

11.1 Variables and Expressions

MATHPOWER™ Eight, pp. 390–391

In the algebraic expression $2x + 3y$, the terms are $2x$ and $3y$.

The letters in the expression are called **variables**.

Variables can represent many numbers.

The value of an algebraic expression can be found by substituting a number for the variable.

Write the words as an algebraic expression.

1. the width plus twelve _____
2. two times the length minus three times the width

3. five times the number of dimes plus ten times the number of nickels

4. fourteen minus two times the height

Write each expression in words.

- | | |
|---------------------------|---------------------------|
| 5. $3w + 2l$ _____ | 6. $4h - 6$ _____ |
| 7. $4l + 2w + 7$ _____ | 8. $6d - 4n + 3$ _____ |

Evaluate.

- | | |
|------------------------------|-------------------------------|
| 9. $24 - 3t, t = 6$ _____ | 10. $7y - 12, y = 4$ _____ |
| 11. $8n + 5, n = 3$ _____ | 12. $15 + 6p, p = 5$ _____ |

Evaluate for $x = 5$.

- | | | |
|------------------------|--------------------------|-----------------------|
| 13. $14 - x$ _____ | 14. $7x$ _____ | 15. $x + 8$ _____ |
| 16. $x^2 - 3$ _____ | 17. $4x \div 2$ _____ | 18. $(2x)^3$ _____ |

Evaluate for $a = 3$ and $b = 6$.

- | | | |
|------------------------|--------------------------|---------------------------|
| 19. $4a - 2b$ _____ | 20. $(b - a)^3$ _____ | 21. $5a + 2b$ _____ |
| 22. $3ab$ _____ | 23. $8a \div b$ _____ | 24. $2a^2 + b^2$ _____ |

Evaluate for $p = 4.2$ and $q = 1.5$.

- | | | |
|------------------------|------------------------|-------------------------|
| 25. $p + q$ _____ | 26. $p - 2q$ _____ | 27. $p - q$ _____ |
| 28. $2p + 3q$ _____ | 29. $2p - 4q$ _____ | 30. $3(p - q)$ _____ |

Evaluate.

- | | |
|------------------------------|-------------------------------|
| 31. $3a, a = -3$ _____ | 32. $5s, s = -4$ _____ |
| 33. $x + 4, x = -2$ _____ | 34. $3t + 4, t = -5$ _____ |

Evaluate for $x = -4$ and $y = -3$.

- | | | |
|----------------------------|---------------------------|------------------------|
| 35. $x - y$ _____ | 36. $3x + 2y$ _____ | 37. $4x - 3y$ _____ |
| 38. $5x + 4y + 8$ _____ | 39. $x - 4y - 4$ _____ | 40. $3xy$ _____ |

41. The total cost of a banquet is represented by the expression $25n$, where n is the number of people. What is the cost for 45 students?

11.2 Solving Equations

MATHPOWER™ Eight, pp. 392–393

A sentence with an equal sign, =, is called an equation.

Equations can be true or false.

The equation $x + 3 = 7$ contains the variable x .

If you replace x by 4, the equation is true.

A number that replaces a variable to make an equation true is called a solution of the equation.

Write "true" or "false" for each of the following.

1. $x + 7 = 12, x = 5$ 2. $14 - x = 6, x = 9$

3. $x - 4 = 12, x = 8$ 4. $7 + x = 18, x = 11$

5. $x \div 4 = 8, x = 34$ 6. $3x + 3 = 15, x = 4$

Solve by inspection.

7. $m + 8 = 16$ 8. $6 + p = 12$

9. $n - 4 = 21$ 10. $25 - q = 10$

11. $14 + x = 19$ 12. $p + 5 = 14$

13. $r - 11 = 20$ 14. $32 - w = 21$

Solve by inspection.

15. $7x = 42$ 16. $8y = 56$

17. $\frac{m}{6} = 8$ 18. $\frac{u}{3} = 12$

19. $9y = 72$ 20. $5x = 40$

21. $\frac{48}{p} = 12$ 22. $\frac{32}{b} = 16$

Solve by guess and check.

