

Function Ball Toss – Class Handout

Table 1

x	$f(x)$
A	B
B	C
C	D
D	D

Table 2

x	$g(x)$
A	B
B	C
C	A
D	A
D	D

Table 3

x	$h(x)$
A	B
B	C
C	A

1. After the four volunteers demonstrate the action described by Table 1, complete the following problems.
 - (a) A is not mentioned in the second column. What is unique about A's interaction with the ball toss? Does this keep $f(x)$ from being a function?
 - (b) D is listed twice in the $f(x)$ column. What was different about D's interaction with the ball toss? Does this keep $f(x)$ from being a function?
 - (c) Did all the volunteers know where they were supposed to toss the ball?
 - (d) Does $f(x)$ represent a function? Why or why not?

2. After the four volunteers demonstrate the action described by Table 2, complete the following problems.
 - (a) A is listed twice in the $g(x)$ column. What was unique about A's interaction with the ball toss?
 - (b) D is listed twice in the x column. What was unique about D's interaction with the ball toss?
 - (c) Did all the volunteers know where they were supposed to toss the ball?
 - (d) Does $g(x)$ represent a function? Why or why not?

3. After the four volunteers demonstrate the action described by Table 3, complete the following problems.
 - (a) Did all the volunteers know where they were supposed to toss the ball?
 - (b) Does $h(x)$ represent a function on the domain $\{A, B, C, D\}$? Why or why not?
 - (c) Is $h(x)$ a function on a different domain? Why or why not?

4. After the four volunteers repeat the procedure described in Table 1, complete the following problems.
 - (a) Does B know who tossed the ball to him/her?
 - (b) Are there any volunteers who received balls from multiple people?
 - (c) If $f(x)$ is invertible, explain why; if not, present a modified version of $f(x)$ such that this new version is invertible.