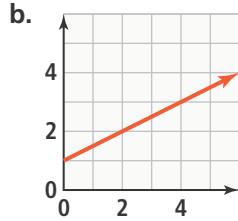
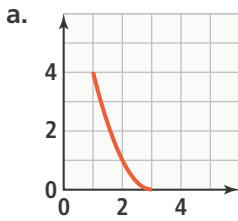




UNDERSTAND

8. **Use Structure** Identify the domain and range of each function.



9. **Construct Arguments** If the domain of a relation is all whole numbers between 2.5 and 7.5, and the range contains 6 different values, can you determine whether the relation is a function? Explain your reasoning.

10. **Error Analysis** A student was asked to name all values of n that make the relation a function. Correct the error.

$\{(2, 8), (6, 0), (4, 2), (2n, n)\}$
 n can be any value except 2, 6, or 4.



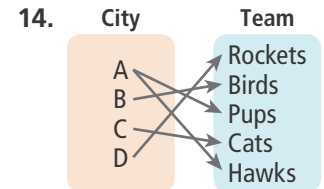
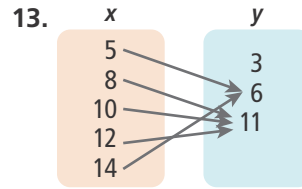
11. **Communicate Precisely** Describe two different representations that show a relation that is also a function. Explain.

12. **Higher Order Thinking** Relations mapping domain values to range values can be described as *one-to-one* or *not one-to-one*.

- If one x -value maps to many y -values (*one-to-many*), does the relation represent a function? If the x - and y -values are reversed, does the relation represent a function? Explain.
- If the relation is *not one-to-one*, does the relation represent a function? If the x - and y -values are reversed, does the relation represent a function? Explain.
- If the relation is *one-to-one*, does the relation represent a function? If the x - and y -values are reversed, does the relation represent a function? Explain.

PRACTICE

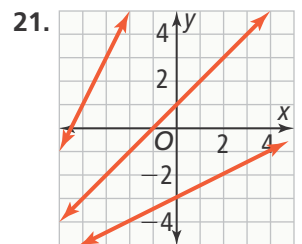
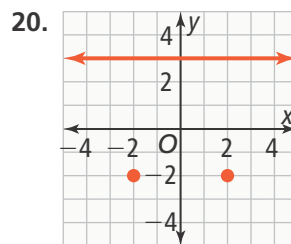
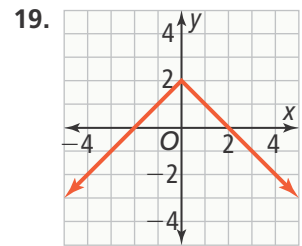
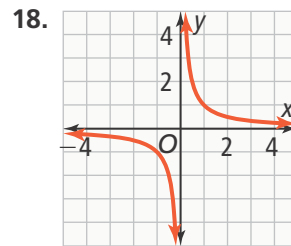
Identify the domain and range of each relation. Is the relation a function? Explain. SEE EXAMPLES 1 AND 3



Analyze each situation. Identify a reasonable domain and range for each situation. SEE EXAMPLE 2

- An airplane travels at 565 mph.
- Tickets to a sporting event cost \$125 each.
- An average person consumes 2,000 Calories each day.

Determine whether each relation is a function. If yes, classify the function as *one-to-one* or *not one-to-one*. SEE EXAMPLE 3



Identify any constraints on the domain. SEE EXAMPLE 4

- Cameron earns an hourly wage at his job. He makes a table of the number of hours he works each week and the amount of money he earns.
- Every day Isabel swims 10 to 20 laps in a 50-meter pool. She tracks the numbers of laps she swims and how long it takes her to complete the lap, in minutes.

