

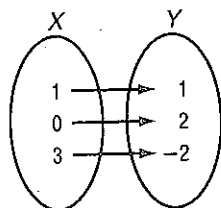
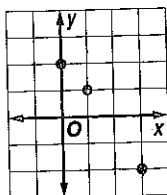
4-3 Study Guide and Intervention

Relations

Represent Relations A relation is a set of ordered pairs. A relation can be represented by a set of ordered pairs, a table, a graph, or a **mapping**. A mapping illustrates how each element of the domain is paired with an element in the range.

Example 1 Express the relation $\{(1, 1), (0, 2), (3, -2)\}$ as a table, a graph, and a mapping. State the domain and range of the relation.

x	y
1	1
0	2
3	-2



The domain for this relation is $\{0, 1, 3\}$.
The range for this relation is $\{-2, 1, 2\}$.

Example 2 A person playing racquetball uses 4 calories per hour for every pound he or she weighs.

a. Make a table to show the relation between weight and calories burned in one hour for people weighing 100, 110, 120, and 130 pounds.

x	y
100	400
110	440
120	480
130	520

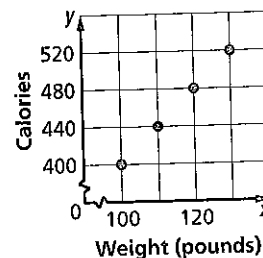
Source: *The Math Teacher's Book of Lists*

b. Give the domain and range.

domain: $\{100, 110, 120, 130\}$

range: $\{400, 440, 480, 520\}$

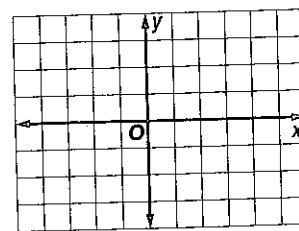
c. Graph the relation.



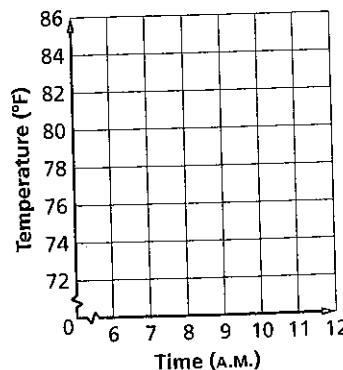
Exercises

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

x	y



2. The temperature in a house drops 2° for every hour the air conditioner is on between the hours of 6 A.M. and 11 A.M. Make a graph to show the relationship between time and temperature if the temperature at 6 A.M. was 82°F .

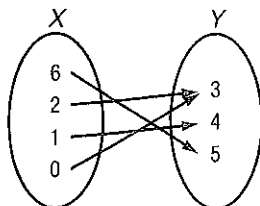


4-3 Study Guide and Intervention *(continued)*

Relations

Inverse Relations The inverse of any relation is obtained by switching the coordinates in each ordered pair.

Example Express the relation shown in the mapping as a set of ordered pairs. Then write the inverse of the relation.



Relation: $\{(6, 5), (2, 3), (1, 4), (0, 3)\}$

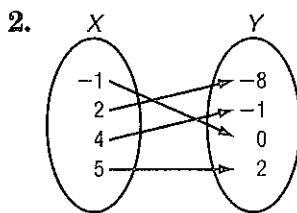
Inverse: $\{(5, 6), (3, 2), (4, 1), (3, 0)\}$

Exercises

Express the relation shown in each table, mapping, or graph as a set of ordered pairs. Then write the inverse of each relation.

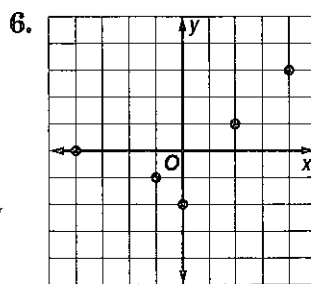
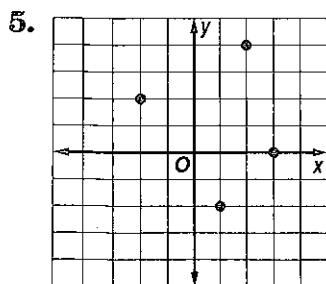
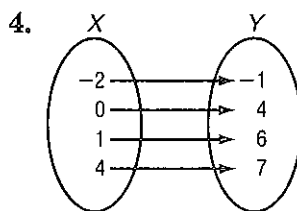
1.

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



3.

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

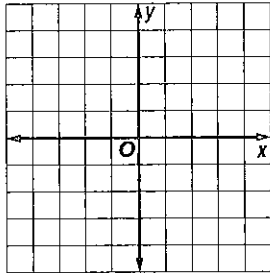


4-3 Practice

Relations

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

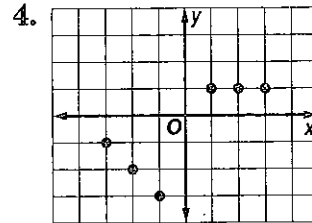
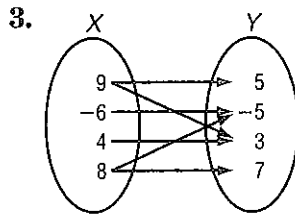
1. $\{(4, 3), (-1, 4), (3, -2), (2, 3), (-2, 1)\}$



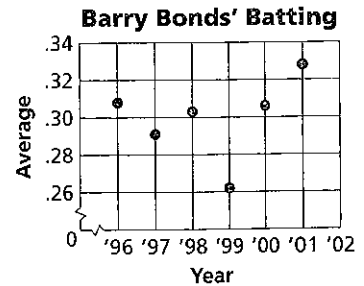
Express the relation shown in each table, mapping, or graph as a set of ordered pairs. Then write the inverse of the relation.

2.

x	y
0	9
-8	3
2	-6
1	4



BASEBALL For Exercises 5 and 6, use the graph that shows the batting average for Barry Bonds of the San Francisco Giants. Source: www.sportsillustrated.cnn.com

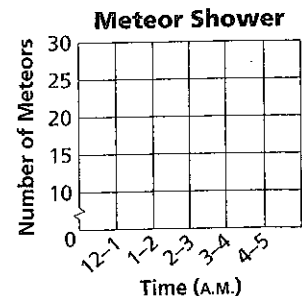


5. Find the domain and estimate the range.

6. Which seasons did Bonds have the lowest and highest batting averages?

METEORS For Exercises 7 and 8, use the table that shows the number of meteors Ann observed each hour during a meteor shower.

Time (A.M.)	Number of Meteors
12	15
1	26
2	28
3	28
4	15



7. What are the domain and range?

8. Graph the relation.