Name: _____ Class Hrs: ____/____

Module 6-A Study Guide

Test Date: March 14th, Pi Day

Q 1; 2 points, P (AD1)

Decide whether the relationships represented in the tables below represent a function and explain what makes it either a function or not a function. **If** the table does **NOT** represent a function, circle the ordered pairs that are the reason it is not.

Example: Part E "is" a function because: each input has exactly one output.

a)

Input (x)	−2	−1	0	1	2
Output (y)	7	1	−1	1	7

Is Is Not

Because: _____

_____

c)

Input (x)	0	4	2	4	8
Output (y)	1	2	2	1	5

Is Is Not

Because: _____

_____

b)

Input (x)	0	2	2	3	3
Output (y)	5	5	5	5	6

Is Is Not

Because: _____

_____

d)

Input (x)	8	9	11	12	13
Output (y)	1	1	2	1	2

Is Is Not

Because: _____

_____

Q 2; 2 points, P (AD4)

Each of the tables below represents a function.

Part A: Write the equation that represents each function.

Part B: Use the equation to determine the output for the new input given for each table.

PART A: Equation **PART B: New Output**

a)

Input (x)	−1	0	1	2
Output (y)	2	6	10	14

_____ If the input is 5, what is the output? _____

b)

Input (x)	−5	1	7	13
Output (y)	−8	−2	4	10

_____ If the input is 11, what is the output? _____

c)

Input (x)	−1	1	3	5
Output (y)	−3	7	17	27

_____ If the input is 7, what is the output? _____

d)

Input (x)	−5	−1	3	7
Output (y)	−9	−1	7	15

_____ If the input is 24, what is the output? _____

Q 3; 2 points, P (AD1)

Consider the relationships given below. Fill- in and circle an answer choice to make each statement true.

a) **IN A GROUP OF PEOPLE:** **Input** (x): height
Output (y): weight

The relationship _____ a function.
Is / Is Not

Because… two people that are the same height must be the same weight.
two people might have the same height, but different weight.
two people might have the same weight, but different height.

b) **IN A GROUP OF PEOPLE:** **Input** (x): eye color
Output (y): shoe size

The relationship _____ a function.
Is / Is Not

Because… two people that have the same eye color must have the same shoe size.
two people might have the same eye color but a different shoe size.
two people might have a different eye color and the same shoe size.

c) **ON A CITY STREET:** **Input** (x): a building
Output (y): its street address

The relationship _____ a function.
Is / Is Not

Because… one building can have only one street address.
two buildings can have the same street address.
one building can have more than one street address.

d) **READING ON A THERMOMETER:** **Input** (x): degrees Celsius
Output (y): degrees Fahrenheit

The relationship _____ a function.
Is / Is Not

Because… one Celsius degree can have only one equivalent Fahrenheit degree.
one Celsius degree might have more than one equivalent Fahrenheit degree.
two Celsius degrees might have the same equivalent Fahrenheit degree.

Q 4; 3 points, PP (AD1)

a) Consider the following function. Which inputs and outputs could also be part of this function? Choose all that apply. There are 3 correct answers.

A. Input; 8; Output; 7
B. Input; −7; Output; 8
C. Input; 2 Output; −6
D. Input; 9 Output; 10
E. Input; 7 Output; 5
F. Input; −1 Output; 10
G. Input; −6 Output; −2

Input (x)	−6	2	1	7	8	−2
Output (y)	2	6	10	3	6	14

b) Consider the following function. Which inputs and outputs could also be part of this function? Choose all that apply. There are 3 correct answers.

