8-1 Study Guide and Intervention

Functions

| Function	A special relation in which each member of the domain is paired with exactly one member in the range.
Vertical Line Test	Move a pencil or straightedge from left to right across the graph of a relation. • If it passes through no more than one point on the graph, the graph represents a function. • If it passes through more than one point on the graph, the graph does not represent a function.

Since functions are relations, they can be represented using ordered pairs, tables, or graphs.

Example **Determine whether each relation is a function. Explain.**

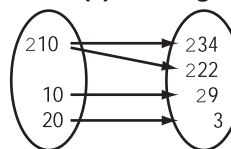**a.** $\{(-10, -34), (0, -22), (10, -9), (20, 3)\}$

Domain (x)   **Range (y)**
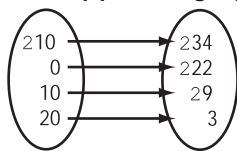
Because each element in the domain is paired with only one value in the range, this is a function.

b.

x	−10	−10	10	20
y	−34	−22	−9	3

Domain (x)   **Range (y)**

Because −10 in the domain is paired with −34 and −22 in the range, this is not a function.

Exercises

Determine whether each relation is a function. Explain.

1. $\{(-5, 2), (3, -3), (1, 7), (3, 0)\}$

2. $\{(2, 7), (-5, 20), (-10, 20), (-2, 10), (1, 20)\}$

3.

x	1	−3	8	−8	20
y	2	6	6	5	11

4.

x	8	1	−5	1	−10
y	−2	3	7	7	13

Glencoe Pre-Algebra

Lesson 8-1

8-1 Skills Practice

Functions

Determine whether each relation is a function. Explain.

1. $\{(3, -8), (3, 2), (6, -1), (2, 2)\}$

2. $\{(0, 1), (-4, -3), (-3, 6), (3, 6)\}$

3. $\{(-6, 3), (2, -2), (0, 8), (1, 1)\}$

4. $\{(1, 8), (-6, 21), (-11, 21), (-3, 11), (0, 21)\}$
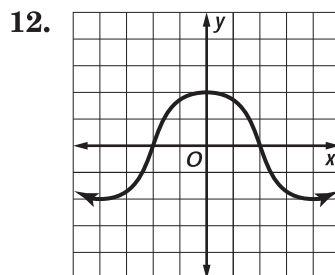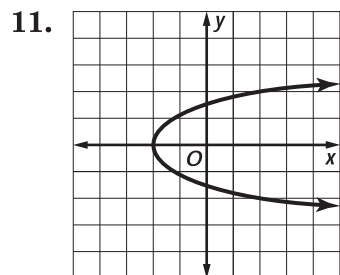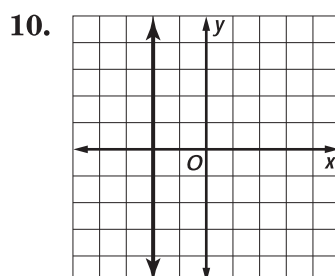
5.

x	1	−3	8	−8	20
y	2	6	6	5	11

6.

x	4	11	8	−13	−4
y	2	−4	1	2	20

7.

x	−1.2	1.1	1.7	−1.2	1.0
y	2.8	2.3	−2.4	2.3	2.6

8.

x	7	0	−6	1	−11
y	−1	4	8	8	14

9.

10.

11.

12.
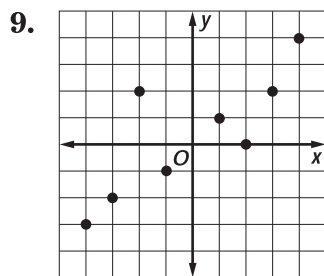
8-1 **Practice**

Functions

Determine whether each relation is a function. Explain.

1. $\{(4, -5), (0, -9), (1, 0), (7, 0)\}$

2. $\{(5, -12), (-1, -2), (8, -5), (4, -2), (3, -5)\}$

3. $\{(-2, -3), (6, -8), (4, 2), (6, -5), (2, -5)\}$

4. $\{(5, 2), (-2, 15), (-7, 15), (1, 5), (4, 15), (-7, 2)\}$

5.

x	4	−5	11	−5	23
y	−3	1	1	0	6

6.

x	7	14	11	−10	−1
y	−3	−9	−4	−3	15

7.

x	−3.0	3.5	4.1	−3.0	3.4
y	4.2	3.7	−3.8	3.7	4.0

8.

x	11	4	−2	4	−7
y	−7	−2	2	2	6

EMPLOYMENT **For Exercises 9–12, use the table, which shows the percent of employed men and women in the U.S. labor force every five years from 1980 to 2000.**

9. Is the relation (year, percent of men) a function? Explain.

10. Describe how the percent of employed men is related to the year.

Employed Members of Labor Force		
Year	Men (% of male population)	Women (% of female population)
1980	77.4	51.5
1985	76.3	54.5
1990	76.4	57.5
1995	75.0	58.9
2000	78.9	67.3

Source: U.S. Census Bureau

11. Is the relation (year, percent of women) a function? Explain.

12. Describe how the percent of employed women is related to the year.