Practice 4-3

Relating Tables and Graphs to Equations

1. Use the table to relate the independent variable x to the dependent variable y.

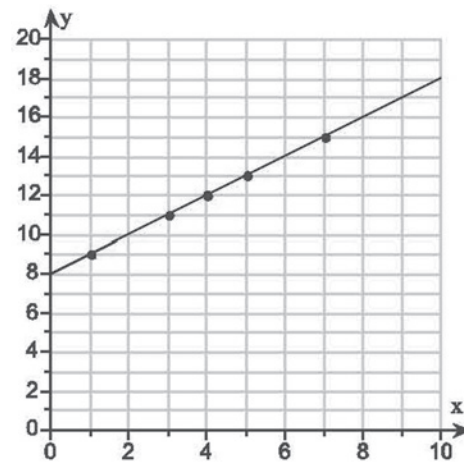| x	0	2	5	6
y	0	4	10	12

   a) Describe the relationship in words.

   b) Write an equation that represents the relationship between x and y.

2. Suppose each side of a triangle has length x. Let y be the perimeter of the triangle. Use the table to relate the independent variable x to the dependent variable y.

x	0	3	4	5
y	0	9	12	15

   a) Describe the relationship in words.

   b) Write an equation that represents the relationship between x and y.

3. **a)** Use the graph to complete the table of values for x and y.

x	1	3	4	5	7
y	___	___	___	___	___

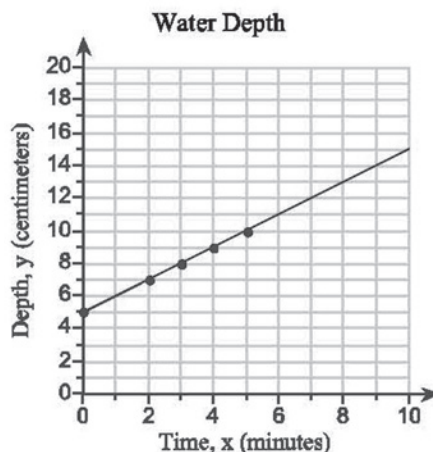   **b)** Write an equation that represents the relationship between x and y.

4. During a thunderstorm, rain fell into a barrel. The graph shows the depth y (in centimeters) of the water in the barrel x minutes after the storm started.

a) Use the graph to complete the table of values for x and y.

x	0	2	3	4	5
y	___	___	___	___	___

b) Write an equation that represents the relationship between x and y.

Water Depth

5. It costs $8 to go to a pottery painting studio. It costs an additional $4 for each piece you paint.

a) Complete the table.

Pottery Painting Studio Costs		
Painted pieces	**Cost of studio fee and painted pieces**	**Total cost ($)**
1	8 + 4(1)	_____
2	8 + 4(_____)	16
_____	8 + 4(3)	_____
_____	_____ + 4(4)	24
5	8 + 4(5)	_____

b) Write an equation that shows the relationship between the number of pieces you paint, p, and the total cost, T.

6. For a Friday show, a band receives $160 plus $6 for each ticket sold. Write an equation that shows the relationship between the number of tickets sold, t, and the total amount the band receives, P. (Hint: You may find it helpful to make a table that shows values of t and related values of P.)

7. Writing Erin is putting items into a crate. The crate weighs 2 kilograms when empty. Let x be the number of items in the crate. Let y be the total weight of the crate. Use the table to relate the independent variable x to the dependent variable y.

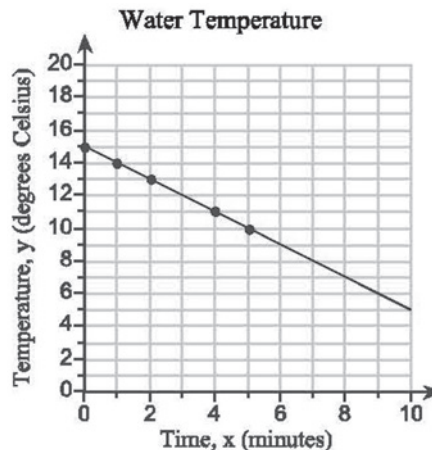| x	0	1	4	7
y	2	3	6	9

a) Describe the relationship in words.

b) Write an equation that represents the relationship between x and y.

c) Explain why Erin might need this information.

8. **Reasoning** Shira put a glass of water in a refrigerator. The graph shows the water's temperature y (in degrees Celsius) after x minutes. Use the graph to complete the table of values for x and y.

a) Complete the table.

x	0	1	2	4	5
y	_____	_____	_____	_____	_____

b) What would the graph look like if Shira leaves the water in the refrigerator for 24 hours? Explain your reasoning.