23. $3n - 5 = 19$ 24. $7x + 8 = 36$

25. $2m + 11 = 37$ 26. $6k - 7 = 29$

27. $31 - 3x = 19$ 28. $16 + 6t = 52$

29. $49 - 5y = 24$ 30. $37 + 7p = 79$

31. $2x + 33 = 49$ 32. $\frac{x}{2} + 9 = 20$

The solution for each equation is $x = 9$.
Complete the equations. More than one answer is possible for each equation.

33. $x + \square = \square$ 34. $x - \square = \square$

35. $\frac{\square}{x} = \square$ 36. $\square x = \square$

37. $\square x - \square = \square$ 38. $\frac{x}{\square} + \square = \square$

39. Mrs. Cantwell gave 2 workbooks to each of the 25 students in her classroom and had 12 workbooks left on the shelf. Circle and solve the equation that represents the total number of workbooks.

a) $25 + 12 = n$ b) $2n = 25 + 12$

c) $n - 12 = 50$ d) $\frac{n}{2} - 12 = 25$

11.3 Solving Equations by Addition

11.4 Solving Equations by Subtraction

MATHPOWER™ Eight, pp. 396–397

Solve $x - 8 = 11$.

Add 8 to both sides.

$$x - 8 + 8 = 11 + 8$$

$$x = 19$$

Check: L.S. = $19 - 8$ R.S. = 11
 = 11

The solution is $x = 19$.

Solve $y + 9 = 14$.

Subtract 9 from both sides.

$$y + 9 - 9 = 14 - 9$$

$$y = 5$$

Check: L.S. = $5 + 9$ R.S. = 14
 = 14

The solution is $y = 5$.

Write the number you would add to both sides and solve each equation.

1. $x - 9 = 13$ _____

2. $x - 12 = 8$ _____

3. $y - 4 = 7$ _____

4. $y - 5 = 14$ _____

5. $p - 6 = 21$ _____

Solve and check.

6. $t - 8 = 14$ 7. $s - 11 = 9$

8. $y - 6 = 8$ 9. $a - 15 = 16$

10. $m - 3 = 8$ 11. $n - 16 = 22$

12. $x - 25 = 3$ 13. $z - 31 = 16$

Solve and check.

14. $x - 5 = 6.7$ 15. $z - 0.7 = 2.4$

16. $m - 2.4 = 6.3$ 17. $5.3 = s - 2.4$

Write the number you would subtract from both sides and solve each equation.

18. $x + 5 = 11$ _____

19. $x + 7 = 14$ _____

20. $y + 11 = 22$ _____

21. $y + 6 = 14$ _____

22. $p + 8 = 24$ _____

Solve and check.

23. $m + 5 = 12$ 24. $y + 9 = 13$

25. $t + 13 = 23$ 26. $n + 17 = 28$

27. $x + 10 = 29$ 28. $a + 8 = 14$

29. $s + 7 = 15$ 30. $m + 17 = 44$

Solve and check.

31. $x + 3.8 = 7$ 32. $a + 3.5 = 4.8$

33. $s + 6.4 = 12.1$ 34. $7.2 = m + 4.3$

11.5 Solving Equations by Division

11.6 Solving Equations by Multiplication

MATHPOWER™ *Eight*, pp. 398–399

Solve $4x = 24$.

Divide both sides by 4.

$$\frac{4x}{4} = \frac{24}{4}$$

$$x = 6$$

Check: L.S. = $4x$ R.S. = 24
 = $4(6)$
 = 24

The solution is $x = 6$.

Solve $\frac{x}{7} = 4$.

Multiply both sides by 7.

$$7 \times \frac{x}{7} = 7 \times 4$$

$$x = 28$$

Check: L.S. = $\frac{x}{7}$ R.S. = 4
 = $\frac{28}{7}$
 = 4

The solution is $x = 4$.

Write the number you would divide both sides by and solve each equation.

1. $7x = 56$ _____
2. $3x = 48$ _____
3. $8x = 64$ _____
4. $13x = 52$ _____

Solve and check.

