NAME

Module 9 Using Functions
Lesson 1 Defining Relations and Functions

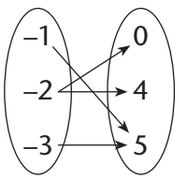
guided practice

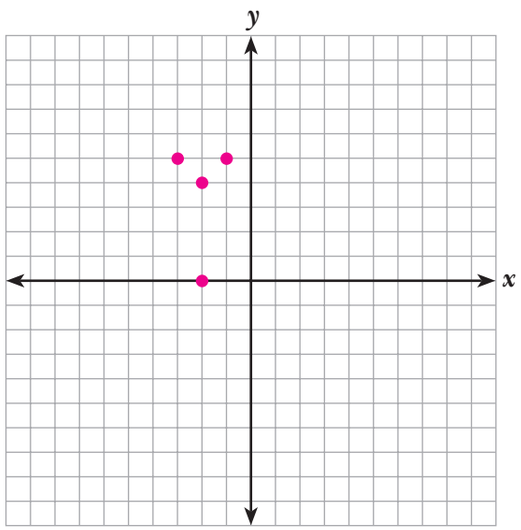
Set 1

1. Find the domain and range of the relation represented by the set

$M = \{(-1, 2), (-1, 4), (0, 5), (3, -7)\}$ **Domain = {–1, 0, 3}; Range = {–7, 2, 4, 5}**

2. Graph on the coordinate plane the relation represented by the following mapping diagram:





3. Find the domain and range of the relation given by the equation $y = x^2$.

Domain = ℜ; Range = {y: y ≥ 0 }

4. The relation given by the equation $y = x - 3$ has a domain of {–1, 0, 1}. Find the range. **Range = {–4, –3, –2}**

Set 2

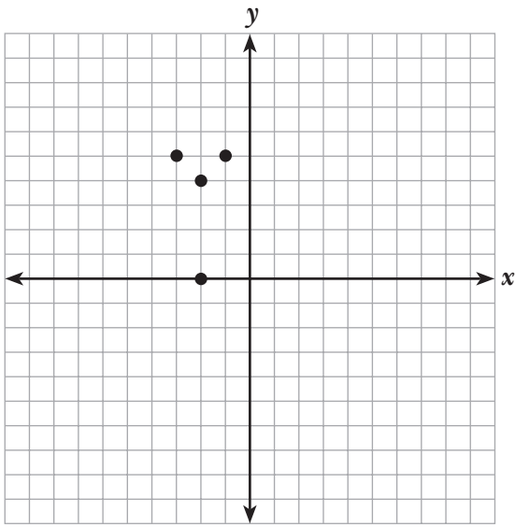
1. How are relations and functions alike? How are they different?

Relations and functions are both sets of ordered pairs. Every function is a relation, but not every relation is a function. In a function, each member of the domain is mapped to, or paired with, exactly one member of the range. Graphs of functions must pass the vertical line test.

2. Explain why the vertical line test can be used to determine whether a graph represents a function. **If a vertical line intersects the graph at more than one point, then two or more points on the graph would have the same first coordinate, and the graph would not represent a function.**

3. Which of the following relations are functions? Write *Yes* if it is a function or *No* if it is not a function. Then give a reason for your choice.

a)



No, the graph does not pass the vertical line test.

b) $T = \{(0, 4), (5, 4), (0, 1)\}$

No, 0 is paired with two different *y*-values, 4 and 1.

c)

x	*y*
0	0
1	9
2	18

Yes, every *x*-value is paired with exactly one *y*-value.