Factor by Grouping Step by Step Lesson

Problem: Factor: $2x^2 + 10x + 5x - 20$

Step 1: Determine if all the four terms have anything in common between them. Does a greatest common factor (GCF) exist? In this case, all four terms only have 1 in common. This does not help us make progress.

Step 2) We will start to approach the terms by grouping them together. If we consider the first two terms together and the last two terms together, we can make so progress.

$$2x^2 + 10x \mid + 5x - 20$$

We will determine a GCF for both sides. On the left side, we can see that 2x is GCF which would leave us with x +5. On the right side 5 is our GCF, this leaves us with x – 4. We would then state the GCF of each group outside of the parentheses and what is left inside. So, this will be restated as:

$2x^2 + 10x + 5x – 20 = 2x (x +5) + 5(x -4)$

Step 3) We need to determine if any factors remain or if we can further simplify. In this case our final solution is already in the most simplified form as:

$2x (x +5) + 5(x -4)$