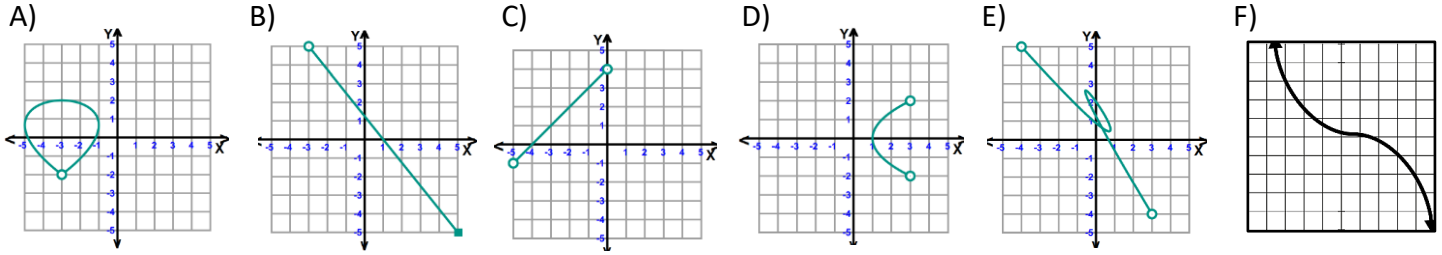
A. Input; 3 Output; 7
B. Input; 7 Output; 3
C. Input; −1 Output; 3
D. Input; 2 Output; 9
E. Input; 1 Output; 3
F. Input; 8 Output; −2
G. Input; −6 Output; −2

Input (x)	−6	2	1	−1	7	−2
Output (y)	2	6	10	3	6	14

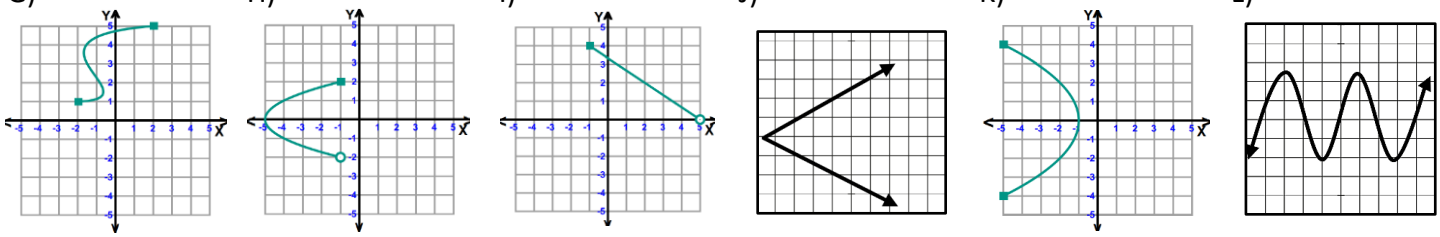
Q 5; 3 points, PP (AD1)

Circle the relationships below that represent a function.

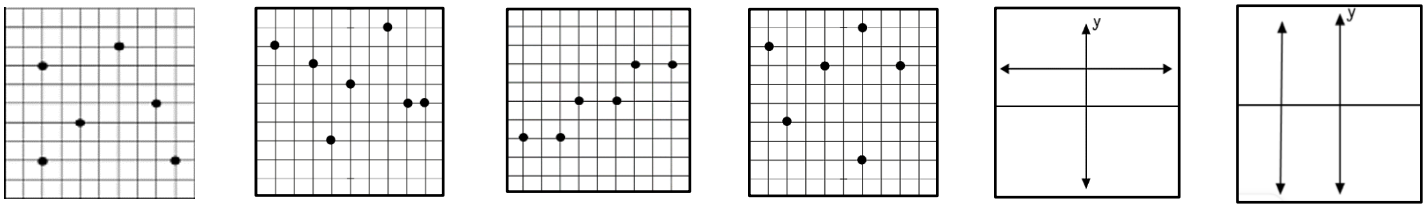
A) B) C) D) E) F)



G) H) I) J) K) L)



M) N) O) P) Q) R)



Answer Key

Question 1: 2 points, P (AD1)

a) **IS** a function *Because…* each input has exactly one output.

b) Is **NOT** a function *Because…* one input has more than one output. (3, 5) and (3, 6)

c) Is **NOT** a function *Because…* one input has more than one output. (4, 2) and (4, 1)

d) **IS** a function *Because…* each input has exactly one output.

