**Level: Gr 6/7**

**Category: Numeracy**

**Title of Lesson: Getting to from .001 to 1 000 000 000**

**Goals/Objectives:**

Big Idea: • small to large numbers (thousandths to billions)

Curricular Content:

• number concepts from .001 to 1 000 000 000

• addition and subtraction of decimals

Curricular Competencies: visualizing and representing number; communicating number

**Materials Needed:**

* Deck of Cards
* Decimal Card Game Scoresheet Template: <https://cdn.shopify.com/s/files/1/0955/2452/files/Decimal_Place_Value_Score_Sheet.pdf?4442265917995204357>

**Task Instructions: (Step by Step)**

**Activity 1: Visualizing and Decomposing Numbers**

Choose a number: 0.352 or 5.786 or 10 000 or 500 000 000

What different ways can you represent the number?

Try and think of at least five different ways.

Consider using symbols, pictures, words, grids/arrays, equations, etc.

Choose a number: 0.875 or 3.649 or 1 000 000 000

What ten different ways can you decompose it?

Decompose means break into parts (ie. 20 can be decomposed into 10 and 10 or 10

and 7 and 3 and many other ways).

How will you show your thinking?

Choose an amount: $999.85 or $999 999

What are some different ways can you make this amount with bills and/or coins?

What are three items that cost about this much?

**Activity 2: Fluency Practice**

**Decimal Place Value**: Number of players: 2-4

1. Shuffle the deck of cards. Be sure that all face cards and Jokers have been removed. Place the deck of cards in a pile facedown in the center of the table.

2. Each player takes a turn taking one card from the top of the pile. Players place the card face-up directly in front of them so that all players can see each card that has been drawn.

3. Each player looks at the number on the card that he/she drew from the pile. Then, each player looks at "Round 1" on their score sheet to decide which place value to assign the number. The player can only write that number under one place value column (hundreds, tens, ones, tenths, hundredths, or thousandths). Players should not show their opponents where they wrote the number on their score sheet. Once each player has written down the number in a place value column, it cannot be changed at any point during the game.

In this game, drawing the 10 card does not represent 10, but represents the number 0.

4. Players repeats steps 1-3 until all 6 place value columns have been filled in (which means that 6 cards should have been drawn by each player).

5. Players show their final number to their opponents to determine who has written the highest number.

6. The player with the highest number must read his/her decimal aloud correctly (i.e. one hundred and seven thousandths, not one hundred point zero zero seven) in order to score the points.

If the player with the highest number reads his/her decimal aloud correctly, he/she gets 1 point for the round. The other players do not get any points.

If the player with the highest number does not read his/her decimal aloud correctly, he/she does not get any points. Every other player gets 1 point for the round.

7. Place all of the used cards back into the pile of cards and shuffle the entire pile again. Begin the next round by repeating the same steps. Play ends after 10 rounds have been played.

**Activity 3: Open Question**

If you are given the digits 1 to 9, make an addition question and a subtraction question that must include decimals to the hundredth. What is the biggest answer you can make using each digit only once (and no zero value numbers allowed)?

How do you know it is the biggest?

Can you visually show how you know this is the biggest?

Example: 937.64 – 521.80 = ? or 9 376.45 – 52.18 = ?

**Activity 4: Representing a Billion**

If you haven’t had too much screen time, check out this video where Humphrey Yang counts out 10 000 grains of rice to help visualize the difference between a million and a billion!

<https://www.youtube.com/watch?v=fWa6Ypc91lA>

What questions does that video make you think about?

Did you realize the gap between a millionaire and a billionaire was so huge?
How might you represent a billion?

How long would it take you to count a billion grains of rice?

**Adaptations/Adjustments: (consider different environments)**

-Look at the activities in the Grade 5 Week 1 Lessons

**Extensions (Optional):**

-Extend activities to 10 000 000 and beyond.

References:

SD38-Janice Novakowski

https://www.weareteachers.com/math-card-games/