



Try these problems before watching the lesson.

1. Compute the sum of the first 99 positive integers.
2. The arithmetic mean of 12 numbers is -3 . What is the sum of the 12 numbers?
3. What is the smallest positive multiple of 135 that is a perfect square?
4. For how many ordered pairs (x, y) of positive integers do we have $xy = 105$?



First Problem: The arithmetic mean of 11 numbers is 78. If 1 is subtracted from the first, 2 is subtracted from the second, 3 is subtracted from the third, and so forth, until 11 is subtracted from the eleventh, what is the arithmetic mean of the 11 resulting numbers?

Second Problem: The sum of five consecutive, positive even integers is a perfect square. What is the smallest possible integer that could be the least of these five integers?

Third Problem: In how many ways can 15,015 be represented as the sum of two or more consecutive positive integers written ascending order?

 Follow-up Problems

5. The arithmetic mean of 23 consecutive integers is 14. What is the smallest of the integers?
6. What is the arithmetic mean of all the 4-digit numbers with units digit 1?
7. Explain why the sum of the smallest n positive odd integers is n^2 .
8. The sum of nine consecutive positive multiples of 5 is a perfect cube. What is the smallest possible integer that could be the least of these nine multiples of 5?
9. For how many positive integer values of k does the sum of the first k positive integers evenly divide $24k$?

 Share Your Thoughts

Have some thoughts about the video? Want to discuss the problems on the Activity Sheet? Visit the MATHCOUNTS Facebook page or the Art of Problem Solving Online Community (www.artofproblemsolving.com).