4: LESSON PLAN - QUARTEX

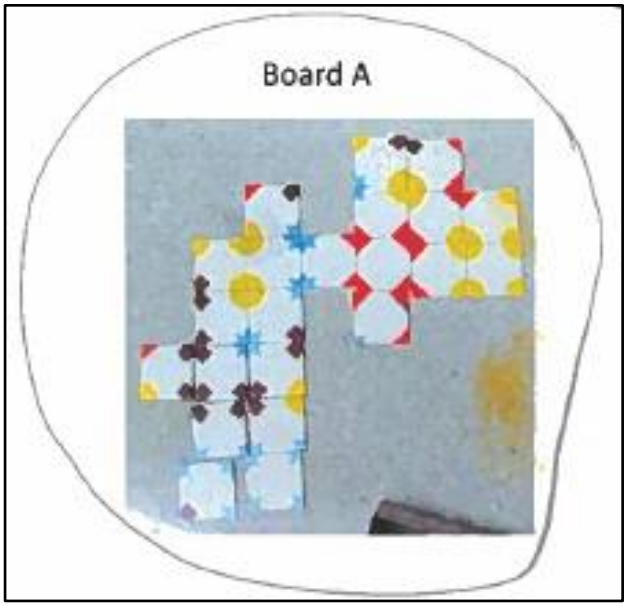
LEARNING AIMS	Students will: ● Engage in cooperative play ● Reflect on their own logical and spatial reasoning ● Gain a basic understanding of game mechanics, rules, fundamental gameplay, scoring, strategies ● Logical reasoning: **Investigate** the game to learn how to create good, legal moves (W1) – getting to know the game ● Spatial reasoning: **Tactilizing** (touching, manipulating, moving around, testing out) with the tiles to figure out how to place tiles on the emerging board (W1) – getting to know the game ● Logical reasoning: **Predicting** future tile placements to set up scoring points (W2) ● Spatial reasoning: **Fitting** pieces onto the board in ways that complete corners to score points (W2) ● Spatial reasoning: **Visualizing** tiles to use to make good plays and **visualizing** where to place tiles for the most effective turn (W3) ● Logical reasoning: **Evaluate** configurations of game boards and **evaluate** plays (W3) ● Logical Reasoning: **Justifying** your reasoning and decision making for a move (W4) ● Spatial Reasoning: **Imagining** tiles and tile placements for optimal moves (W4)
MATERIALS	● Enough copies of *Quartex* for your class ● Scoring sheet ● Pencil for scorekeeping ● Reflection sheet
SPECIAL CONSIDERATIONS	● Organize groups according to student needs: students can play in pairs or individually up to 4 players. Encourage discussion and understanding of the game. ● One round of Quartex game play takes takes approximately 30 minutes.
LESSON ACTIVITIES	1. In last class, you were asked to focus on visualizing where the best possible placements might be for a tile. In this lesson, you are encouraged to take that thinking one step further by first **imagining** where you would place a tile, but then to **justifying** and defending why that position is the best. Try to think hard about why you are making each move. Can you explain to someone else why it is a good move? Any words used by the teacher that might help you explain to someone why your placement was the best choice? How do you think **justifying** is different than just explaining? Let's look

	at Student D's thinking from last week (which board is better) and figure it out together: *Starter Image* (see below). *[Students could count how many places they could get 1 token, 2 tokens. Students could say how to set up 3 token move the next turn. Focusing on what they would say about a "why" for never ending board idea.] [perhaps explaining is giving reasons, but justifying is saying why the reasons are true or are good ideas; also defending completely]* 2. Divide students into their groups and hand out reflection sheets. a. Reinforce knowledge of game pieces and game rules as needed. b. If students want, they could have open play, where all tiles are visible to all players or they may begin to use the shields to hide their pieces. c. Play! 3. Teacher circulates and prompts student discussion of strategies. 4. Students clean up games. 5. Students complete the reflection sheet.
QUESTIONS/ REFLECTION	Focus Prompts for Week 4: ● What steps do you go through in order to imagine what tile you might place next and where you might place it? ● When do you start imagining your next move? Is there a 'too soon' for planning your next tile placement? ● When you are thinking about placing a tile, what questions do you ask yourself before you make your move? ● Are there any criteria you have come up with that determine whether a move you are thinking of making is a good move? ● Does playing with the shields and hiding your tiles from your opponent make it easier or harder to visualize your move? Why? ● When you are planning out your move, do you need to touch any of your tiles in order to help you visualize where each piece might fit, or can you think of a move to make without touching any of your tiles? ● In other games we have played, students have created rules such as 'once you touch a piece, you have to move or play that piece'- do you think that would make Quartex harder to play? Why/Why not? ● How do you go about evaluating your opponent's move? What do you do or think of first, second, third … when you evaluate when playing a game? ● How many turns in advance do you start trying to plan your next move? ● Is there a risk in trying to predict your next move too soon? Why?

