

Problem of the Week
Problem B and Solution
Stanley's Sticky Note Stacks

Problem

Stanley has stacks of sticky notes in three colours: yellow, pink, and green. At the start of the week, the ratio of the number of yellow to pink to green sticky notes is $9 : 5 : 2$. Each day Stanley leaves 3 yellow and 2 green sticky notes on his friend's desk, but no pink. After several days he runs out of green sticky notes and exactly 30 pink sticky notes remain.

(a) How many sticky notes of each colour did Stanley start with?

(b) For how many days did Stanley leave sticky notes for his friend?

(c) How many yellow sticky notes remain?

(d) Stanley then bought 50 more green sticky notes and found one extra green sticky note in his bag. What is the ratio of the number of yellow to pink to green sticky notes now? Give your answer in the simplest form.

Solution

(a) The ratio of yellow to pink to green sticky notes is $9 : 5 : 2$. So, for every 9 yellow sticky notes, there are 5 pink sticky notes and 2 green sticky notes. We will call 9 yellow, 5 pink, and 2 green sticky notes a 'set' of sticky notes.

Since Stanley only leaves yellow and green sticky notes on his friend's desk, the number of pink sticky notes has remained the same, namely 30. Thus, since there are 5 pink sticky notes in a set, he must have started with $30 \div 5 = 6$ sets of sticky notes.

So, he must have had $6 \times 9 = 54$ yellow sticky notes, and $6 \times 2 = 12$ green sticky notes.

Therefore, Stanley started with 54 yellow, 30 pink, and 12 green sticky notes.

(b) Since Stanley used up all 12 of his green sticky notes and left 2 each day, he left notes for his friend for $12 \div 2 = 6$ days.

(c) Since Stanley left 3 yellow sticky notes each day for 6 days, he used $3 \times 6 = 18$ yellow sticky notes in total. Thus $54 - 18 = 36$ yellow sticky notes remain.

(d) There are now 36 yellow, 30 pink, and 51 green sticky notes left. Thus, the ratio of the number of yellow to pink to green sticky notes is now $36 : 30 : 51$. This simplifies to $12 : 10 : 17$.