

Module 4 Lesson 3

Math Lab: Identifying Functions

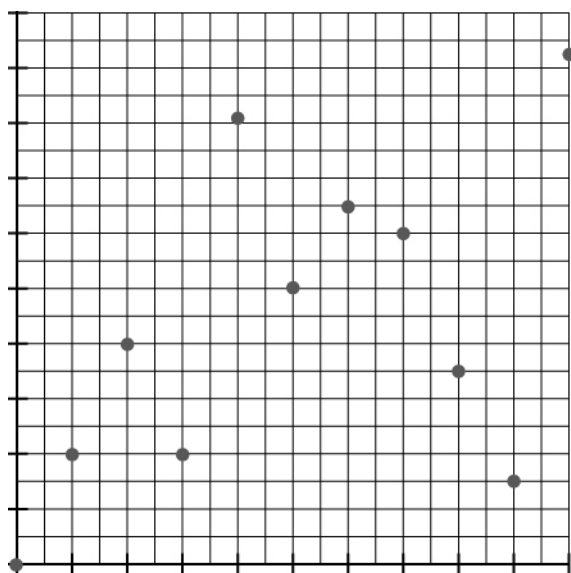
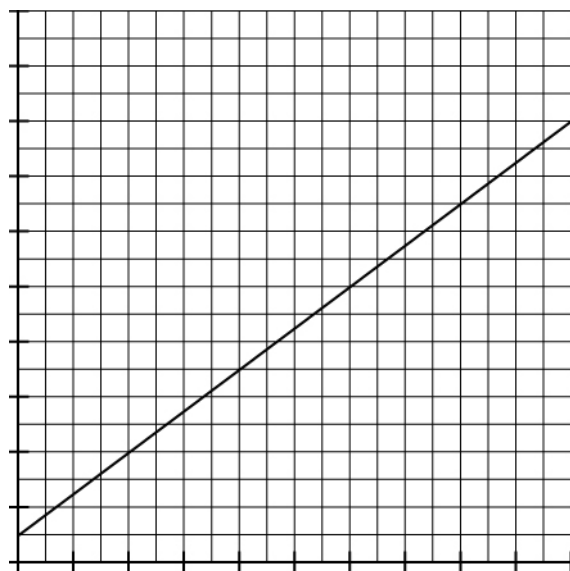
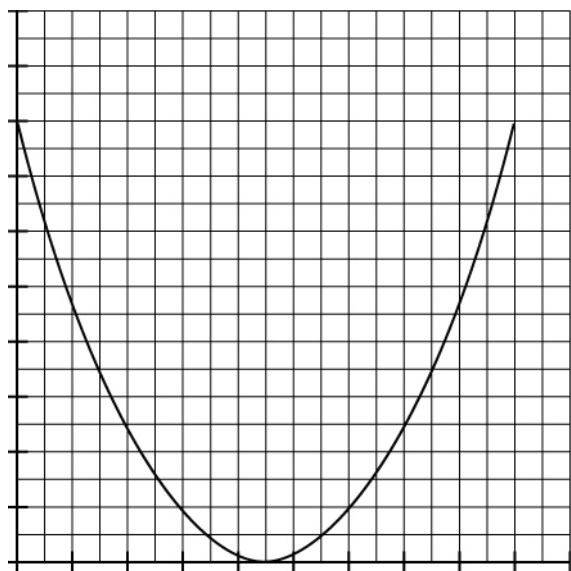
Purpose

Analyze data shown in graphs to investigate functions and relations.

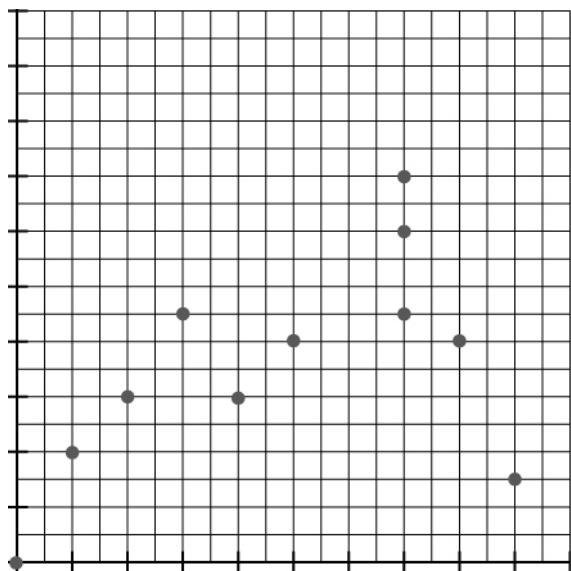
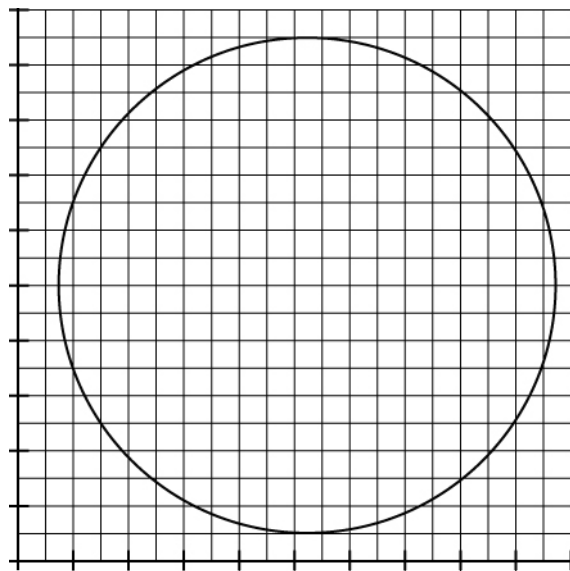
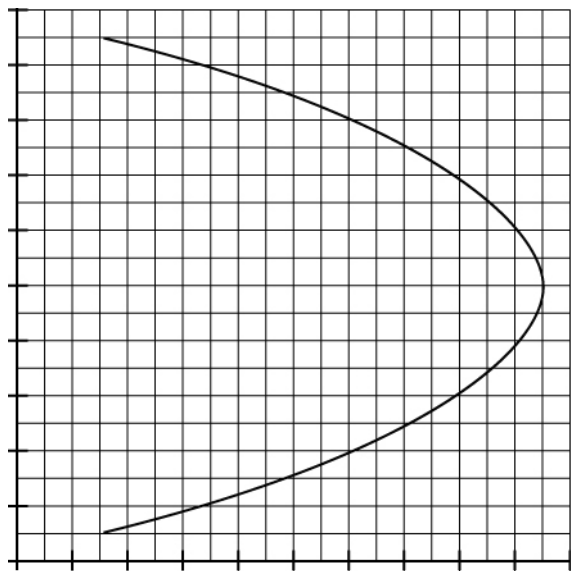
Procedure

