4-Step Problem-Solving Method Example

Miss. George has 120 markers and 30 pieces of paper to give to her students. What is the largest # of students she can have in her class so that each student gets an equal # of markers and equal # of paper? How many markers and pieces of paper will each student get?

**Understand the Problem:**

**Given:**

* 120 markers and 30 pieces of paper to give out

**Required:**

* What’s the most students she can have and be able to give each student an equal amount of markers and paper
* How many markers and pieces of paper will each of those students get

**Make a Plan:**

In this question, I know I have 120 markers and 30 pieces of paper that must be shared/divided amongst however many students Miss. George has, so that each student gets an equal amount. I know that if I have to split things into smaller sections, it means the question is asking me to find the greatest common factor. To do this, I will divide the markers and paper into groups by doing the prime factorization of 120 and 30 using factor trees. Next, I will arrange the prime factors of 120 and 30 into a Venn Diagram and look for the prime factors they have in common, which will be the numbers in the overlapping area of the Venn Diagram. To find the greatest common factor, I will multiply the prime factors that 120 and 30 have in common (the numbers in the overlapping area). The greatest factor that 120 and 30 have in common will tell me the most students that Miss. George can have in her class and be able to give each student an equal amount of markers and paper. Once I know how many students are in Miss. George’s class, I will have to figure out how many markers and pieces of paper each of those students will get. To determine this, I will divide 120 and 30 by the greatest common factor (maximum number of students) to determine how many markers and pieces of paper each of the students will receive.

**Carry out the Plan:**

See board example

**Solution:**

For this problem, I had to figure out the largest number of students Miss. George can have in her class so that each student gets an equal number of the 120 markers and 30 pieces of paper she has in her classroom. Because I was asked to split markers and paper into smaller groups, I decided to find the greatest common factor of 120 and 30, using prime factorization. The greatest common factor of 120 and 30 is 30, therefore, the most students that Miss. George can have in her class is 30. Additionally, I had to figure out how many markers and pieces of paper each student would receive. To figure this out I decided to divide the total number of markers and total number of pieces of paper by the maximum number of students in her class. If the 120 markers and 30 pieces of paper are divided evenly amongst her 30 students, each student will get 4 markers and 1 sheet of paper.