

I. What do we want to learn from this lesson? (*Research Lesson Goals for Teachers*)

- ❖ USE PART-TO-PART RELATIONSHIPS TO FIGURE OUT THE WHOLE
- ❖ A CLEAR UNDERSTANDING OF HOW ONE WHOLE CAN BE DIVIDED AND ITS VALUE REPRESENTED

II. The overarching Lesson Study goals are:

- ❖ TO SEE IF THE STUDENTS ARE RISK TAKERS AND CRITICAL THINKERS.

Steps of Research Lesson	Students	Teacher	Evidence of student learning/engagement	Observer’s Comments: Things to think about for next time
<p>Building a context for the lesson <i>(Connecting to meaningful things or previous lesson)</i> 4X4 GRIDS.</p> <ol style="list-style-type: none"> 1. EQUAL DIVISION OF THE GRIDS TO INCLUDE THE FOLLOWING PORTIONS: HALVES, FOURTHS, EIGHTS, AND SIXTEENTHS USING BOTH VERTICAL AND NON-VERTICAL LINES. 2. RECORD WAYS TO DIVIDE A WHOLE INTO HALVES, FOURTHS, EIGHTHS, AND SIXTEENTHS. 	<p>Doing: VISUAL AND TACTILE IDENTIFICATION OF EQUIVALENT OBJECT REPRESENTATIONS</p> <p>Thinking/Possible Questions or Misconceptions: HARD TIME DISTINGUISHING FROM THE OBJECT NOT LOOKING EQUAL TO ACTUALLY BEING EQUAL</p>	<p>Doing: PRESENTING ACTIVITY, AND CHECKING FOR STUDENT ENGAGEMENT/VISUAL CHECK FOR UNDERSTANDING OF TASK</p> <p>Possible Responses/ Questions to Pose:</p>		N/A
<p>Laying the framework for the learning experience (<i>Launching the activity</i>)</p>	<p>Doing: STUDENTS ARE TRYING TO MAKE A SQUARE WITH THE TANGRAMS</p>	<p>Doing: MONITORING PROGRESS, ASSESSING ABILITY.</p>		

	<p>Thinking/Possible Questions or Misconceptions: THE PIECES DON'T FIT. WE NEED MORE PIECES. I AM MISSING SOME SHAPES I NEED ANOTHER ONE OF THESE. USING THEIR NEIGHBORS PIECES / TRADING PIECES.</p>	<p>Possible Responses/ Questions to Pose:</p> <ul style="list-style-type: none"> ❖ YES, THEY DO. ❖ THEY ARE ALL THERE ❖ USE YOUR OWN PIECES, NO MORE THAN SEVEN ❖ JUST TRY IT ❖ TRYING IS THE WAY YOU WILL FIND OUT. 		
<p>Engaging students with concepts <i>(Exploring, investigating, problem solving)</i> IDENTIFYING TRIANGLE COMPONENTS OF A GIVEN WHOLE. WITH RESPECT TO THE FRACTIONAL WHOLE</p> <p>DIFFERENT SIZE TRIANGLES FROM 1/4 TO 1/16 SQUARE AND PARALLELOGRAM EQUIVALENT TO 1/8</p>	<p>Doing: THE STUDENTS WILL BE WORKING IN SMALL GROUPS OF NO MORE THAN 4.</p>	<p>Doing: WALKING AROUND VISUALLY ASSESSING PROGRESS CLARIFYING QUESTIONS ABOUT THE TASK.</p>		
	<p>Thinking/Possible Questions or Misconceptions: NOT SEEING THE WHOLE AS ONE. MISCOUNTING NOT ALIGNING PARTS EVENLY GOING OUTSIDE THE PERIMETER OF THE SQUARE.</p>	<p>Possible Responses/ Questions to Pose:</p> <ul style="list-style-type: none"> ❖ IS THERE ANOTHER WAY TO DO THAT? ❖ IS THAT THE ONLY WAY THAT SHAPE FITS THERE? ❖ HOW MANY SHAPES CAN FIT THERE? ❖ WHAT IS EQUAL TO THAT SHAPE? 		
<p>Sharing ideas/solutions <i>(Whole group, small group, written)</i> SMALL GROUP WORK, SELECTED INDIVIDUALS PRESENT ANSWERS</p>	<p>Doing: INTERMITTENT</p> <ul style="list-style-type: none"> ❖ BLACKBOARD USAGE ❖ OVERHEAD USAGE ❖ PAPER IDENTIFY ❖ 	<p>Doing:</p> <ul style="list-style-type: none"> ❖ ORCHESTRATING TO MINIMIZE CONFUSION ❖ 		

	<p>Thinking/Possible Questions or Misconceptions:</p>	<p>Possible Responses/ Questions to Pose:</p>		
<p>Closure/Summarizing <i>(Tying ideas together)</i> FITTING THE TANGRAM PIECES INTO A SQUARE AND IDENTIFYING THEIR FRACTIONAL VALUE.</p>	<p>Doing:</p> <p>Thinking/Possible Questions or Misconceptions: THEY DO NOT EQUAL ONE WHOLE. THEY CAN'T SEE THE EQUIVALENT RELATIONSHIP. BLIND SUBSTITUTION VS ACTUAL UNDERSTANDING</p>	<p>Doing:</p> <p>Possible Responses/ Questions to Pose:</p>		