



Problem of the Week

Problem B and Solution

The Puzzler

Problem

The Puzzler is the world's latest superhero. He uses his immense brain to win all battles by solving a series of math problems. He needs your help to solve the following problems.

Use a calculator to help when needed. You may also want to look up words like *consecutive* and *sum*.

- (a) The numbers 3, 5, and 7 are three consecutive odd numbers that have a sum of $3 + 5 + 7 = 15$.
What are three consecutive odd numbers that have a sum of 399?
- (b) What are three consecutive even numbers that have a sum of 5760?
- (c) What are four consecutive whole numbers that have a sum of 2022?

Solution

- (a) The sum of the three consecutive odd numbers 3, 5, and 7 is $3 + 5 + 7 = 15$. We notice that $15 = 3 \times 5$ and 5 is the middle number. It seems that to find the middle of three consecutive odd numbers with a certain sum, we may divide that sum by 3.
Let's try using this to solve the problem. We note that $399 \div 3 = 133$. Therefore, the middle number could be 133. Then the first number would be 131 and the third number would be 135. The sum of these numbers is indeed $131 + 133 + 135 = 399$. Therefore, the three consecutive odd numbers are 131, 133, and 135.
- (b) We will use a process like in (a). Noting that $5760 \div 3 = 1920$, we see that three consecutive even numbers could be 1918, 1920, and 1922. The sum of these numbers is indeed $1918 + 1920 + 1922 = 5760$. Therefore, the three consecutive even numbers are 1918, 1920, and 1922.
- (c) Using a similar process, when we divide 2022 by 4 we get 505.5. Since 505 and 506 are the closest whole numbers to 505.5, they may be the two middle numbers. The four consecutive numbers may be 504, 505, 506, and 507. The sum of these numbers is indeed $504 + 505 + 506 + 507 = 2022$. Therefore, the four consecutive numbers are 504, 505, 506, and 507.