5. $8x = 40$ 6. $4x = 28$
 _____ _____

7. $11x = 88$ 8. $6x = 54$
 _____ _____

9. $3x = 63$ 10. $9x = 108$
 _____ _____

11. $7x = 91$ 12. $5x = 45$
 _____ _____

Solve and check.

13. $8x = 25.6$ 14. $4x = 5.2$
 _____ _____

15. $1.2x = 4.2$ 16. $0.5x = 3.2$
 _____ _____

Write the number you would multiply both sides by and solve each equation.

17. $\frac{x}{3} = 12$ _____
18. $\frac{x}{8} = 5$ _____
19. $\frac{x}{5} = 7$ _____
20. $\frac{x}{11} = 4$ _____

Solve and check.

21. $\frac{m}{7} = 3$ 22. $\frac{t}{6} = 11$
 _____ _____

23. $\frac{y}{12} = 20$ 24. $\frac{n}{8} = 12$
 _____ _____

25. $\frac{a}{7} = 15$ 26. $\frac{x}{4} = 23$
 _____ _____

27. $\frac{s}{6} = 18$ 28. $\frac{z}{3} = 37$
 _____ _____

Solve and check.

29. $\frac{x}{3} = 2.6$ 30. $\frac{x}{8} = 1.4$
 _____ _____

31. $\frac{x}{0.6} = 3.2$ 32. $\frac{x}{1.4} = 0.5$
 _____ _____

11.7 Like Terms

11.8 The Distributive Property

MATHPOWER™ Eight, pp. 402-403

Terms that have the same variable parts are called **like terms**. The terms $2x$, $4x$, and $5x$ are like terms. The terms $6x$, $3x^2$, and $4y$ are **unlike terms**. Only like terms can be combined.

To expand an expression with brackets means to remove the brackets by multiplying. This is done using the distributive property.

$$\begin{aligned} 4(x - 3) &= 4(x - 3) \\ &= 4 \times x - 4 \times 3 \\ &= 4x - 12 \end{aligned}$$

Multiply each term inside the brackets by 4.

Simplify.

1. $2x + 7x$

2. $7y - 3y$

3. $4z + 3z + 2z$

4. $6p - 3p + 7p$

5. $12f - 4f - 2f$

6. $x + 3x + 6x$

7. $7d + 8b - 3d + 4b$

8. $3t + 4y + 5y + t$

9. $7 + 5c + 7c - 3c$

10. $z + 2z + x + 3x$

11. $3m + n + 4n - m$

12. $9w - 6w - 2w + u$

Simplify, then evaluate for $x = 3$ and $y = 2$.

13. $8x + 3x - 2x + 3y$ _____

14. $7x - 2y + 5x + 4y$ _____

15. $5x + 6y - 5x - 4y$ _____

16. $4x - 6x + 2y - 6y$ _____

17. $x + 4x - 2x + 9y$ _____

18. $8y - 7x + 2y - x$ _____

Expand.

19. $3(x + 6)$

20. $4(a + 4)$

21. $7(y - 3)$

22. $8(b - 2)$

23. $5(3 + c)$

24. $2(9 + d)$

25. $7(6 - s)$

26. $9(3 - x)$

Expand.

27. $3(4z + 3)$

28. $5(6p - 2)$

29. $-7(3q - 1)$

30. $-2(1 + 6d)$

31. $4(3x - 7y)$

32. $8(7a + 4b)$

33. $4(3x + 7y + 2)$

34. $6(a - 2b + 3)$

35. $-3(3 + 4c + d)$

36. $-8(2 - g - h)$

Name _____

11.9 Solving Equations in More Than One Step

MATHPOWER™ *Eight*, pp. 404–405

When you solve equations, the object is to get the variable alone, or to **isolate the variable**, on one side of the equal sign.

Sometimes this requires more than one step.

Solve $3x + 5 = 14$.

$$3x + 5 = 14$$

$$3x + 5 - 5 = 14 - 5 \quad \text{Subtract 5 from both sides.}$$

$$3x = 9$$

$$\frac{3x}{3} = \frac{9}{3}$$

$$x = 3$$

Divide both sides by 3.

The solution is $x = 3$.

