**Sample Journal**

**Step 1:**

I need to find out how many true equations are possible and tell what they are.

**Step 2:**

* I need to use single digits 0-9 one time in all the spaces
* I can’t use zero
* All equations must be true.
* Can’t have a 4-digit answer
* Carried over numbers don’t count in the spaces

**Step 3:**

On Monday night when I sat down to solve this, I knew what I was supposed to find but wasn’t so sure where or how to begin. I decided to just try random numbers, placing them in the spaces, but it seemed to be taking a long time and I was erasing like crazy, so I figured there had to be an easier way!

On Tuesday, my friend Laura and I talked about the problem and she said she tried using Uno cards in the spaces. Of course! But when I got home I couldn’t find my Uno cards, so I just made some number cards using post-it notes. It was a better strategy than yesterday because today I was doing a lot less erasing! I quickly realized that randomly guessing and checking was still taking too much time, so I began really thinking about where to place the cards…sort of how a person plans their strategy for chess or checkers—thinking ahead! By planning my moves I was able to find two solutions pretty quickly (see my diagram on the ‘Tuesday’ page).

On Wednesday, my friend Laura came over to my house and we talked about what each of us had so far, then we continued on since we were doing the same strategy using the Uno cards. As we worked, it hit me that I couldn’t place the nine in the hundred’s spot because the final answer would be four digits and the rule stated that the answer couldn’t be 4 digits. We also discovered that the sum of the digits in the answer added up to 18! That was a really cool finding and made finding more solutions even easier!

Finally, on Thursday, I noticed that from each solution I could arrange the numbers to get 8 more! I found a total of 20 solutions, but I think there are probably many more. In the end, I was proud of how I went from feeling overwhelmed to coming up with many solutions, as well as patterns. The best part is that I had fun doing it!

**Step 4:**

I reviewed every solution I found, making sure each of them followed the ‘rules’ of the problem—all of them are true equations and each of them uses the digits once. I didn’t try any other strategies to prove my answers this time.