Name: _____ Date: _____ Period: _____

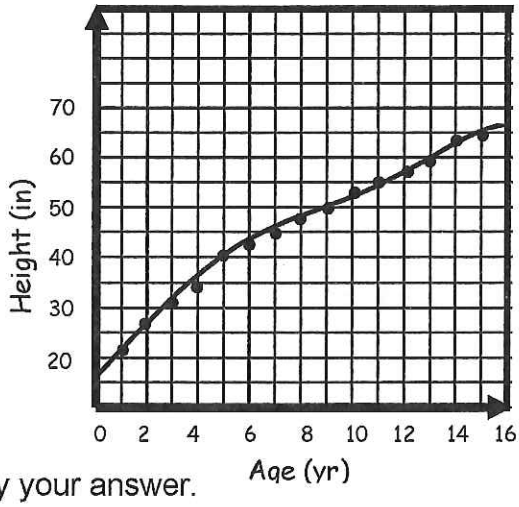
Lesson 1.02
Notes - What is a Function?

*For every x value there is one y value

Maria's parents kept track of her height on her birthday each year. They plotted the points on a graph and connected the dots with a curve. For every age you choose on the x-axis, there is only one height that pairs with it on the y-axis.

In Algebra 1, you learned that a **relation** is any relationship between two variables.

A **function** is a relationship between two variables such that for every value of the independent variable, there is at most one value of the dependent variable. A function is just a special type of relation. If x is your independent variable, a function pairs at most one y with each x.



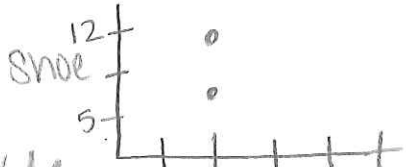
1. Is Maria's height a function of her age? Justify your answer.

Yes, because each age has only on height. She can't be 40 in & 50 in at age 4

Would the following dependent/independent variables represent a function? Justify your answer.

2. Independent: the age of a student in this class
   Dependent: the shoe size of a student in this class

(14, 10) (14, 7)



NO, two people could be the same age, but have different shoe sizes

3. Independent: an automobile in Texas (a person's car)
   Dependent: that automobile's license plate number

HC plate
auto

Yes, every automobile has a unique licence plate

4. Write your own example of a relation. Is this relation a function? Justify your answer.

_____

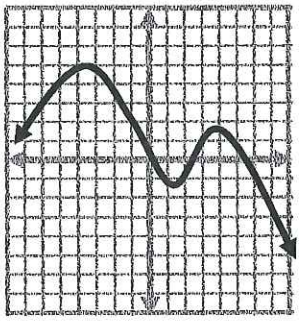
You should also remember the **vertical line test** for functions from Algebra 1. This "test" can be used to help you determine whether or not a graph represents a function. If no vertical line crosses the graph more than once, the relation is a function.

5. How could you apply this technique to the graph of Maria's height?

every year there was only one height

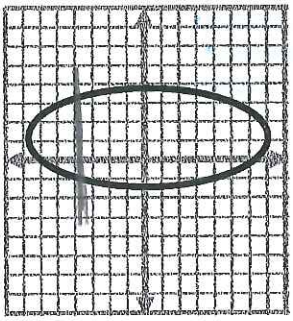
Use the vertical line test to classify the following relations. For each relation that is not a function, explain why not.

6.



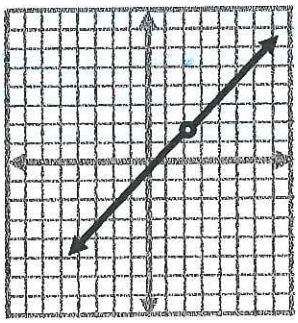
yes

7.



no, (-4, -1) (-4, 3)

8.

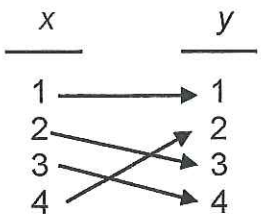


yes

Functions may also be identified by analyzing their ordered pairs in **mapping diagrams**. Mapping diagrams allow you to visually check the number of *y* values associated with any one *x* value.

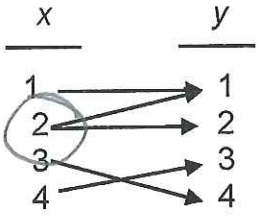
Using the definition of a function, identify each relation that is also a function. If the relation is not a function, explain why not.

9.



yes

10.



no, 2 goes to 1 and 2

11. independent: a day of the month
dependent: the time of the sunset

yes, sun sets once each day

12. independent: the time of sunset
dependent: a day of the month

no, could set at same time each day

day | time