	● Which piece in your hand would you trade in for another if you could, why? ● Do you have any planned moves which include more than one of your tiles? ● Did you look at the tiles first? Board first? ● How is this game similar and different to Qwirkle? ● What are you doing to find a spot to put your tile? ● What did you say to your partner to figure out your next move? ● Do you stop after finding one spot or do you keep looking? ● If you have two good plays, how do you choose? ● How did you know you'd get a colour token that turn? How did you know you could complete a corner shape? ● What do you notice about the tiles? ● Did you know you can flip the tile over? How do the two sides compare? ● What are the most or least colours that could be on the corners of tiles? ● How are the colours on the corners of the tiles arranged? Other questions/prompts: ● When your turn starts, how do you decide what piece to play? Use drawings and words. ● Look at the board below. Let's say you're going to put your next piece in the spot where the arrow is pointing. Draw a picture of at least two different pieces that would fit there. Explain why both would fit. ● Tell me one interesting thing you learned about Quartex. Use drawings and words. ● What strategy helps you get a high score in the game? Is there something you do during the game to get a high score? ● How do you know you're an expert at Quartex? How would you know if a friend you were playing Quartex with was an expert at the game? ● A strategy I'm testing today is _____. My reason for trying this strategy is _____. ● Here's a strategy I use to set up to get a colour token (points). ● A good move/strategy that my partner shared with me today was _____. ● If you could start the game with any piece, which one would it be? Draw a picture and explain why with words. ● What are **ALL** the **DIFFERENT** ways you could place the piece pictured on the game board? Use the tiles below to show (draw). Explain how you know you have all. [Give a piece and then 12 boxes to draw in.] ● Here's what we did to find the best place to play (draw and explain).

	● Here's what we did to try to finish a shape and get a colour token (points) today (draw and explain). Here is one thing I did in the game today to finish a shape and get a point chip (use drawings and words): ● Pick a piece and examine it. Draw it below. Tell me everything about the piece you can. ● If you have two good plays, how do you choose? Use drawings and words. Convince me your choice is the best move. ● Today you learned the rules for how to find your score at the end of the game. How did that affect how you played Quartex? ● For your fourth turn, draw the tile you played. Explain why you picked that tile. Explain what you did to put it fit it on the board. ● These are two different boards that came up in your class. Circle which game board you would rather play on. Convince me **why** it's a better board! Why is the other board not as good? ● STOP when you get your first colour chip for finishing a shape! How did you first know you would finish a shape? Tell me what you did to finish the shape – use drawings and words. ● Can you tell me three things you noticed about the playing pieces? Be sure to draw pictures to help me understand! (give them three squares to draw in) ● When you're setting up, find a tile that has symmetry. Draw it: Make a dashed line - - - - - - - for any lines of symmetry. ● Find a second piece that has at least one more line of symmetry. Draw it: Make a dashed line - - - - - - - for any lines of symmetry. ● STOP when someone finishes a shape for the **first** time. Get a picture taken! How many of the four corners on a tile have to make a match on the board? Why? ● Explain a situation where you can finish three shapes at the same time (drawings and words). How many of the corners have to match? ● Do more lines of symmetry make a piece harder or easier play? Explain why (drawings and words). ● These are two different boards that came up in your class. (give 2 photos). How many spots can you complete a shape on this board? _____. How do you know you found all the spots?

