



Try these problems before watching the lesson.

1. In how many ways can 9 be written as the sum of three distinct positive integers?  
Note:  $1 + 3 + 5$  and  $5 + 1 + 3$  are counted as different ways.
2. In how many ways can 12 be written as the sum of three distinct positive integers?  
Note:  $1 + 3 + 8$  and  $8 + 1 + 3$  are counted as different ways.
3. Compute  $\binom{6}{2}$ .
4. In how many ways can 7 be written as the sum of three positive integers? Note:  $1+3+3$  and  $3+1+3$  are counted as different ways.




**First Problem:** In how many ways can 18 be written as the sum of four distinct positive integers? Note:  $1 + 3 + 5 + 9$  and  $5 + 1 + 3 + 9$  are counted as different ways.

**Second Problem:** In how many ways can 18 be written as the sum of four positive integers? Note:  $1 + 3 + 5 + 9$  and  $5 + 1 + 3 + 9$  are counted as different ways.

 *Follow-up Problems*

5. In how many ways can 19 be written as the sum of four distinct positive integers?  
Note:  $1 + 3 + 5 + 10$  and  $5 + 1 + 3 + 10$  are counted as different ways.
6. In how many ways can 24 be written as the sum of four positive integers such that exactly two of the integers are the same? Note:  $1 + 3 + 10 + 10$  and  $10 + 1 + 3 + 10$  are counted as different ways.
7. In how many ways can 19 be written as the sum of five positive integers?
8. In how many ways can 30 be written as the sum of five positive even integers?

 *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](http://www.artofproblemsolving.com)).