Check: L.S. = $3x + 5$
 $= 3(3) + 5$
 $= 9 + 5$
 $= 14$
 R.S. = 14

Solve and check.

1. $5x + 4 = 34$

2. $6y + 3 = 45$

3. $8z - 7 = 57$

4. $11t - 16 = 39$

5. $2m - 6 = 12 + 4$

6. $3z + 4 = 22 - 3$

Solve and check.

7. $4x + 2 = 14$

8. $7y - 6 = 8$

9. $2x - 9 = 5$

10. $8n - 13 = 3$

11. $3t + 4 = 51 - 8$

12. $2m - 15 = -21 + 8$

Solve and check.

13. $\frac{x}{5} + 3 = 7$

14. $\frac{a}{5} + 6 = 11$

15. $\frac{t}{3} + 9 = 12$

16. $\frac{w}{11} - 2 = 7$

Solve and check.

17. $2x - 3.6 = 4.4$

18. $5y + 1.3 = 21.3$

19. $4y - 1.3 = 8.7$

20. $3x + 2.1 = 11.7$

Solve and check.

21. $4z + 12 = 7z - 9$

22. $8y + 2y = 6y + 16$

23. $10n + 12 - 9 - 7n + 4n = 31$

24. $12 + 2t + 7t + 4t = 64$

Solve and check.

25. $3(x - 5) = 9$

26. $9(n + 2) = n + 26$

27. $3 + 6s = 4(s - 3) + 19$

28. $4(d - 4) + 2 = 3(d + 1)$

11.10 Writing Equations

MATHPOWER™ Eight, pp. 406–407

Write an equation for each statement.

1. Three added to a number is twelve.

2. A number decreased by six is four.

3. A number divided by three is eight.

4. A number multiplied by nine is fifty-four.

5. The sum of a number and three less than the number is sixteen.

6. A number multiplied by seven, then increased by nine, is thirty.

7. A number decreased by four, then divided by two, is eight.

8. Six more than three times a number is twenty-four.

Write an equation for each statement.

9. The width decreased by two is nine.

10. Six times the length is seventy-two.

11. The area decreased by twelve is sixty.

12. Half the base times the height is 20.

Write an equation that could be used to solve each problem.

13. Miguel is four years older than Jasmine. The sum of their ages is twenty-eight. How old is Jasmine?

14. Manitoba has twice as many days of thunderstorms in a year as New Brunswick. Together, they have thirty-nine days of thunderstorms. How many days of thunderstorms does New Brunswick have?

15. At Niagara Falls, the American Falls are two metres higher than the Horseshoe Falls. The sum of their heights is 116 m. How high are the Horseshoe Falls?

16. The mass of a bobcat is one-fifth the mass of an Arctic wolf. Their combined mass is forty-eight kilograms. What is the mass of a bobcat?

Write a word problem that could be solved by each equation.

17. $x + 5 = 12$

18. $4y - 2 = 18$

19. $\frac{x}{2} + 5 = 11$

Name _____

11.11 Using Equations to Solve Problems

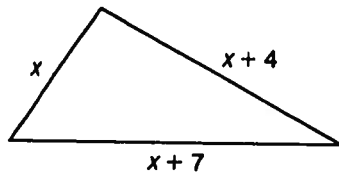
MATHPOWER™ Eight, pp. 408–409

Write an equation and solve each problem.

1. When a number is increased by thirty-four, the result is seventy-eight. Find the number.

2. Luanne read the same number of pages in her novel for three days. She finished the book on the fourth day by reading fifty-two pages. If there are one hundred ninety-six pages in the book, how many pages did she read on each of the first three days?

3.



The perimeter of the triangle is 74 cm. Find the length of each side.

4. The width of a rectangle is one-third the length. The perimeter is 48 cm. Find the length and width.

5. The perimeter of a regular hexagon is ninety-six centimetres. Find the length of each side.

6. There were twelve times more children than adults at the matinee performance of the school play. There were 455 people at the play. How many adults and children were there?

7. The sum of three consecutive numbers is 237. What are the three numbers?

8. The sum of three numbers is 81. The second number is 4 times the first. The third number is 3 more than the first. What are the three numbers?

