Name:

Date:

Easy

Problem 1.

Mr. Jian is counting backward by 7s starting from 100 (i.e. $100, 93, 86, \ldots$). What is his 10th number?

Solution.

Problem 2.

When three positive integers a, b, and c are multiplied together, their product is 100. Suppose $a < b < c$. In how many ways can the numbers be chosen?

Solution.

Moderate

Problem 3.

How many positive integers can fill the blank in the sentence below?
"One positive integer is _____ more than twice another, and the sum of the two numbers is 28."

Solution.

Problem 4.

In how many ways can the letters in **BEEKEEPER** be rearranged so that two or more **E**s do not appear together?

Solution.

Challenging

Problem 5.

How many ways are there to split the integers 1 through 14 into 7 pairs such that in each pair, the greater number is at least 2 times the lesser number?

Solution.

Problem 6.

Let A, M, and C be nonnegative integers such that $A + M + C = 10$. What is the maximum value of $A \cdot M \cdot C + A \cdot M + M \cdot C + C \cdot A$?

Solution.