



Problem of the Week

Problem A

Colouring Box

Mysha was playing with a blank 10 by 10 grid on white paper.
She wants to create a pattern that follows these rules:

The top left square of the grid is square 1.

Mysha counts along a row from left to right. From the end of one row, she moves to the leftmost square in the row below and continues counting.

Starting with the 5th square on the top row, she adds red to every 5th square.

Starting with the 7th square on the top row, she adds blue to every 7th square.

Starting with the 9th square on the top row, she adds yellow every 9th square.

If a square is part of more than one pattern, then the colours will mix together to make a new colour, according to the following rules:

- Red mixed with blue will make purple.

$$\boxed{\text{R}} + \boxed{\text{B}} = \boxed{\text{P}}$$

- Blue mixed with yellow will make green.

$$\boxed{\text{B}} + \boxed{\text{Y}} = \boxed{\text{G}}$$

- Yellow mixed with red will make orange.

$$\boxed{\text{Y}} + \boxed{\text{R}} = \boxed{\text{O}}$$

- How many squares of each colour will there be in the grid when Mysha finishes filling in the patterns?
- After finishing her colouring, how many squares of the grid are still white?