9. A full-grown giraffe is about 6 times heavier than a full-grown lion. A full-grown cheetah is about one-quarter as heavy as a full-grown lion. Together, they are about 450 kg. What is the approximate mass of each animal?

10. Each of the equal sides of an isosceles triangle is 5 cm greater than the base. The perimeter is 46 cm. What is the length of each of the sides of the triangle?

11. Jonathan has \$7.00 in nickels, dimes, and quarters. He has twice as many dimes as nickels, and 3 times as many quarters as nickels. He has 42 coins altogether. How many of each coin does he have?

11.12 Developing and Working with Formulas

MATHPOWER™ Eight, pp. 410–411

1. The formula for the area of a parallelogram is $A = b \times h$.

a) Find A when $b = 8$ m and $h = 4$ m.

b) Find b when $A = 42$ cm² and $h = 7$ cm.

c) Find h when $A = 56$ m² and $b = 7$ m.

2. The formula for the area of a triangle is $A = \frac{1}{2}b \times h$.

a) Find A when $b = 10$ cm and $h = 3$ cm.

b) Find b when $A = 14$ m² and $h = 7$ m.

c) Find h when $A = 36$ cm² and $b = 12$ cm.

3. a) Complete the table.

| | | | | | | |
|---------------|----|----|----|---|---|---|
| Hours (h) | 1 | 2 | 3 | 4 | 5 | 6 |
| Cost (C) | 12 | 24 | 36 | | | |

b) Write a formula for the pattern.

4. If the perimeter and the width of a rectangle are known, the length can be calculated using $l = \frac{P - 2w}{2}$. Find the length of the following rectangles.




a) $P = 39$ cm, $w = 9$ cm _____

b) $P = 45$ cm, $w = 10.8$ cm _____

c) $P = 28.8$ m, $w = 6.6$ m _____

d) $P = 48.6$ m, $w = 13.7$ m _____

5. a) Complete the table.

| Number of Squares | Figure | Perimeter |
|-------------------|---|-----------|
| 1 |  | 4 |
| 2 |  | 6 |
| 3 |  | 8 |
| 4 | | |
| 5 | | |
| 6 | | |

b) Write a formula for the perimeter in terms of the number of squares.

c) What is the perimeter of the figure made from 24 squares?

d) How many squares are in the figure with a perimeter of 62?

6. The formula for the circumference of a circle is $C = 2\pi r$. Write a formula for calculating the radius when the circumference is known.

7. Use the formula you wrote in question 6 to find the radius of the circles with each of the following circumferences.

a) 47.1 cm b) 37.68 cm

c) 78.5 cm d) 157 cm

Name _____

11.13 Equations with Integer Solutions

MATHPOWER™ Eight, pp. 412–413

Solve and check

$$4x - 2 = -6.$$

Add 2 to both sides:

$$4x - 2 = -6$$
$$4x - 2 + 2 = -6 + 2$$

$$4x = -4$$

Divide both sides by 4:

$$\frac{4x}{4} = \frac{-4}{4}$$

$$x = -1$$

Check: L.S. = $4x - 2$
 $= 4(-1) - 2$
 $= -4 - 2$
 $= -6$

R.S. = -6

The solution is $x = -1$.

Solve and check.

1. $x + 4 = -2$

2. $x + 10 = 3$

3. $x - 8 = 3$

4. $x - 5 = -8$

5. $7 + x = -11$

6. $-10 + x = 17$

7. $x + 12 = -6$

8. $x - 7 = -12$

9. $x - 4 = -4$

10. $-7 = x - 3$

Solve and check.

11. $7x = -28$

12. $-4y = -20$

13. $\frac{z}{5} = -3$

14. $\frac{p}{-3} = 11$

15. $\frac{w}{-4} = -8$

16. $-9q = 36$

17. $-8b = -32$

18. $\frac{45}{n} = -9$

Solve and check.

19. $4x - 3 = -11$

20. $6y + 4 = -8$

21. $9z - 5 = 22$

22. $6p + 10 = -14$

23. $3q - 3 = -27$

24. $2a + 5 = 1$

Solve and check.

