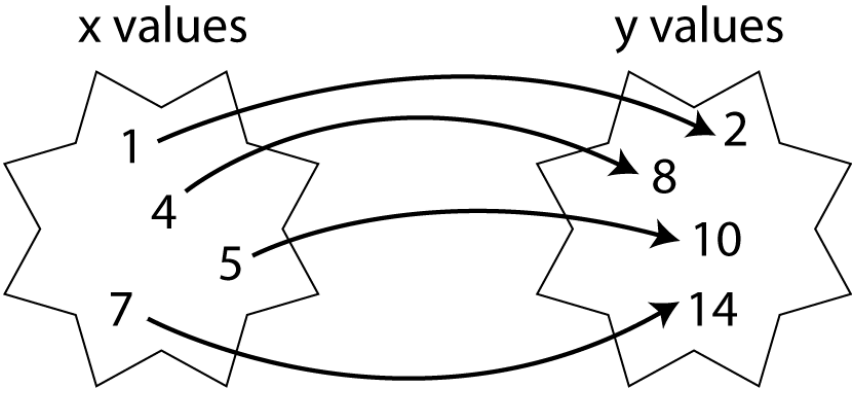
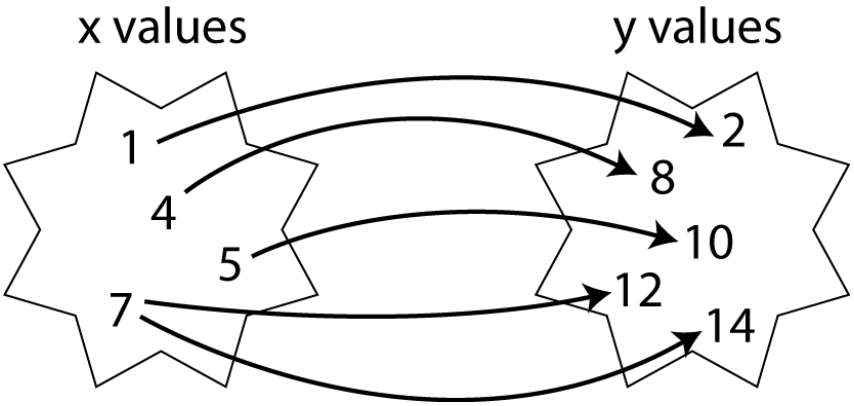
Introduction to Functions (Section 3.1) NAMES:

Turn in one paper per group but be sure all members of the group have seen the final answers. Circle your name if the paper that gets turned in is your copy.

1. Consider the following relationship. Write the pairings of x and y values as ordered pairs.



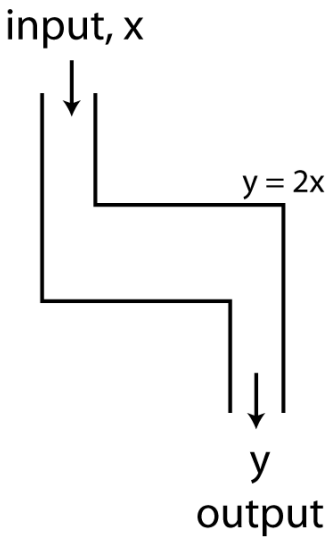
2. Consider the following relationship. Write the pairings of x and y values as ordered pairs.



3. A function is a relationship that has exactly one y value (output) for every x value (input). Which of the two relationships above satisfies this criterion?

4. Consider the first relationship on page 1. Can you think of a rule (written in equation form) that shows how x and y are related? (It is much harder to make an equation for the second relationship since there is not one rule that finds the y value that goes with each x.)

5. We can think of functions as machines that take a raw material (the x value or input) and produce a finished product (the y value or output). I have drawn this. Use this notion to find the y values in the table below. It is helpful to visualize a machine doing the same job again and again.



x	$y = 2x$
-10	
-5	
0	
5	
10	
15	
20	

6. Find the equations for the functions below. Think about what happens to each x value to get the corresponding y value. Write them in the form "y = …"

a.)

x	1	2	3	4	5
y	6	7	8	9	10

b.)

x	1	2	3	4	5
y	3	6	9	12	15

c.)

x	1	2	3	4	5
y	5	8	11	14	17

(Hint: How do the y values compare with the y values in part *b*?)

d.)

x	1	2	3	4	5
y	5	5	5	5	5

7. An orchard sells apples for $3 each. Each apple costs them $ 0.50 to grow plus a fixed cost of $100. Answer the following questions.

a.) The orchard sells apples for $3 each. Find a function for the revenue (money they bring in). Let x be the number of apples they sell and y be their revenue. At this time, only consider the money they bring in, not how much it costs to grow the apples.

b.) Complete the table for this revenue function.

***x* (number of apples)**	***y* (revenue, dollars)**
0	
10	
20	
30	
40	
50	

c.) Each apple costs them $ 0.50 to grow plus a fixed cost of $100. So the function that relates total cost (y) to the number of apples (x) they grow is $y = .50x + 100$. Complete the table for this function.

***x* (number of apples)**	***y* (cost, dollars)**
0	
10	
20	
30	
40	
50	

d.) To "break even" means the orchard brings in as much money as they spend. How many apples would they need to grow and sell to break even? How do you know?