Math Grades 8 – 12
Functions, Domain/Range

MA.8.A.1.5
M A.912.A.2.4
M A.912.A.2.3

"Fly Away"
Traditional rhyme

Directions:
The students will explore how the "Fly Away" poem above can be modeled with a function, which we shall call the `bird flying away function'. Have students read the poem and answer the following questions.

1. What is the domain, in words, of the `bird flying away function'? What is the smallest value needed in the domain of the `bird flying away function'? What is the largest value needed in the domain of the `bird flying away function'?

2. What, in words, is the range of this function? What is the smallest value needed in the range of the `bird flying away function'? What is the largest value needed in the range of the `bird flying away function'?

3. Why is the `bird flying away function' actually a function, as opposed to a non-function relation?

4. Explain, in words, what the `bird flying away function' is doing with this domain and range. What, for example, would (2, 8) mean in the `bird flying away function'?

5. Write a function that would find the number of birds remaining after *x* birds flew away.

6. Is this function one-to-one or many-to-one?

Solutions:

1. The domain is the number of birds that flew away. The smallest value needed is 0 because that would indicate that no birds flew away. The largest value needed is 10, which would mean that all the birds flew away. Note that the domain is the integers from 0 to 10 { } .
   There cannot be fractions of birds that fly away.

2. The range is the number of birds left after some flew away. The smallest value needed is 0 because that would indicate that all the birds flew away. The largest value needed is 10, which would mean that none of the birds flew away. Note that the range is the integers from 0 to 10 . There cannot be fractions of birds that are left.

3. Each element in the domain is paired with exactly one element in the range. For example, if 2 birds flew away, there is only one choice for how many birds remain, 8. If 2 birds flew away, it is not possible for any other amount of birds to be left. (2,8) represents that 2 birds flew away (domain) and 8 remained (range).

4. The `bird flying away function' is subtracting the value in the domain from 10 to give the precise value in the range.

5.

6. This function is one-to-one.