Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

# Lesson 1.02

# Notes - What is a Function?

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.

0 2 4 6 8 10 12 14 16

Age (yr)

Height (in)

20

30

40

50

60

70

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.

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

1. Independent: the age of a student in this class

Dependent: the shoe size of a student in this class

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1. Independent: an automobile in Texas

Dependent: that automobile’s license plate number

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

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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?

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

6. 7. 8.

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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. *x*  *y* 10. *x y*

1 1 1 1

2 2 2 2

3 3 3 3

4 4 4 4

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

dependent: the time of the sunset dependent: a day of the month

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_