

Table 49 Private Contributions to Political Conventions

Year	Contribution (millions of dollars)	
	Republicans	Democrats
1980	2	1
1984	8	4
1988	3	3
1992	3	9
1996	22	24
2000	22	50
2004	64	50

Source: Campaign Finance Institute

- Find the change in the private contributions to Democratic conventions from 1996 to 2000.
 - Find the change in the private contributions to Republican conventions from 1984 to 1988.
 - Over which four-year period was there the greatest change in private contributions to Democratic conventions? What was that change?
 - Over which four-year period was there the greatest change in private contributions to Republican conventions? What was that change?
48. There were 145.5 million ring tones for cell phones sold in 2004 and 220 million ring tones for phones sold in 2007 (Source: *Jupiter Research*). Find the unit ratio of the number of ring tones sold in 2007 to the number of ring tones sold in 2004. What does your result mean?

For Exercises 49 and 50, write the percentage as a decimal number.

49. 75% 50. 2.9%
51. Find 87% of \$43. 52. Find 8% of 925 students.
53. A person's credit card balance is -5493 dollars. If the person pays off 20% of the balance, what is the new balance?

CHAPTER 2 TEST

For Exercises 1–14, perform the indicated operations by hand.

- $-8 - 5$
- $-7(-9)$
- $-3 + 9 \div (-3)$
- $(4 - 2)(3 - 7)$
- $\frac{4 - 7}{-1 - 5}$
- $5 - (2 - 10) \div (-4)$
- $-20 \div 5 - (2 - 9)(-3)$
- $0.4(-0.2)$
- $-\frac{27}{10} \div \frac{18}{75}$
- $-\frac{3}{10} + \frac{5}{8}$
- 3^4
- -4^2
- $7 + 2^3 - 3^2$
- $1 - (3 - 7)^2 + 10 \div (-5)$
- Simplify $\frac{84}{-16}$.
- Two hours ago the temperature was 5°F . If the temperature has decreased by 9°F in the last two hours, what is the current temperature?
- The chances of being audited by the Internal Revenue Service (IRS) have increased since 2001 (see Table 51).

Evaluate the expression for $a = 2$, $b = -5$, $c = -4$, and $d = 10$.

- $ac + c \div a$
- $b^2 - 4ac$
- $a(b - c)$
- $\frac{-b - c^2}{2a}$
- $2c^2 - 5c + 3$
- $\frac{a - b}{c - d}$

For Exercises 60–63, let x be a number. Translate the English phrase into a mathematical expression. Then evaluate the expression for $x = -3$.

- 5 more than the number
- The number subtracted from -7
- 2 minus the product of the number and 4
- 1 plus the quotient of -24 and the number
- If T is the total cost (in dollars) for a team to join a softball league and there are n players on the team, then $T \div n$ is the cost (in dollars) per player. Evaluate $T \div n$ for $T = 650$ and $n = 13$. What does your result mean in this situation?
- A basement is flooded with 400 cubic feet of water. Each hour, 50 cubic feet of water is pumped out of the basement.
 - Complete Table 50 to help find an expression that stands for the volume (in cubic feet) of water in the basement after water has been pumped out for t hours. Show the arithmetic to help you see a pattern.

Table 50 Volumes of Water

Time (hours)	Volume of Water (cubic feet)
0	
1	
2	
3	
4	
t	

- Evaluate the expression that you found in part (a) for $t = 7$. What does your result mean in this situation?

Table 51 Tax Audit Rates

Year	Tax Audit Rate (number of audits per 1000 tax returns)
1995	16.7
1997	12.8
1999	9.0
2001	5.8
2003	6.5
2005	9.3
2007	10.3

Source: Internal Revenue Service

- Find the change in the tax audit rate from 1999 to 2001.
- Find the change in the tax audit rate from 2003 to 2005.
- During the late 1990s, the U.S. economy was exceptionally good. During the period 2000–2003, the economy was poor. The economy was good for the period 2003–2007. On the basis of the information shown in Table 51 alone, under what conditions does the IRS appear to increase the audit rate? Why might the IRS do this?

