

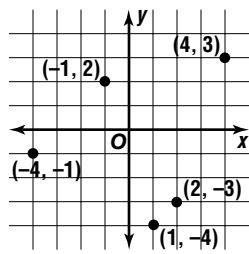
Relations (Pages 238–243)

A **relation** is a set of ordered pairs. The first coordinate in an ordered pair is the **x-coordinate**. The second coordinate is the **y-coordinate**. The **domain** of a relation is the set of all **x-coordinates**, and the **range** is the set of all **y-coordinates**.

EXAMPLE

Express the relation $\{(-4, -1), (-1, 2), (1, -4), (2, -3), (4, 3)\}$ as a table and as a graph. Then determine the domain and range.

x	y
-4	-1
-1	2
1	-4
2	-3
4	3



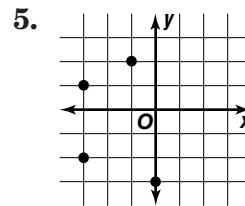
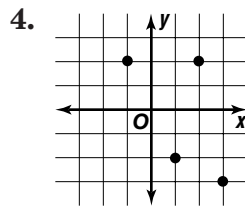
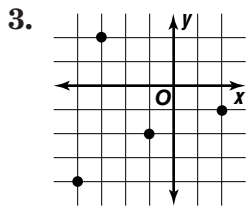
The domain is $\{-4, -1, 1, 2, 4\}$ and the range is $\{-1, 2, -4, -3, 3\}$.

PRACTICE

Express each relation as a table and as a graph. Then determine the domain and the range.

1. $\{(-2, 1), (-1, 0), (1, 2), (2, -4), (4, 3)\}$ 2. $\{(-3, -3), (-1, 1), (0, -0.5), (2.5, -2), (3, 4)\}$

Express each relation as a set of ordered pairs and in a table. Then determine the domain and the range.



Express each relation as a set of ordered pairs.

6.

x	y
-3	3
-2	4
-1	5
0	6

7.

x	y
4	3
3	1
2	-1
1	-3

8.

x	y
0	1
-2	-1
-4	-3
-6	-5

9. **Standardized Test Practice** What is the domain of the relation $\{(2, 7), (3, 5), (2, 8)\}$?

- A $\{2, 3, 5, 7, 8\}$ B $\{5, 7, 8\}$ C $\{2, 3, 8\}$ D $\{2, 3\}$

Answers: 1–2. See Answer Key for tables and graphs. 1. $D = \{-2, -1, 1, 2, 4\}; R = \{-3, -1, 0, 2, 5, 3\}$; 3. $\{(-4, -1), (-1, 2), (1, -4), (2, -3), (4, 3)\}$; 4. $\{(-1, 2), (1, -4), (2, -3), (4, 3)\}; D = \{-1, 1, 2, 3\}; R = \{2, -2, -3\}$; 5. $\{(-3, -3), (-1, 1), (0, -0.5), (2.5, -2), (3, 4)\}; D = \{-3, -1, 0, 2, 3\}; R = \{-3, -1, 0, 2, 5, 3\}$; 6. $\{(-3, 3), (-2, 4), (-1, 5), (0, 6)\}$; 7. $\{(4, 3), (3, 1), (2, -1), (1, -3)\}$; 8. $\{(0, 1), (-2, -1), (-4, -3), (-6, -5)\}$; 9. D