Place the Digits

Place the Digits is a classic math game that can be used to develop place value concepts and language in grades 2-3.

Original source: About Teaching Mathematics: A K-8 Resource by Marilyn Burns

Materials needed:
1) gameboard – can project on screen to play as a class, have students draw in their notebooks or on small whiteboards or use paper copies of the gameboard in plastic sleeves with non-permanent markers
2) digit generator – a 0-9 dice or spinner

Instructions:
Can be played with the whole class or in small groups.
1) The dice is rolled or the spinner is spun. The digit/numeral is called out and recorded on a chart or whiteboard.
2) Students need to decide where to place the digit. Once they place it in a box, it cannot be changed. Each row has four choices/places. Each row comprises one game. The digit in the discard box does not count as part of the three-digit number but is strategic choice for students in the game – which digits are worth discarding?
3) Three more digits are generated until all four spots have been filled.
4) Students each read aloud the number they have recorded.
    a. You could choose to record all the numbers in order with tally marks indicating how many of each student recorded that number – this could lead to both data analysis and strategy conversations. (What was the most common number recorded? Why do you think so many students recorded that number?)
5) Ask which students think they have the number with the greatest value and choose one or two students to explain and justify their claim. When class agrees on the greatest number, students with that number can place a mark beside that row to indicate they "won" that game.
6) Repeat.

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After a game, the teacher can ask questions to promote thinking, comparing numbers and reflection such as:

    a. What would have been the number with the least (smallest) value that we could have made with these digits?
    b. What would you need to change in your number to make it the number with the greatest value possible? Least value possible?
    c. If you added 10 (20, 50, 200 etc) to your number, what would it be?
    d. What kinds of numbers are in the discard boxes?
    e. What strategy will you try for the next game?

Note: Model and practice not using the word "and" when reading numbers such as 327. It should be read as three hundred twenty-seven, not three hundred and twenty-seven. When reading numbers in most languages and in the "metric" system, the use of "and" refers to the decimal point or separation of whole and fractional numbers.

BC Mathematics Curricular Content and Competencies:
- number represents quantity (numbers to 1000)
- the place a digit/numeral is in determines its value or quantity
- the place values increase in magnitude ten times each place to the left
- relative magnitude and range of numbers
- reading and writing numbers
- the likelihood of rolls/spins (it is not likely that all four rolls will be nines)
- use reasoning to explore and make connections
- develop, demonstrate and apply mathematical understanding through play
- communicate mathematical thinking
- use mathematical vocabulary and language
- explain and justify mathematical ideas and decisions

Different ways to play:
The game can be adapted to use at the end of grade one, beginning of grade two with only tens, ones and discard columns. The game can be played with the goal of creating the number with the least possible value or a value "between" the greatest and least possible value. The game can be extended to use in grades 4&5 by increasing the number of places to include thousands and ten thousands. It can also be used with decimal numbers

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100s	10s	1s	discard

The number with the greatest value I made was _____.
A strategy I used was _____.