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Lesson Plan Template

Lesson Segment Focus: Problem Solving Methods **Lesson:** 3 of 5
Course & topic addressed: Mathematics **Date:** 10/30/19 **Grade:** 4th

Student Outcomes

Specific learning objectives for this lesson.	- Be able to solve a multi-step translation problem using the Guess and Check method - Insert their data into a spreadsheet table using functions to check their math
Describe the connection to previous lessons. (Prior knowledge of students this builds upon)	- This lesson is part of section 3 of Chapter 1: Problem Solving and Reasoning - Lesson 1 was about patterns and Inductive Reasoning and lesson 2 introduced Polya's Four-Step Problem Solving Process - This lesson is the introduction to Polya's 16 Problem Solving Strategies. For the purpose of this lesson, we will be starting with Guess and Check as well as Make a Table.
Knowledge of students background (personal, cultural, or community assets)	- The school district provides each teacher with a classroom set of MacBook Pros for student use. Students have a fairly strong concept of spreadsheets from other classes/projects.

State Academic Content Standards

List the state academic content standards with which this lesson is aligned. Include state abbreviation and number & text of the standard.	- AR.Math.Content.4.OA.A.3 • Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity - AR.Math.Content.4.OA.C.5 • Generate a number or shape pattern that follows a given rule • Identify apparent features of the pattern that were not explicit in the rule itself - AR.Math.Content.4.NF.A.2 • Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as ½)

Academic Language Support

What planned instructional supports might you use to assist students to understand key academic language to express and develop their content learning?	- I will provide large, visible posters around the room that students can reference if they have trouble remembering how to convert fractions or recalling Polya's Four-Step Problem Solving Method. - I will be clear and concise when reading the problem to the class, and allow students to ask questions if necessary before they begin working.

What will you do to provide varying supports for students at different levels of academic language development?	

Key Vocabulary

What vocabulary terms/content specific terminology must be addressed for students to master the lesson?	- Strategy, Problem, Plan, Understand, Solve, Guess, Check, Fraction, Numerator, Denominator

Materials

Materials needed by teacher for **this lesson**.	- Posters for front of the class, classroom set of laptops
Materials needed by students for **this lesson**.	- Laptops, internet access, Google Spreadsheets, pencil, paper

Lesson Timeline with Instructional Strategies & Learning Tasks (This should be VERY DETAILED)

t of Time	**ng & Learning Activities**	**e what YOU (teacher) will be doing and/or what STUDENTS will be doing during this part of the lesson.**
5 min	**Introduction**:	- First I will read the problem aloud to the class - **Twenty-two years ago, Robert's daughter was ¼ his age, and his dog Rover was 2. Today Robert's daughter is ½ his age. How old are Robert and his daughter now?**
30 min	**Instruction:**	- Next, I will assist the class in breaking down each part of the question using Polya's Four-Step Problem Solving Method. - 1. Understand: ● What is asked? - How old are Robert and his daughter now? ● What is given? - Twenty-two years ago, Robert's daughter was ¼ his age - Today, Robert's daughter is ½ his age - Robert is *at least* twenty two (Can he be 22 years old though? No, you can't have a child when you're zero years old. Help the class realize that logically he probably isn't younger than 40) - Robert must be an even numbered age - His dog Rover was two years old twenty two years ago. (Is this relevant?) - 2. Plan: ● Make educated guesses and check your work

		- 3. Solve: ● I will allow the students to work independently until everyone has found the answer as I walk around the room assisting those that need further instruction - 4. Check: ● I will have the students get into groups to discuss how they got their answer. Note: I suggested that it would be wise to use the Guess and Check Method, however I encouraged students to try other methods they thought might work as well, but they still need to do the table for the spreadsheet. I will have the students compare their thought process. - Students will then leave the groups and begin creating their spreadsheets to document their data that they found from making the table, using the functions and autofill abilities to check their math
5 minutes	**Closure:**	- Once everyone has completed their table and made their graphs, we will discuss our answers and I will allow a few volunteers to show their spreadsheets on the projector and explain how they got their answer and what they did to check that it is correct (besides the spreadsheet)

Accommodations/Modifications

How might I modify instruction for: Remediation? Intervention? IEP/504? LEP/ESL?	TBD

Differentiation:

How might you provide a variety of instructional methods/tasks/instructional strategies to ensure all student needs are met?	TBD

Assessments: Formative and/or Summative

Describe the tools/procedures that will be used in this lesson to monitor students' learning of the lesson objective/s (include type of assessment & what is assessed).	☐ Formative /☐ Summative	
	☐ Formative /☐ Summative	
	☐ Formative /☐ Summative	

Research/Theory

Identify theories or research that supports the approach you used.	