Advanced Algebra 3/4 Name:____________

Functions, Inverses, and Tables

Part 1: Fun with Functions!

Remember the definition of a function: A relation where each INPUT has exactly one OUTPUT.

1. Three of the following tables are functions. Identify which are functions.

x	0	1	2	3	4	5
y	9	8	7	6	5	4

Yes

x	0	1	2	3	4	5
y	9	9	9	9	9	9

Yes

x	9	9	9	9	9	9
y	5	6	7	8	3	43

No

x	0	1	2	2	1	0
y	0	1	4	4	1	0

Yes

x	0	1	2	2	1	0
y	0	1	4	-4	-1	0

No

2. How can you identify if a table is a function?

If each x has a ~~unique~~ exactly one y

3. Find the equation for at least one of the tables.

Table 1: $y = 9 - x$

4. Choose one of the tables and create a table for its inverse.

Table 1:

x	9	8	7	6	5	4
y	0	1	2	3	4	5

Part 2: Investigating Inverses

Remember the definition of an inverse: a relation where the INPUT and OUTPUT are switched.

Consider the following table. The functions f(x) and g(x) are inverses.

x	0	3	6	9	12
f(x)	6	9	3	11	0
g(x)	12	6	0	3	55

1. Explain why the functions are inverses.

   Because each (x,y) pair is reversed for the other function. Examples: f(0)=6 & g(6)=0
   f(3)=9 & g(9)=3

2. One of the following tables represents inverse functions. Identify which one and explain how you know.

Table 1

x	h(x)	k(x)
0	1	-1
1	2	0
2	9	1
9	730	2
4	65	1.4422

Table 2

x	p(x)	q(x)
0	1	-1
1	2	0
2	9	9
9	2	730
4	65	1.4422

Inverse

h(1)=2&k(2)=1, ~~f~~ h(0)=1 & k(1)=0, etc

Not

p(2)=9& g(9)=730

3. Complete the following table so that s(x) and t(x) are inverses.

x	0	3	700	5	7
s(x)	3	900	0	7	1234
t(x)	700	0	1111	9	5

Answers Vary!

4. Make a table that represents a function, but whose inverse is NOT a function. Explain why your table meets BOTH conditions

X	1	2	3	4
y	9	9	9	9

$\xrightarrow{\text{Invert}}$

X	9	9	9	9
y	1	2	3	4

Each x has 1 y

Each x has multiple Is