

Bergen County Math League

Good Luck to You



Good Luck to All

Contest #3

2021-2022

12 minutes

Questions 1 & 2

- 3-1. What is the greatest difference in the perimeters of two rectangles whose sides have integral lengths and whose area are both 25?
- 3-2. What are five positive integers whose mean and median are both 5 and whose only mode is 8?
[Note: Write the numbers in ascending order.]

Bergen County Math League

Good Luck to You



Good Luck to All

Contest #3

2021-2022

12 minutes

Questions 3 & 4

- 3-3. If x and y are acute angles whose sum is 60° , what is the largest possible value of $(\tan x)(\tan y)$?
- 3-4. In a 75m race, if Ace give Flash a 15m head start, Ace and Flash will tie. If Flash gives Speedy a 15m head start, Flash and Speedy will tie. At these rates, how many meters head start should Ace give Speedy for Ace and Speed to tie in a 75m race?

Bergen County Math League

Good Luck to You



Good Luck to All

Contest #3

2021-2022

12 minutes

Questions 5 & 6

- 3-5. If f and g are linear functions such that $g(f(x)) = 2x + 6$, and the graph of $y = f(g(x))$ passes through the origin, what is the value of $f(g(2021))$?
- 3-6. Two perpendicular diameters are drawn in a circle, as shown. From an endpoint of one of them, chords that intersect the other diameter at different points drawn are as shown. The horizontal diameter splits one of the chords into a 2:1 ratio and the other into a 3:1 ratio. What is the square of the ratio, bigger to smaller, of the lengths of the two chords?

