EXERCISES

Practice and Problem Solving

A Practice by Example

Example 1 (page 254)

Match each table with its rule.

1. $y = 4x$

A.

x	y
−2	−6
−1	−5
0	−4
1	−3

2. $y = x - 4$

B.

x	y
−1	−4
−2	−8
−3	−12
−4	−16

3. $y = -4 - x$

C.

x	y
−1	−3
0	−4
1	−5
2	−6

Write a function rule for each table.

4.

x	f(x)
1	3
2	6
3	9
4	12

5.

x	f(x)
1	0.5
2	1.5
3	2.5
4	3.5

6.

x	f(x)
1	0.5
2	1
3	1.5
4	2

7.

x	f(x)
1	−3
2	−6
3	−9
4	−12

8.

x	y
−2	−8
−1	−4
0	0
1	4

9.

x	y
−8	64
−4	16
0	0
4	16
8	64

Example 2 (page 255)

Write a function rule for each situation.

10. the total cost $t(c)$ of c ounces of cinnamon if each ounce costs $.79
11. the total distance $d(n)$ traveled after n hours at a constant speed of 45 miles per hour
12. the height $f(h)$ of an object in feet when you know the height h in inches
13. a worker's earnings $e(n)$ for n hours when the worker's hourly wage is $6.37
14. the area $A(n)$ of a square when you know the length n of a side
15. the volume $V(n)$ of a cube when you know the length n of a side
16. the area $A(r)$ of a circle with radius r

Example 3 (page 255)

17. **Food Costs** At a supermarket salad bar, the price of a salad depends on its weight. Salad costs $.19 per ounce.
    a. Write a rule to describe the function.
    b. How much would an 8-ounce salad cost?
18. **Postage** In 2002, the price of mailing a letter was $.34 for the first ounce or part of an ounce and $.21 for each ounce or part of an ounce after the first ounce.
    a. Write a rule to describe the function.
    b. How much did it cost to mail a 4-ounce letter?

Skills

Write a function rule for each table.

19.

Distance (km)	Distance (m)
0.5	500
1.0	1000
1.5	1500
2.0	2000

20.

Inches	Centimeters
1	2.54
2	5.08
3	7.62
4	10.16

Math in the Media **Use the advertisement at the left for Exercises 21–22.**

21. **a.** Write a rule to find the total cost $C(a)$ for all the books a person buys through Book Express. Let a represent the number of additional books bought (after the first 6 books).
b. Suppose a person buys 9 books in all. Find the total cost.
c. Evaluate the function for $a = 6$. What does the output represent?

22. A bookstore sells the same books for an average price of $6 each.
a. Write a function rule to model the total cost $C(b)$ of books bought at the bookstore. Let b represent the number of books bought.
b. Evaluate your function for $b = 12$. What does the output represent?
c. You plan to buy 12 books. What is your average cost per book as a member of Book Express?
d. Is it less expensive to buy 12 books through the club or at the bookstore? Explain.

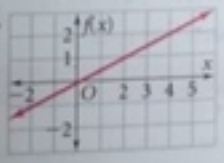
23. Writing What advantage(s) can you see of having a function rule instead of a table of values for a function?

24. Water Usage Use the function in the table at the right.
a. Identify the dependent and independent variables.
b. Write a rule to describe the function.
c. How many gallons of water would you use for 7 loads of laundry?
d. Critical Thinking In one month, you used 442 gallons of water for laundry. How many loads did you wash?

Water Used for Laundry	
1 load	34 gallons
2 loads	68 gallons
3 loads	102 gallons
4 loads	136 gallons

Make a table of values for each graph. Use the table to write a function rule.

25.



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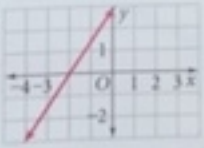

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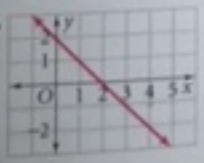

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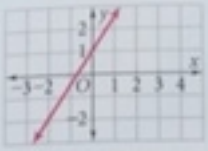

29. Open-Ended Write a function rule that models a real-world situation. Explain your function for an input value and explain what the output represents.

30. Tipping You go out to dinner and decide to leave a 15% tip for the server.

a. The bill for your meal is b. Write an expression for the amount of the tip in terms of b.

b. The total cost $c(b)$ of your meal is the original bill plus the tip. Write a function rule to model this situation.

c. Suppose the original bill is $18. Find the cost of your meal with a 15% tip.

Challenge

Write a function rule for each table.

31.

x	$f(x)$
1	1
2	8
3	27
4	64

32.

x	$f(x)$
−1	1
−2	8
−3	27
−4	64

33.

x	$f(x)$
−1	0
−2	7
−3	26
−4	63

34. Truck Rental A truck rental company charges $44 per day for renting a medium-sized truck. There is also a charge of $.38 per mile.

a. Write a function rule $c(m)$ to model the cost of renting a truck for a day and driving m miles.

b. Evaluate your function rule for $m = 70$ and $m = 120$.

c. You return the truck to the rental company and pay $58.44 (excluding tax). How far did you drive?

d. Suppose you need to rent a truck for two days. You plan to drive 150 miles each day. How much will this cost?

35. Making Pickles The table at the right shows the relationship between the amount of pickling salt added to a gallon of water and the brine concentration, which is the percent of salt by weight.

a. Write a function rule to describe the relationship between salt volume and brine concentration.

b. Write a function rule to describe the relationship between salt weight and brine concentration.

Brine Strength

Salt Volume (cup)	Salt Weight (oz)	Brine Concentration (percent salt)
$\frac{1}{3}$	3.3	2.31
$\frac{1}{2}$	4.95	3.465
$\frac{2}{3}$	6.6	4.62
$\frac{3}{4}$	7.425	5.1975
1	9.9	6.93

Connection

...rves vegetables ...the growth of ...ling requires salt ...h as vinegar.

Standardized Test Prep