

# Patterns and Linear Functions Guided Notes

## Patterns and their Representations

In mathematics, anything arranged following a certain rule or a set of rules represent a pattern. The relation represented in a pattern can be represented in the following ways:

- **Table**
- **Graph**
- **Ordered Pairs**
- **Words**
- **Equation**

### Representation using table:

A table is made using the data in the patterns. There is an input and corresponding output associated with each input.

### Representation using graph:

A graph can be made using the input and output values from the patterns.

### Representation using ordered pairs:

The relationship between the data can also be represented using ordered pairs  $(x, y)$  where  $x$  represents input and  $y$  represents output.

### Representation using words:

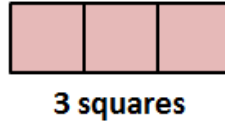
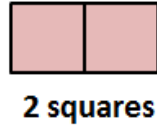
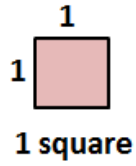
A relationship in a pattern can also be represented using words by using words for the mathematical operations like “**times**” for multiplication.

### Representation using an equation:

An equation can be used to represent the relation between variables using the equation notation like “ $y = ax + b$ ”.

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**Problem 1:** For each diagram given below, find the relation between the number of shapes and the perimeter of the figure they form. Represent this relationship using a table, words, an equation and a graph.

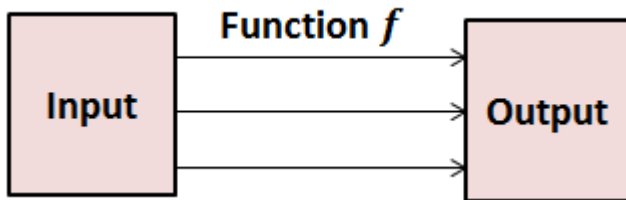


# Patterns and Linear Functions

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## Function

A function is a relation in which each input is related to one and only one output.



## Linear Function

A function is a linear function whose graph makes a line.

**Problem 2:** Identify whether the data shown in the table represents a function or not. If yes, is the function linear?

Day	Tickets Sold
1	70
2	60
3	50
4	40