Question 2: Part A: 2 points, P (AD4)
Part B: 2 points, P (AD4)

a) **PART A:** Equation: $y = 4x + 6$
PART B: $If\ x = 5$ $y = 4(5) + 6$ $y = 26$

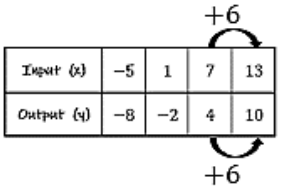
b) **PART A:** Equation: $y = x - 3$
PART B: $If\ x = 11$ $y = 11 - 3$ $y = 8$

c) **PART A:** Equation: $y = 5x + 2$
PART B: $If\ x = 7$ $y = 5(7) + 2$ $y = 37$

d) **PART A:** Equation: $y = 2x + 1$
PART B: $If\ x = 24$ $y = 2(24) + 1$ $y = 49$

Notes for Question 2:

- You know each table represents a function and you are being asked to write an equation which means there is a constant rate of change (slope).
- So – you only need to find the rate of change (slope) between 2 ordered pairs.
- Choose the <u>easiest</u> numbers to work with (probably not the negatives).



Question 3: 2 points, P (AD1)

a) Is **NOT** a function *Because…* two people might have the same height, but different weight.

b) Is **NOT** a function *Because…* two people might have the same eye color but a different shoe size.

c) **IS** a function *Because…* one building can have only one street address.

d) **IS** a function *Because…* one Celsius degree can have only one equivalent Fahrenheit degree.

Question 4: 3 points, PP (AD1)

a) B, D, F

b) A, C, F

Notes for Question 4:

- Look at the **inputs, (x)** given in the multiple choice selections.
- **If** the new number given (for x) is <u>not</u> already listed in the table, **then** it <u>can't</u> have more than one **output, (y)** – so it could be part of the function.
- **If** the new number given (for x) <u>is</u> already listed in the table, **then** look at the matching **output, (y)**.
- **If** the new **output, (y)** is <u>different</u> from the one in the table, **then** it could <u>not</u> be part of the function.
- **If** the new **output, (y)** is the <u>same</u> as the one in the table, **then** it <u>could</u> be part of the function.
- Functions may have identical ordered pairs listed multiple times.

Question 5: 3 points, PP (AD1)

Circle the relationships that represent a function.

B	C	F
I	L	
N	O	Q

Notes for Question 5:

- Look to see if you can find more than one ordered pair with the **same "x."**
- **If** you can, **then** it is **not** a function.

Another way to visualize this...

- See if you can draw a vertical line anywhere that touches **more than one** part of the shape or more than one point anywhere on the graph.
- If you **can**, that shows you that the **"x"** where the vertical line touches more than once has more than one **"y."** (You can write out the ordered pairs to check).

Fun Facts

1) 3.14 backwards is PIE!
2) It took 1,000 years to prove pi irrational.
3) Albert Einstein was born on Pi Day, 1879.
4) P and pi are both the 16th letters in their alphabets.
5) 22/7 is used to estimate pi in fraction form.
6) The first major Pi Day celebration was in 1988.
7) The current world record for memorizing the digits of pi is 67,890 consecutive digits in 2005.
8) Mathematicians estimate that it would take 133 years for a person to recite the 6.4 billion known digits of Pi without stopping!
9) Pi has been calculated past the two-quadrillionth digit.
10) Even though the Greek symbol π wasn't adopted until the 1700s, the earliest references to the constant ratio between any circle's circumference and diameter occurred in Ancient Egypt around 1650 BCE
11) The first people to refer to the ratio between the diameter and the circumference of a circle were the Ancient Egyptians.
12) You can likely find your phone number (without the area code) in Pi. (http://angio.net/pi/)