Problem 1. In a recent football game, team $A$ had three times as many points as team $B$. $B$ then scored another touchdown (7 points), after which $A$ had twice as many points as $B$. What was the combined score of the two teams after that touchdown?
Problem 2. What is the maximum number of dots you can choose from a 3 by 3 grid of dots, if no 3 of the chosen dots can be in the same row, the same column, or the same diagonal?
Problem 3. Find $\sum_{p=1}^{\infty} \left(\sum_{q=1}^{\infty} \left(\frac{1}{3}\right)^q\right)^p$. 
Problem 4. How many 1s are in the base 2 expansion of the number whose base 8 expansion is 2017?
Problem 5. How many ordered pairs of positive integers \((x, y)\) satisfy \(x + y \leq 100\)?
Problem 6. What is the largest number of lines you can draw through \((0,0)\) in the \(xy\)-plane with the property that the angle between any two of them is the same?
Problem 7. How many of the coefficients of \((2x + \frac{1}{2}y)^8\) are integers, after simplifying?
Problem 8. What is the length of the shortest path in the $xy$-plane that starts at $(1, 1)$, touches the $x$-axis, and ends at $(2, 2)$?
**Problem 9.** If $x$ and $y$ are positive integers satisfying $\ln(x + y) = \ln(x) + \ln(y)$, what is $x^2 + y^2$?
Problem 10. Start with a circle of radius 1 centered at $(0,0)$. Draw two lines making an angle of $30^\circ$ with the $x$-axis. Drop perpendiculars from these lines to the points $(\pm 1, 0)$ and $(0, \pm 1)$. Join the perpendiculars along the $30^\circ$ lines to form a closed polygon.

What is the perimeter of this polygon?