25. $3(y - 2) = -18$

26. $4x + 2(x - 1) = -20$

27. $2(p - 3) + 6 = 4p - 10$

28. $5(w + 2) = 3(w - 4)$

Solve and check.

29. $x + 2.1 = -3.8$

30. $y - 1.7 = -6.5$

31. $z - (-1.4) = -7.2$

32. $p - (-3.2) = 5.9$

11.14 Solving Inequalities

MATHPOWER™ Eight, pp. 416–417

Solve each inequality for whole-number values of the variable.

1. $x + 2 < 6$ _____
 2. $2 + y < 9$ _____

3. $z + 3 \leq 7$ _____
 4. $4p \leq 32$ _____

Solve each inequality for whole-number values of the variable from 0 to 10.

5. $x - 4 > 2$ _____
 6. $1 + y > 3$ _____

7. $3p \geq 6$ _____
 8. $z + 2 \leq 10$ _____

Solve each inequality for whole-number values of the variable. Graph the solution.

9. $x \geq 9$ _____

10. $y < 5$ _____

11. $2z \leq 14$ _____

12. $2x > 12$ _____

13. $x + 2 < 12$ _____

Solve each inequality for whole-number values of the variable. Graph the solution.

14. $t + 1 \geq 4$ _____

15. $y - 3 \leq 6$ _____

16. $p - 2 \geq 5$ _____

State an inequality represented by each graph.



19. Stephanie has to save at least \$860 this year for a vacation. Write the inequality that can be used to calculate the amount she needs to save each week. Calculate the least amount she must save each week.

20. Find the whole-number values of x that give a triangle a perimeter of no more than 30 cm, given the inequality $x + 10 + 12 \leq 30$.

Name _____

Test One CHAPTER 11: Algebra
MATHPOWER™ Eight, pp. 385–421

Evaluate for $x = 2$ and $y = 3$.

1. $3x - y$

2. $5x - 2y$

3. $x^2 + 3y$

4. $3(x + y)$

Solve and check.

5. $x + 6 = 11$

6. $y - 5 = 3$

7. $3t = 18$

8. $\frac{m}{4} = 9$

9. $3n - 4 = 11$

10. $4x + 1 = 21$

Simplify.

11. $3x + 5x + 3$

12. $6m - 2 - 3m + 5$

13. $9t + 3 + 6t - 10$

14. $12 - 3a + 6a - 4$

Expand.

15. $3(x + 2)$

16. $4(3a - 3)$

17. $2(6m + 3n)$

18. $5(3s - r)$

Solve and check.

19. $3m + 2 = 11$

20. $3(y + 1) = 21$

21. $4x - 2.5 = 2.3$

22. $5.4 = 2p + 0.6$

23. $2(x + 2) = 3(x - 4)$ 24. $4 = 2(y - 5)$

Solve each inequality for whole-number values of the variable. Graph the solution.

25. $3x < 18$ _____

26. $x + 2 \geq 7$ _____

Write an equation for each statement.

27. Nine less than five times a number is fifty-one.

28. Shannon has \$15 more than Emil, and together they have \$49.

Solve.

29. The length of a rectangle is 3 cm more than the width. The perimeter is 34 cm. Find the length and width.

30. One-fifth of Canada's medals at one Summer Olympics were silver. Canada won two silver medals that year. How many medals did Canada win that year?

31. Angela has \$5.00 more than Gino. Together, they have \$40.00. How much does each of them have?

Test Two CHAPTER 11: Algebra

MATHPOWER™ Eight, pp. 385-421

Evaluate for $x = 4$ and $y = 1.5$.

1. $3x + 4y$

2. $x^2 - 3y$

3. $3x^2 - (6y)^2$

4. $2xy - 3x$

Solve and check.

5. $x + 7 = 19$

6. $y - 8 = 12$

7. $5n = 40$

8. $\frac{x}{3} = 9$

9. $2t + 3 = 17$

10. $4p - 1 = 15$

Simplify.

11. $6x + 7y + 3x - 4y$

12. $8m - 9 + 3n - 2m$

13. $8a + 5 - 4b - 2b + 3a$

14. $10t - 3s - 2t + 4s$

Expand.

