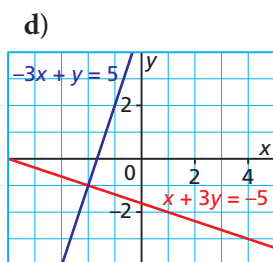
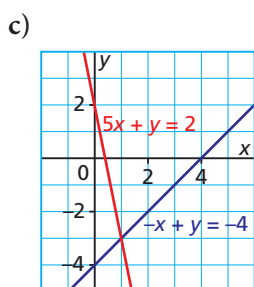
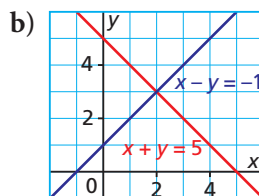
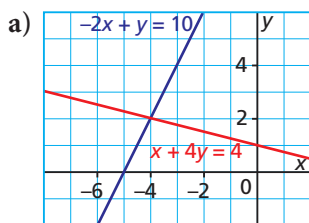


Exercises

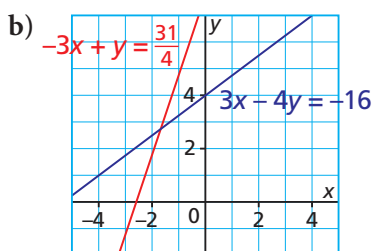
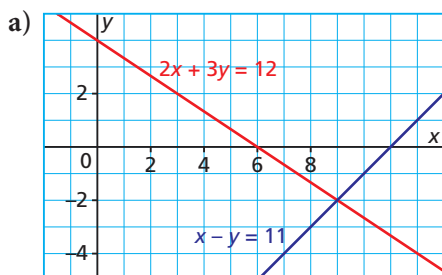
A

3. Determine the solution of each linear system.



B

4. For each linear system, use the graphs to determine the solution. Explain how you know whether the solution is exact or approximate.



5. a) Solve each linear system.

- i) $x + y = 7$ ii) $x - y = -1$
 $3x + 4y = 24$ $3x + 2y = 12$
 iii) $5x + 4y = 10$ iv) $x + 2y = -1$
 $5x + 6y = 0$ $2x + y = -5$

b) Choose one linear system from part a. Explain the meaning of the point of intersection of the graphs of a system of linear equations.

6. Emil's solution to this linear system was (500, 300). Is his solution exact or approximate? Explain.

$$\begin{aligned} 3x - y &= 1149 \\ -x + 2y &= 142 \end{aligned}$$

7. Solve each linear system.

a) $2x + 4y = -1$ b) $5x + 5y = 17$
 $3x - y = 9$ $x - y = -1$

c) $x + y = \frac{23}{4}$ d) $3x + y = 6$
 $x - y = \frac{3}{4}$ $x + y = -\frac{4}{3}$

8. Two companies charge these rates for printing a brochure:

Company A charges \$175 for set-up, and \$0.10 per brochure.

Company B charges \$250 for set-up, and \$0.07 per brochure.

A linear system that models this situation is:

$$C = 175 + 0.10n$$

$$C = 250 + 0.07n$$

where C is the total cost in dollars and n is the number of brochures printed

a) Graph the linear system above.

b) Use the graph to solve these problems:

- i) How many brochures must be printed for the cost to be the same at both companies?
 ii) When is it cheaper to use Company A to print brochures? Explain.

9. Part-time sales clerks at a computer store are offered two methods of payment:

Plan A: \$700 a month plus 3% commission on total sales

Plan B: \$1000 a month plus 2% commission on total sales.

A linear system that models this situation is:

$$P = 700 + 0.03s$$

$$P = 1000 + 0.02s$$

where P is the clerk's monthly salary in dollars and s is the clerk's monthly sales in dollars

a) Graph the linear system above.

b) Use the graph to solve these problems:

- i) What must the monthly sales be for a clerk to receive the same salary with both plans?
 ii) When would it be better for a clerk to choose Plan B? Explain.

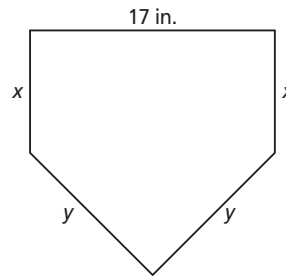
For questions 10 to 13, write a linear system to model each situation. Solve the related problem. Indicate whether your solution is exact or approximate.

- 10.** The area of Stanley Park in Vancouver is 391 hectares. The forested area is 141 hectares more than the rest of the park. What is the area of each part of the park?
- 11.** In the American Hockey League, a team gets 2 points for a win and 1 point for an overtime loss. In the 2008–2009 regular season, the Manitoba Moose had 107 points. They had 43 more wins than overtime losses. How many wins and how many overtime losses did the team have?
- 12.** Annika’s class raised \$800 by selling \$5 and \$10 movie gift cards. The class sold a total of 115 gift cards. How many of each type of card did the class sell?
- 13.** A group of adults and students went on a field trip to the Royal Tyrell Museum, near Drumheller, Alberta. The total admission fee was \$152. There were 13 more students than adults. How many adults and how many students went on the field trip?



- 14.** a) Write a linear system to model this situation: A box of 36 golf balls has a mass of 1806 g. When 12 balls are removed, the mass is 1254 g.
 b) Use a graph to solve this problem: What is the mass of the box and the mass of one golf ball?
 c) Why was it difficult to determine a solution?

- 15.** The home plate in a baseball diamond is a pentagon with perimeter 58 in. Each shorter side, x , is $3\frac{1}{2}$ in. less than each longer side, y . What are the values of x and y ?



- 16.** a) Solve this linear system by graphing.
 $2x + 7y = 3$
 $4x + 3y = 7$
 b) Why is the solution approximate?

C

- 17.** Emma solved a linear system by graphing. She first determined the intercepts of each line.

| Equation | x -intercept | y -intercept |
|----------|----------------|----------------|
| 1 | 5 | 5 |
| 2 | 4 | 6 |

- a) Write a linear system that Emma could have solved. Explain your work.
 b) Draw the graphs to determine the solution.
- 18.** One equation of a linear system is $y = 2x + 1$. The solution of the linear system is in the third quadrant. What might the second equation be? Explain how you determined the equation.
- 19.** a) Suppose you want to solve this linear system by graphing. How do you know that the lines are perpendicular?
 $2x + 3y = -5$
 $\frac{x}{2} - \frac{y}{3} = 2$
 b) Create another linear system where the lines are perpendicular. Explain what you did.

Reflect

When you solve a linear system graphically, how can you determine whether the solution is approximate or exact?