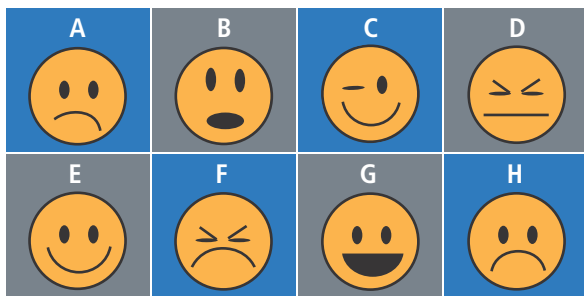
APPLY

24. **Model With Mathematics** The table shows the number of minutes Drew spends in each class for two weeks.

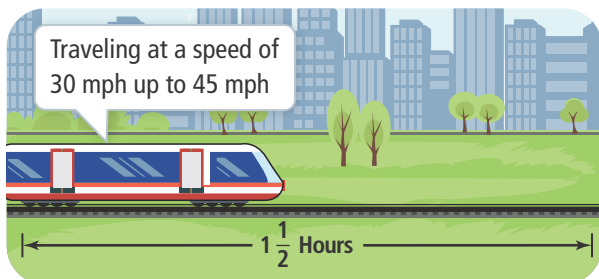
Class	Week 1	Week 2
	Time (min)	Time (min)
English	60	60
Math	90	60
History	45	45
Biology	45	45
Biology Lab	0	60

- For Drew's week 1 classes, identify the domain and range. Is the relation a function? Explain.
- For Drew's week 2 classes, identify the domain and range. Is the relation a function? Explain.
- Is Drew's class time for week 2 a function of his class time for week 1? Explain.

25. **Make Sense and Persevere** Using the names of the emoticons as the domain and the shape of the emoticons mouth as the range, make a list of 5 emoticons that make a function.



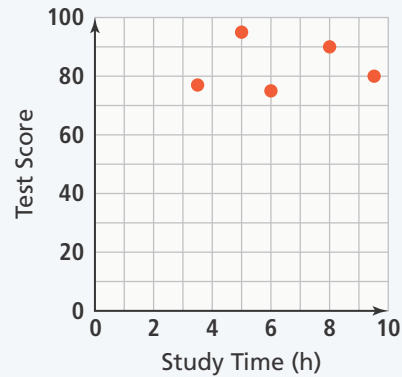
26. **Reason** After a train has traveled for $\frac{1}{2}$ hour, it increases its speed and travels at a constant rate for $1\frac{1}{2}$ hours.



- What is the domain? What is the range?
- How can you represent the relationship between time traveled and speed?
- Why did you choose this representation?

ASSESSMENT PRACTICE

27. The graph shows students' study times and their scores on a recent exam. Determine whether each of the data points given in parts (a) through (e) can be added to the graph so the graph still represents a function. Select **Yes** or **No**.



	Yes	No
a. Pilar scored 85 and studied for 8 h.	<input type="checkbox"/>	<input type="checkbox"/>
b. Naida scored 97 and studied for 9 h.	<input type="checkbox"/>	<input type="checkbox"/>
c. Alex scored 77 and studied for 4.5 h.	<input type="checkbox"/>	<input type="checkbox"/>
d. Damian scored 80 and studied for 7.5 h.	<input type="checkbox"/>	<input type="checkbox"/>
e. Dylan scored 90 and studied for 6 h.	<input type="checkbox"/>	<input type="checkbox"/>

28. **SAT/ACT** For a relation, where y is a function of x , and $y = 4$ when $x = 6$; which of the following does not represent another possible mapping in the relation?

- $x = 3$ maps to $y = 2$
- $x = 1$ maps to $y = 6$
- $x = 0$ maps to $y = 0$
- $x = 4$ maps to $y = 6$
- $x = 6$ maps to $y = 2$

29. **Performance Task** City Tours rents bicycles for \$10 an hour with a maximum daily fee of \$100.

Part A Make a table that show the cost for renting a bicycle for 1, 3, 11, and 20 hours.

Part B Is cost a function of time? Explain.

Part C Is time a function of cost? Explain.