

PROBLEM 1 You Aren't Looking Like Yourself Today



Understanding patterns not only gives insight into the world around you, it provides you with a powerful tool for predicting the future. Pictures, words, graphs, tables, and equations can describe the exact same pattern, but in different ways.

A relation is a mapping between a set of input values and a set of output values. In the problem, *The Cat's Out of the Bag*, you used a visual model, graph, table, and context to describe the relation between the number of ballot counters, and the total number of seniors that learned the result of the homecoming king election. In relations such as this one, there is only one output for each input. This type of relation is called a *function*. A **function** is a relation such that for each element of the domain there exists exactly one element in the range. **Function notation** is a way to represent functions algebraically. The function $f(x)$ is read as “ f of x ” and indicates that x is the input and $f(x)$ is the output.



Directions: Cut out the relations provided on the following pages. You will encounter graphs, tables, equations, and contexts. Analyze and then sort the relations into groups of equivalent representations. All relations will have at least one match.

Attach your groupings on the blank pages that follow the cut-out pages. Then provide a brief rationale for how you grouped each set of relations.

Remember that the domain is the set of all the input values and the range is the set of all the output values.



Be careful— all groupings do not necessarily have the same number of representations. Also, remember that equations can be written in different forms and still be equivalent.



1. What strategies did you use to sort the representations into your groups?

Did you come up with more than one way to show that different representations are equivalent?



2. How do you know which relations are functions and which are not functions? Explain your reasoning in terms of the graph, table, and equation.



3. Identify the function family associated with each grouping. How can you determine the function family from the graph, table, context, and the equation?