

Bergen County Math League

Calculators Permitted

Good Luck to You



Good Luck to All

Contest #5

2025-2026 12 minutes

Questions 1 & 2

- 5-1. Two bags each contain an equal number of red balls and yellow balls. Zoe randomly selects one ball from each bag. When asked if she has a yellow ball, she truthfully replies that she does. What is the probability that she also has a red ball?
- 5-2. In acute triangle ABC , \overline{BP} and \overline{CQ} are altitudes. If $AP = x$, and $PC = 2x - 6$, $AQ = 8$, and $QB = x - 5$, find the numerical value of $\cos A$.

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Questions 3 & 4

- 5-3. What is the base of the number system in which the numeral 92 represents a number that is 4 times the number represented by the numeral 29?
- 5-4. The lengths of the bases of a trapezoid are 14 and 2. Find the length of the line segment which is parallel to the bases, has its endpoints on the legs, and partitions the trapezoid into two regions of equal area.

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Questions 5 & 6

- 5-5. Find the coordinates of both points in the rectangular coordinate plane which lie on the graph of the equation $2x - 3y + 6 = 0$ and which are also equidistant from the coordinate axes.
- 5-6. A function f , defined for every integral value of x , satisfies the rule $f(x) = x \cdot f(x - 1)$. Find the numerical value of $f(5)$.