15. $3(x + 5)$

16. $6(2a - 5)$

17. $3(4m + 5n)$

18. $7(3s - t)$

Solve and check.

19. $3m + 2 = 8$

20. $8 + 2z = 24$

21. $20 = 4y - 4$

22. $4t - 1.5 = 7.3$

23. $4(a + 1) = 2(a + 8)$ _____

24. $3(x + 3) = -12$ _____

Solve each inequality for whole-number values of the variable. Graph the solution.

25. $4x < 24$ _____

26. $3x - 2 \geq 12$ _____

Write an equation for each statement.

27. The sum of three consecutive numbers is forty-five.

28. If you multiply a number by nine, then subtract six, the result is fifty-seven.

Solve.

29. Jupiter has eight times as many moons as Mars. Mars has two moons. How many moons does Jupiter have?

30. The sum of three numbers is twenty-nine. The second number is three times the first number, and the third number is four more than the first number. What are the three numbers?

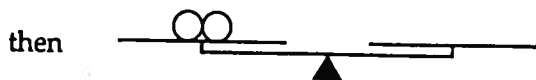
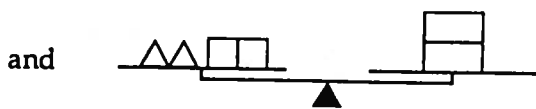
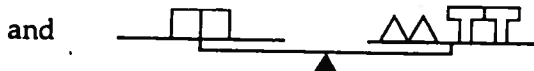
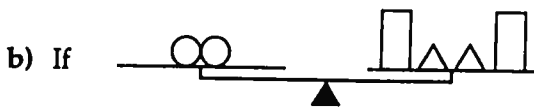
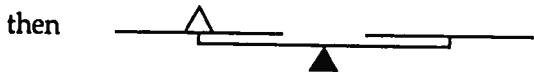
Extension CHAPTER 11: Algebra

MATHPOWER™ Eight, pp. 385-421

1. Complete the table for $x < y$.

| x | y | $x + y$ | $3x - y$ | $x + 4y$ | $(x - y)^2$ | $(y - x)^3$ |
|-----|-----|---------|----------|----------|-------------|-------------|
| -2 | 6 | | | | | |
| -3 | | | | 5 | | |
| | 7 | | | | 64 | |
| 0 | | | -4 | | | |
| | 11 | | | | | 125 |
| | 9 | | | | 25 | |

2. Use the clues to determine which objects must be placed in the right pan of the last seesaw to balance the seesaw. Draw the missing objects in the right pan. The objects in the left pan of the last seesaw cannot be used in the right pan of the last seesaw.



3. Evaluate the expression $\frac{4x - 3}{2}$ for each of the following values of x .

a) 0.5 _____ b) 1.8 _____

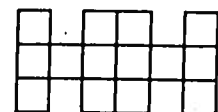
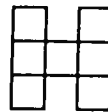
c) 0.75 _____ d) 3.2 _____

4. Evaluate the expression $4\frac{1}{3} + 5y$ for each of the following values of y .

a) $\frac{1}{2}$ _____ b) $\frac{3}{5}$ _____

c) $\frac{1}{8}$ _____ d) $\frac{3}{4}$ _____

5. The first figure is made up of one H-shape. It has a perimeter of 16 units. The second figure is made up of 2 connected H-shapes. It has a perimeter of 26 units.



a) Complete the table by finding the perimeters of the figures with the given numbers of H-shapes.

| Number of H-Shapes | Perimeter |
|--------------------|-----------|
| 1 | 16 |
| 2 | 26 |
| 3 | |
| 4 | |
| 5 | |

b) What is the increase in the perimeter each time an H-shape is added?

c) What is the perimeter of the figure made from 6 H-shapes? 7 H-shapes?

d) Write a formula for the perimeter in the form $P = \blacktriangle \times n + \blacksquare$, where n is the number of H-shapes in the figure, and \blacktriangle and \blacksquare represent two different numbers.

6. Solve each inequality for whole-number values of the variable. Graph each solution.

a) $2x + 1 < 11$ _____

b) $6x - 3 \geq 15$ _____