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Activity Sheet for the November, 2019, MATHCOUNTS Mini

Warm-Up!

Try these problems before watching the lesson.

1. The arithmetic sequence
$$3, 7, 11, \ldots, 83$$
   has 21 terms. What is the middle term?

2. An arithmetic sequence with 14 terms has 31 and 33 as its middle two terms. What is the largest term of the sequence?

3. What is the arithmetic mean of all the integers from -10 through 10?

4. At Forlorne Middle School, a student needs a 94% average to earn an A. Ty Wan has 4 test scores in mathematics: 94%, 93%, 96%, and 91%. What is the lowest percent score he could earn on his fifth test and still earn an A?

The Problems

First Problem: So far, Ricardo has scores of 13, 17, 19 and 21 points for the first four rounds of a dice game. What does he need the total score to be for the next two rounds combined in order to achieve an average score of 20 points per round for all six rounds?

Second Problem: The sum of six consecutive integers, the least of which is 30, can also be written as a sum of five consecutive integers. What is the greatest of these five integers?

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Follow-up Problems

5. In his last game of bowling, Roberto earned a score of 241, and his average score increased from 205 to 209. What score would he have needed in the last game to increase his average to 211?

6. An arithmetic sequence of 41 integers has a sum of 2009. If there is only one one-digit integer in the sequence, what is the one-digit integer?

7. When 210 is written as the sum of the greatest possible number of consecutive *positive* integers, what is the largest of these integers?

8. For a set of 10 numbers, removing the largest number decreases the average by 1. Removing the smallest number increases the average by 2. What is the positive difference between the largest and smallest of these ten numbers?

Wow! 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).