Camp. Each student takes one of 5 courses: Math, Writing, Physics, Chemistry, or Computer Science. The table below describes the distribution of the courses for the 400 students:

Course	Math	Writing	Physics	Chemistry	Computer Science
Number of Students	108	72	68	88	64

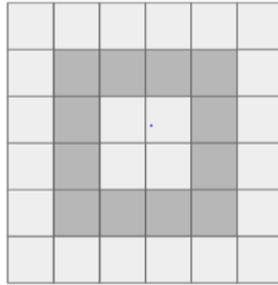
Two students are randomly selected. The probability that the first student selected is taking a math course and that the second student selected is taking a physics course can be expressed as a simplified fraction $\frac{m}{n}$, where m and n are positive integers that share no common factors other than 1. Find $m + n$.

7. Let x and y satisfy the following two equations.

$$7x + 9 = 3012 = 3y - 48$$

Suppose that Howard has a garden in the shape of a regular pentagon with side length x and Alicia has a garden in the shape of a regular octagon with side length y inches. What is the positive difference between the perimeter of their gardens in inches?

8. A 5 by 5 grid of square tiles is shown below, with some tiles in light gray and other tiles in dark gray. The ratio of lighter gray tiles to darker gray tiles can be written as a simplified fraction $\frac{m}{n}$, where m and n are positive integers that share no common divisors other than 1. What is $m + n$?



9. Juniper the jumping bug loves drinking nectar from daisies. There are six daisies in the garden. In how many different ways can Juniper visit all six daisies one by one?



10. How many ways are there to arrange the four integers 1,2,3, and 4 in a row so that no two numbers right next to each other have a sum of 5? A number may only be used once in each row arrangement.