

Guess my Rule - Tables

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Summary	Two children create secret rules for transforming input numbers. The teacher uses a doubling rule.
Goals	1. Simple additive functions and their inverses. 2. Learn mapping notation. 3. Name the rules; use the name of the person who made up the rule.
Materials	Overheads, Handouts
Keywords	Full Class Discussion Interpretation of Tables Production of Algebraic Expressions Production of Tables

Activity Plan:

Filling in a function table for 3 functions.

1. Completing a 3-Rule table [Whole Class]

This table will hold three different columns of output for three different rules that we use to operate on each input value.

Ask two students to volunteer. Encourage one of them to use an additive rule (for example, input + 3). The second student will always subtract a constant from the input (for example, input - 5). The teacher will use a rule to always double the input (input x 2). Keep track of the inputs and outputs on the table on Page 1.

Make sure students understand that once they pick a rule, they need to use the same rule for the whole column of the table.

Don't worry about generalizing the rule during this part of the class. We want to elicit their generalizations during the handout phase.

2. Handout

The students now take their turn at filling out the table on Pages 2 & 3, presumably with some different initial values than those tried out in the class discussion.

It is important to note how they state the rules.

3. The Students' Descriptions of the Rules [Whole Class]

Spend a careful amount of time discussing how various children tried to capture the rules. Did any use N ? Did any only specify the change, e.g. 3?

Ask them to judge which descriptions would be easier to follow for a child who was not already familiar with the rules.

Introduce mapping notation for each of the rules. Use the person's name to identify which rule you are talking about.

Erica (Student 1): $K \rightarrow K + 7$

Matthew (Student 2): $P \rightarrow P - 5$

David (Teacher): $C \rightarrow C + C$ or $C \rightarrow C \times 2$

4. Discuss (if time) function notation [Whole Class]

On Page 4 the "in" part is located between the parentheses. The name of the rule is before the parentheses.

The value is the "out" part.

	Out		
In	Student 1	Student 2	Teacher



Name: _____ Date: _____

	Out		
In	Student 1	Student 2	Teacher
5			
8			
10			
<i>N</i>			

What is Student 1's rule? _____

What is Student 2's rule? _____

What is the Teacher's rule? _____

Overhead and Handout: Now You Try It**(Page 3)**

Name: _____ Date: _____

	Out		
In	Student 1	Student 2	Teacher
100			
101			
10			
	14		
		14	
			14
15			
6			
N			

What is Student 1's rule? _____

What is Student 2's rule? _____

What is the Teacher's rule? _____

Student 1 (3) =

Student 2 (3) =

Teacher (3) =

Student 1 (14)

Student 2 (14)

Teacher (14)

Overhead and Homework: Make Your Own Rule
(Page 5)

Name: _____ Date: _____

In	Out
100	
101	
10	
	14
	20
3	
	17
6	
N	

What is your rule? _____