Number and Operations in Base Ten

Cluster A: Use place value understanding and properties of operations to perform multi-digit arithmetic.[1]

[1] A range of algorithms may be used.

Standard: 3.NBT.A.2. *Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.*

Standards for Mathematical Practice:

SFMP 2. **Reason abstractly and quantitatively.**
Students build on previous experiences with concrete materials to apply efficient algorithms to adding three-digit numbers.

SFMP 6. Attend to precision.
Students consider place value and add accurately.

SFMP 7. Look for and make use of structure.
Students apply their understanding of place value to work to make the greatest (or least) sum.

Goal:
To provide practice with adding and subtracting whole numbers.

Planning:

Materials: Deck of cards (with 10 and face cards removed), paper and pencil

Sample Activity:
Ask students to draw the following on a piece of paper:

　 _____　 _____　 _____

+ _____　 _____　 _____
_____

Randomly choose a card and say the number on the card. Students write that digit on one of the lines on their papers. Once a digit has been recorded, it cannot be moved. Repeat until 6 numbers have been drawn. The object is to get the greatest (or least) sum. Play several times.

Questions/Prompts:

Following each round, ask students to describe how they decided where to put the digits. Talk about how they can be sure the greatest possible sum was found (or maybe not).

Change the object of the game to finding the lowest sum. Discuss how that changed students' strategies.

Another variation of the game is to subtract and look for the greatest (or least) possible difference.

Differentiating Instruction:

Struggling Students: This game should be played after students have had enough experience with concrete representations and explicitly connecting those experiences to written equations. Students who have not yet mastered the algorithm can play and should explain their strategies for adding.

Play adding a three-digit number and a two-digit number.

Be sure to recognize answers that may not be the greatest sum and give students opportunities to explain their work.

Extension: Extend the game to more than two addends or to using four-digit numbers.