Here is Student D's thinking from last class. She did a great job explaining Board A as a better board to play on!



Board A. Because there are more spaces to win a token. Also because it looks like a never ending board

What would you add to JUSTIFY?
Could you give evidence for D's reasons or say why her reason makes sense?

Reflection Sheet: Quartex

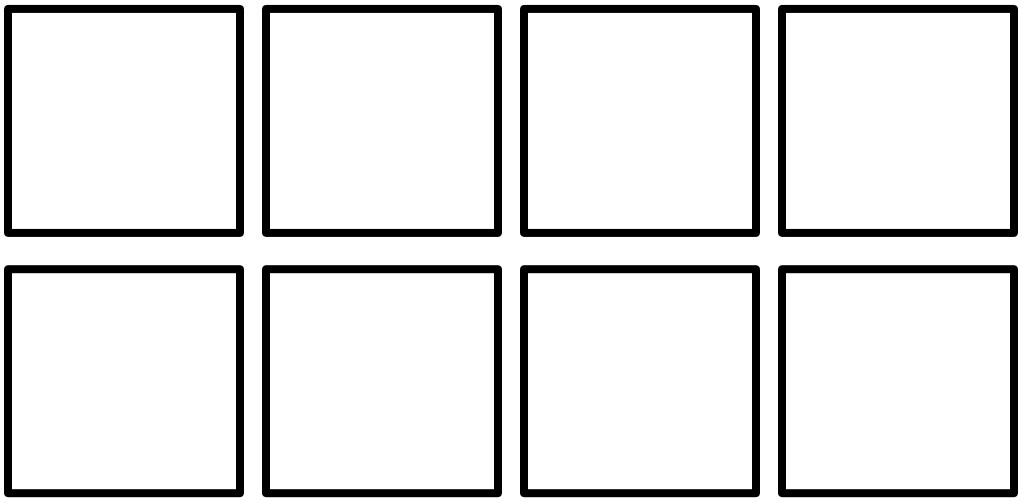
Your Name: _____ Team Members: _____

1) Justifying Placement

What did you do today to find the best place to play your tile? Justify using drawings and words.

2) Imagining Tile Movements

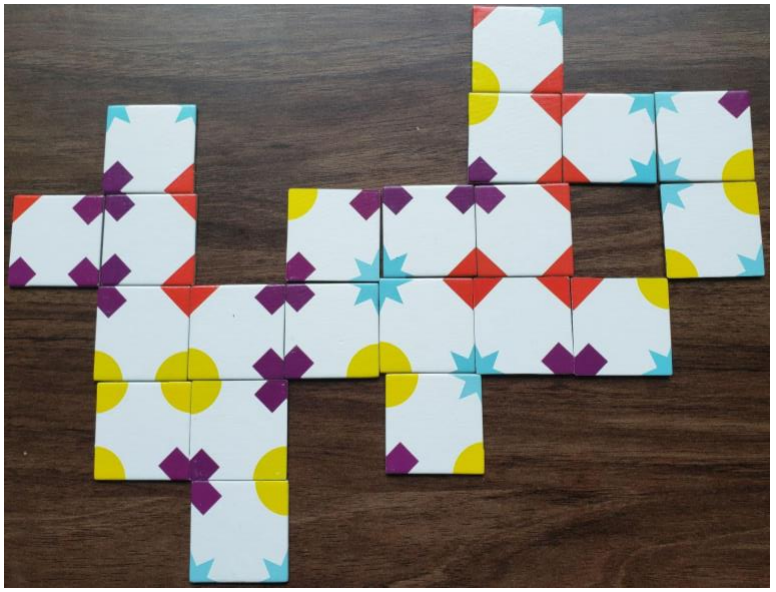
a) What are **ALL** the different ways you could place the tile pictured on a game board? Draw **ALL** the ways.



b) How do you know you have **ALL** the different ways to place the tile. Justify your drawings.

3) Imagining and Justifying

a) Draw the **best** tile you would want to play next on the game board shown.



b) Justify your choice by explaining what makes that tile the best option. Draw and write.

_____

_____

_____

_____