Part A: Graph Comparison

The first set of graphs shows relations called **functions**.



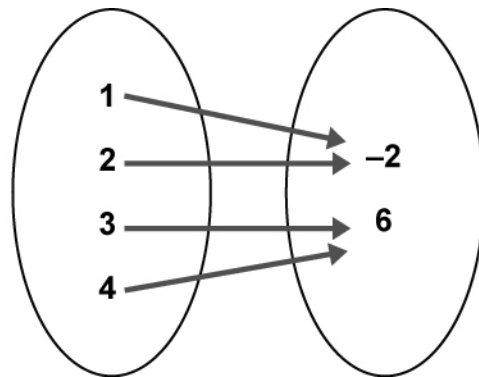
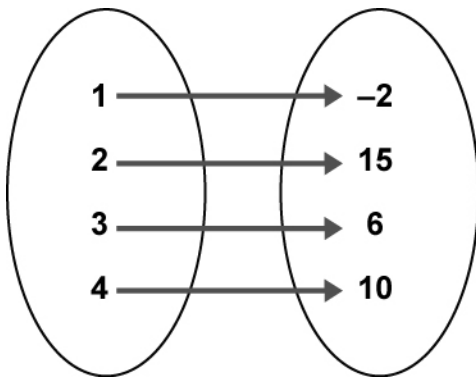
The second set consists of relations that are **not functions**.



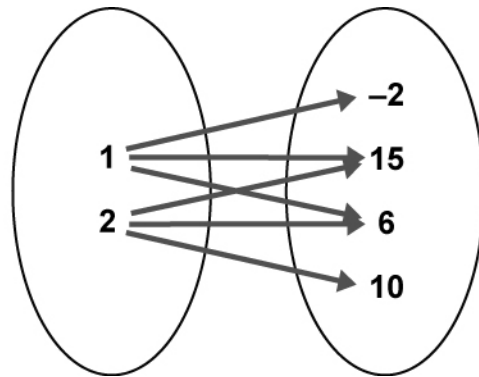
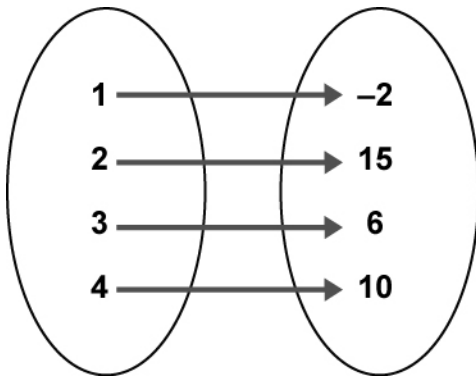
1. Study each set of graphs. Record the similarities and differences between the graphs in the two sets.

Part B: Arrow Diagram Comparisons

The first set of arrow diagrams **are functions**.



The second set **are not functions**.



2. Study each set of arrow diagrams. Record the similarities and differences between each set of arrow diagrams.

Part C: Ordered Pairs Comparison

The ordered pairs in Set A and Set B **are functions**.

$$\text{Set A} = \{(0, 3), (1, 2), (2, 5), (3, -7)\}$$

$$\text{Set B} = \{(-2, 1), (0, 4), (10, 3), (4, 5)\}$$

The ordered pairs in Set C and Set D **are not functions**.

$$\text{Set C} = \{(-2, 1), (-2, 4), (-2, 3), (-2, 5)\}$$

$$\text{Set D} = \{(0, 3), (1, 2), (1, 5), (3, -7)\}$$

3.
 - a. Study each set of ordered pairs. Record the similarities and the differences between the two sets of ordered pairs.

 - b. Construct an arrow diagram representing Set A and one representing Set D. Study the main difference between the two arrow diagrams.

Analysis

4. From your observations in Parts A, B, and C, explain how you can tell a function from a non-function when the relation is represented as

- a graph
- an arrow diagram
- a set of ordered pairs

Write your explanation in the form of a hypothesis that can be used to identify each of the relations shown above as functions or non-functions.

5. What similarities do you see among the sets of functions for graphs, arrow diagrams, and ordered pairs?
6. Construct a definition of a function based on your observations and responses to the questions in this section. Later in the lesson you will come back to this question to compare what you have learned to your initial impressions.