

Problem Solving 1

One. There are 1001 pennies lined up on a table. I come along and replace every second coin with a nickel. Then, I replace every third coin with a dime. Finally, I replace every fourth coin with a quarter. How much money is on the table?

Two. If you write out the numbers from 1 to 1000, how many times will you write the digit 7?

Three. A group of people decided to make up a 100s chart in different ways.

- Mr. Carlson shaded the numbers divisible by 2.
- Esther marked the numbers divisible by 3 with a check in the upper-right corner.
- Uncle Basil circled the numbers divisible by 5.
- Larry marked the numbers divisible by 7 with an X in the upper-left corner.
- Oswald underlined the prime numbers.

1. Did at least one symbol or marking appear on all 100 numbers on the chart?
2. Which numbers had the most symbols? How many symbols did these numbers have?
3. If the chart went beyond 100, what would be the smallest number that has Mr. Carlson, Esther, Uncle Basil, and Larry would all mark?
4. Is there a number greater than 100 that all five people would mark? Explain your response.

Four. One hundred pigeons are to be housed in identical cages under the following conditions:

- Each cage must contain at least one pigeon.
- No two cages can contain the same number of pigeons.
- No cages can go inside any other cage.

What is the maximum number of cages required to house the pigeons?

Five. Ten blocks are arranged as shown in the image. Each letter represents a number. The sum of the numbers on any three consecutive blocks is 19. What is the value of S?

