

Question:

Ram uses a lot of pens. He discovered that he can save money by mixing the ink from five empty pens to make one full pen. If he buys 25 pens and then uses them to make new pens when the ink runs low how many total pens does he get to have?

Reasoning + Answer:

<think> Ram gets 25 pens and he can make $25 / 5 = 5$ new pens by using the empty pens. He therefore ends up with $25 + 5 = 30$ pens. After writing in those for a while, $30 / 5 = 6$ more pens have to be made. Thus, he has $30 + 6 = 36$ pens when that happens. He then writes in those pens until they are half gone, at which point, he has $36 / 2 = 18$ new empty pens. Thus, he can make $18 / 5 = 3$ more pens (we round down because he can't make a pen if there isn't enough ink for a full one). Thus, he ends up with $18 + 3 = 21$ pens after that process. He repeats this once more, this time ending up with $21 / 2 = 10$ empty pens. Therefore, he makes $10 / 5 = 2$ more pens before ending up with $10 + 2 = 12$ pens. This means that he will repeat the process one last time, ending up with $12 / 2 = 6$ empty pens. Thus, he will make $6 / 5 = 1$ more pen, and will have $6 + 1 = 7$ pens. Since he will now use up those pens as well, his final total is $7 + 36 = 43$ pens. </think><answer>43</answer>