1-6 Relations and Functions

A *relation* is a pairing of values that can be written as a set of ordered pairs. A *function* is a special type of relation. Use the information below to explore what makes a function different from other types of relations.

Functions

x	y
0	1
1	1
2	1
3	1

x	y
0	2
2	1
5	−1
9	−4

x	y
−2	3
0	2
2	4
4	5

Not Functions

x	y
0	1
0	2
1	3
1	4

x	y
1	−5
2	−4
3	−5
1	−4

x	y
−2	1
2	4
2	−4
−2	−1

1. Examine the *x*-values in the tables. Make a conjecture about the *x*-values in a function.

2. Does your conjecture apply to *y*-values as well? Explain.

3. Use your conjecture to determine whether the ordered pairs in each table represent a function.

   a.
x	−2	−1	0	−1	−2
y	5	4	3	2	1

   b.
x	−2	−1	0	1	2
y	3	5	7	5	3

THINK AND DISCUSS

4. **Describe** what makes a relation a function.

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x	y
-2	1
2	4
2	-4
-2	-1

1. Examine the *x*-values in the tables. Make a conjecture about the *x*-values in a function. **Possible answer: The *x*-values in a function never repeat.**

2. Does your conjecture apply to *y*-values as well? Explain.
No; possible answer: the first function has a *y*-value that repeats.

3. Use your conjecture to determine whether the ordered pairs in each table represent a function.

a.

x	-2	-1	0	-1	-2
y	5	4	3	2	1

no

b.

x	-2	-1	0	1	2
y	3	5	7	5	3

yes

THINK AND DISCUSS

4. Describe what makes a relation a function.
Possible answer: If a relation has only one *y*-value for each *x*-value, then it is a function.

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