

## 1-6 Relations and Functions

### Example 1 Identifying Domain and Range

Give the domain and range for this relation:  $\{(100, 5), (120, 5), (140, 6), (160, 6), (180, 12)\}$ .

Domain:  $\{100, 120, 140, 160, 180\}$  *The set of x-coordinates*

Range:  $\{5, 6, 12\}$  *The set of y-coordinates*

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## **Example 2** Determining Whether a Relation Is a Function

Determine whether each relation is a function.

**A. from the items in a store to their prices on a certain date**

An item, such as a box of pencils, from the domain would be associated with only one price on a certain day. The relation from items to their prices on a certain date is a function.

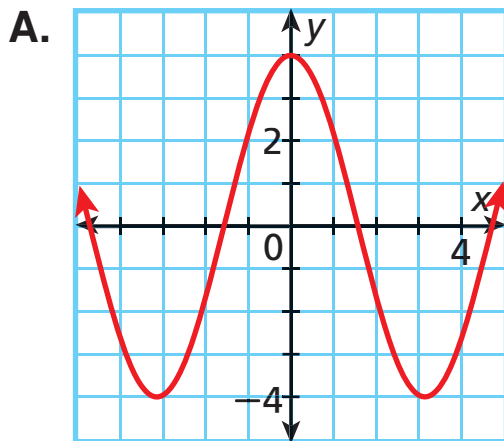
**B. from types of fruits to their colors**

A fruit, such as an apple, from the domain would be associated with more than one color, such as red and green. The relation from types of fruits to their colors is not a function.

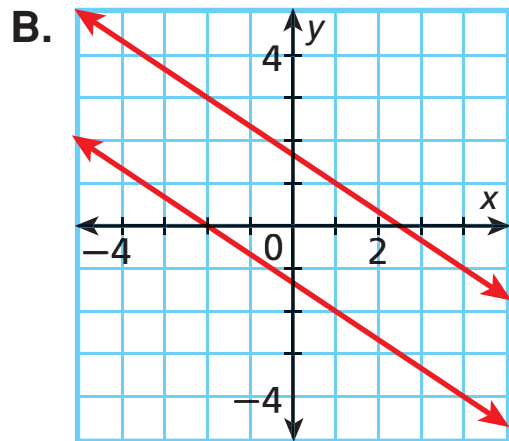
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## Example 3 Using the Vertical-Line Test

Use the vertical-line test to determine whether each relation is a function. If not, identify two points a vertical line would pass through.



This is a function. Any vertical line would pass through only one point on the graph.



This is *not* a function. A vertical line at  $x = 1$  would pass through  $(1, 1)$  and  $(1, -2)$ .