Bergen County Math League

Good Luck to You  **Good Luck to All**

Contest #2 **2021** **12 minutes** **Questions 1 & 2**

2-1. A man born in the year x^2 died, on his 87th birthday, in the year $(x+1)^2$. In what year was he born?

2-2. A series of 7 books was published at 9-year intervals. When the 7th book was published, the sum of the publication years was 13,601. In what year was the 4th book published?

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Contest #2 **2021** **12 minutes** **Questions 3 & 4**

2-3. What are all two-digit positive integers in which the difference between the integer and the product of its two digits is 12?

2-4. In an isosceles triangle, the perpendicular bisector of a leg passes through the midpoint of the base. If the length of this leg is 10, how long is the square of this base?

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Contest #2 **2021** **12 minutes** **Questions 5 & 6**

2-5. Semicircles drawn on each side of a triangle have areas of 9π, 16π, and 25π. What is the area of the triangle?

2-6. In the coordinate plane, the graphs of the equations

$x^2 + y^2 - 4x + 6y - 12 = 0$ and $y = ax^2 + bx + c$

Have exactly 3 points in common. Two of these points are $(-3, -3)$ and $(7, -3)$. All possible coordinates of the third point are (x, y). What are all such ordered pairs?