Water Temperature

c) Write an equation that represents the relationship between x and y.

9. **Error Analysis** Anna had this table as part of her homework last night. She had to use it to relate the independent variable x to the dependent variable y. First, she used words and then she wrote an equation. She incorrectly said the value of x times 2 equals the value of y, and that the equation is y = 2x.

x	1	4	5	6
y	2	5	6	7

a) Describe the relationship in words correctly.

b) Write an equation that represents the relationship between x and y.

c) Explain Anna's likely error.

○ A. She considered only the first (x, y) pair, not all four.

○ B. She used the correct number but the incorrect operation.

○ C. She used the correct operation but the incorrect number.

○ D. She formed the correct equation, but did not give the correct description in words.
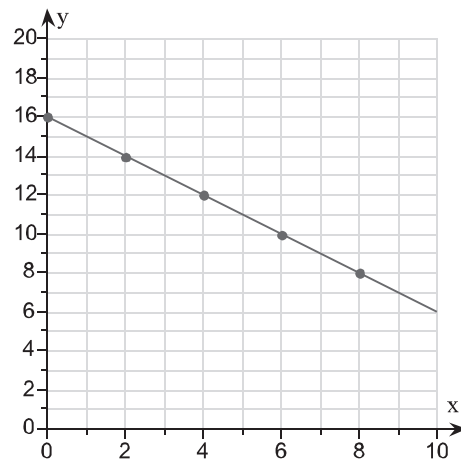
10. **Flower Growth** Early last summer, Jasmine planted a flower. Let y be the flower's height (in centimeters) x days after she planted it. Use the table to relate the independent variable x to the dependent variable y.

x	1	3	5	8
y	17	19	21	24

    a) Describe the relationship in words.

    b) Write an equation that represents the relationship between x and y.

    c) What was the flower's height after 9 days?

11. **a)** **Multiple Representations** Use the graph to complete the table of values for x and y.

x	0	2	4	6	8
y	___	___	___	___	___

    b) Place a check mark next to each equation that represents the relationship between x and y.

       ❏ A. $x + y = 16$

       ❏ B. $y + x = 16$

       ❏ C. $y = x - 16$

       ❏ D. $y = 16 + x$

       ❏ E. $y - x = 16$

       ❏ F. $y = 16 - x$

12. Use the table to relate the independent variable x to the dependent variable y.

x	0	1	2	4
y	0	4	8	16

    a) First describe the relationship in words.

    b) Write an equation.

    c) Extend the table to show three more (x, y) pairs that have the same relationship.

13. Mental Math It costs a company $100 to use a machine to make any number of shirts. The materials for each shirt cost $5.

a) Complete the table.

Shirt Making Costs		
Shirts made	**Cost of machine and materials**	**Total cost ($)**
1	100 + 5(1)	_____
2	100 + 5(_____)	110
_____	100 + 5(3)	_____
_____	_____ + 5(4)	120
5	100 + 5(5)	_____

b) Write an equation that shows the relationship between the number of shirts made, s, and the total cost, T.

c) What will be the total cost if the company wants to make 10 shirts?
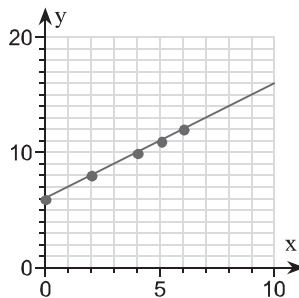
14. Think About the Process

a) Use the graph to complete the table of values for x and y.

x	0	2	4	5	6
y	____	____	____	____	____

b) Describe the relationship between x and y in words.

c) Write an equation that represents the relationship between x and y.

d) Mark three new points on the graph and give their x- and y-values.

15. **Think About the Process** To rent a paddle boat, there is a fee of $7. It also costs $9 per hour.

a) Complete the table.

Paddle Boat Rental Costs		
Hours rented	**Cost of fee and hourly rate**	**Total cost ($)**
1	7 + 9(1)	_____
2	7 + 9(_____)	25
_____	7 + 9(3)	_____
_____	_____ + 9(4)	43
5	7 + 9(5)	_____

b) Describe the relationship between the number of hours a paddle boat is rented, r, and the total cost of the rental, C, in words.

c) Write an equation that represents the relationship.

d) How would changing the $7 fee to $8 affect the relationship between r and C?