18. The number of live-birth deliveries as a result of fertility treatments was 25 thousand in 2000 and 40 thousand in 2006 (Source: *Centers for Disease Control and Prevention*). Find the unit ratio of the number of such births in 2006 to the number of such births in 2000. What does your result mean?

Evaluate the expression for $a = -6$, $b = -2$, $c = 5$, and $d = -1$.

19. $ac - \frac{a}{b}$ 20. $\frac{a-b}{c-d}$
 21. $a + b^3 + c^2$ 22. $b^2 - 4ac$

For Exercises 23 and 24, let x be a number. Translate the English phrase into a mathematical expression. Then evaluate the expression for $x = -5$.

23. Twice the number minus the product of 3 and the number
 24. 6 subtracted from the quotient of -10 and the number
 25. U.S. Postal Service mail volume was 213.1 billion pieces in 2006. The mail volume has decreased by about 5.2 billion pieces per year since 2006 (Source: *U.S. Postal Service*).

- a. Complete Table 52 to help find an expression that stands for the U.S. Postal Service mail volume (in billions of pieces) in the year that is t years since 2006. Show the arithmetic to help you see a pattern.

Years Since 2006	Mail Volume (billions of pieces)
0	
1	
2	
3	
4	
t	

- b. Evaluate the expression that you found in part (a) for $t = 8$. What does your result mean in this situation?

CUMULATIVE REVIEW OF CHAPTERS 1 AND 2

1. A rectangle has a perimeter of 36 inches. Let W be the width, L be the length, and P be the perimeter, all with units in inches.
 a. Sketch three possible rectangles with a perimeter of 36 inches.
 b. Which of the symbols W , L , and P are variables? Explain.
 c. Which of the symbols W , L , and P are constants? Explain.
2. Graph the integers between -2 and 3 , inclusive, on a number line.
3. Here are the changes in a stock's value from one month to the next: increase of 1 dollar, decrease of 3 dollars, increase of 4 dollars, and decrease of 2 dollars. Let C be the change in the stock's value (in dollars) from one month to the next. Use points on a number line to describe the changes in value of the stock.
4. What is the x -coordinate of the ordered pair $(-5, 3)$?
5. A person takes a bath. Let V be the volume (in gallons) of water in the bathtub at t minutes after the person pulls out the plug from the drain. Identify the independent variable and the dependent variable.
6. Annual worldwide box office receipts (for movies) are shown in Table 53 for various years. Let B be the annual worldwide box office receipts (in billions of dollars) in the year that is t years since 2000.

- a. Create a scattergram of the data.
 b. For which year shown in Table 53 were the box office receipts the most?
 c. For which year shown in Table 53 were the box office receipts the least?
 d. From which year to the next did the box office receipts increase the most? What was that change in box office receipts?
 e. From which year to the next did the box office receipts decrease the most? What was that change in box office receipts?

For Exercises 7–10, refer to Fig. 35.

7. Find y when $x = -4$.
 8. Find x when $y = 1$.
 9. Find the y -intercept.
 10. Find the x -intercept.

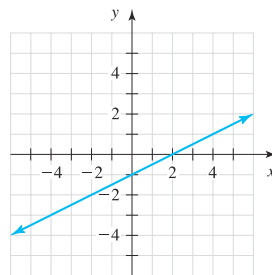


Figure 35 Exercises 7–10

11. A person is laid off from work. Let B be the balance (in thousands of dollars) in her checking account at t months since she was laid off. Some pairs of values of t and B are shown in Table 54.

Years	Annual Worldwide Box Office Receipts (billions of dollars)
2001	16.7
2002	19.8
2003	20.1
2004	24.9
2005	23.1
2006	25.5
2007	26.7

Source: *Motion Picture Association of America*