3: LESSON PLAN - Nmbr9

LEARNING AIMS	Students will: ● Engage in cooperative play ● Reflect on their own logical and spatial reasoning ● Gain a basic understanding of game mechanics, rules, fundamental gameplay, scoring, strategies, cooperative principles, increase mental math skills, number sense skills ● Logical reasoning: **Investigating** the game to learn how to create good, legal moves – getting to know the game (W1) ● Spatial reasoning: **Tactilizing** (touching, manipulating, moving around, testing out) with the tiles to figure out how to place tiles and how to fit tiles together – getting to know the game (W1) ● Logical reasoning: **Analyzing** tiles for creating effective table layer (level 0) (W2) ● Spatial Reasoning: **Fitting** tiles in order to effective table layer (level 0) (W2) ● Logical reasoning: **Modifying** earlier strategies to increase points by building higher levels (W3) ● Spatial Reasoning: **Arranging** tiles on discrete (individual) levels but aware of relationship between levels to build higher levels (W3)
MATERIALS	● Enough copies of Nmbr9 for your class (3-4 students per game) ● Nmbr9 Scorecard (one per student) ● Condensed rules sheet - Nmbr9 How to Play ● ½ in grid paper (build game board on it)
SPECIAL CONSIDERATIONS	● Grouping the students in either the same or different groups as last class. ● One round of Nmbr9 game play takes approximately 20 minutes.
LESSON ACTIVITIES	1. Last class, you focused on **fitting** tiles together to create a strong base level. As you **analyzed** your boards, some of you spent time developing a strong base while others decided to try and score points earlier on. Today, you're encouraged to **modify** strategies for building a good base and **arrange** your tiles strategically to figure out a good time to start moving up from your base (level 0) and build higher for more points! What strategies do you have that you can **modify**? What does that mean? What do you think about when **arranging** your tiles? Is it different from **fitting**? Let's see how a good base and higher levels are related: Starter image. Navya gave us a good strategy to think about! And what about the two different starting boards? (prompts on starter image). Tiles, turns and points -- what is your winning strategy? The challenge is on: what's the highest level you can get to?

	For the reflection sheet today, please answer Question #1 after you have placed your first tile on **level 1** (not the base level). 2. Divide students into their groups. 3. Hand out the reflection sheet so students know what questions to think about. Encourage them to choose one round of the game and answer the questions (could get through 2 rounds in one class). 4. Teacher circulates and prompts student discussion of strategies. Encourage students to ask each other the questions listed on the "How to Play" sheet (see below). a. Why did you choose to place that piece there? b. Could you have tried a different strategy? c. How many points did that move equate to? 5. At the end of the game time, encourage students to complete the reflection sheet.
QUESTIONS/ REFLECTIONS	Questions for students/prompts: Focus for Week 3: ● What is the earliest turn it becomes a good idea to start moving up levels? ● Are there any tiles that might make you wait less or more turns to start moving up to higher levels? ● What tiles do you not want to see come up in the first five turns, why? ● What tiles would you be excited to see come up in the first five turns, why? ● What is the quickest number of turns you were able to place a tile on level 2 (two levels above the table)? ● Which are the best pieces to place on level one? Are they the best because they score points or let you build higher? "Think about it for next time" Reflection Question: Seven tiles have been placed and I am still constructing my base level, am I in trouble? Why or Why not? Other questions to consider: ● Which pieces are the best for making your table layer? ● Which pieces are the worst (least favourite) for making your table layer? ● What makes a piece good or bad for creating the table layer?

	● There are 20 turns in a game, what turn do you think you **must** start building your second and third levels to get a good score? ● Is your strategy for fitting the tiles changing? Did you physically rotate or shift? Did you use the squares to help? Did you visualize? ● What is your strategy to have the least gaps? ● Did you have a good hint for another player who wasn't sure where to place his/her piece? ● How did you decide to start the next level? ● How many pieces did you have to place on Level 0 (table) before you could add your first Level 1 piece? ● How would it change the game if the tiles were double sided and you could flip them? ● How are you going to obtain the most points? ● Did the player with the highest level get the most points? ● What strategy did you use to get the most amount of points? ● How are your individual boards the same? How are they different? ● What was the most challenging part of this game? ● If you could make one change to the game, what would it be? Why? ● How many levels do you think is the maximum someone could get to for this game? ● BEFORE YOU TALLY POINTS: Compare your game board to your neighbour. Estimate who won. ● You get to design a new piece for number 10, what would you design?