3. Give two examples of a polynomial that satisfies all statements.
- consists of two terms
- contains two variables
- has degree 2
- one term is of degree 1 and has a coefficient of 1

4. When is it acceptable not to write the 1 in an algebraic expression? When must you write the 1? Give examples.

Practise

For help with #5 to #7, refer to Example 1 on page 176.

5. For each expression, identify the number of terms and whether the expression is a monomial, binomial, trinomial, or polynomial.

a) $3x^2 - 5x - 7$ **b)** $-11a$

c) $c^2 + cf + df - f^2$ **d)** 8

6. What is the number of terms and what is a name for each expression?

a) n **b)** $6 + 4x - x^2$

c) 0 **d)** $p^2 + 3pq$

7. Refer to the polynomials below to answer each question.

$6x$	-15
$3x - y$	$4c^2 - cd$
$7 + a + b$	$3m^2 - 4mn - 9n^2 + 1$

a) Which ones are monomials?

b) Which ones are trinomials?

c) Which ones have two terms?

For help with #8 to #10, refer to Example 2 on pages 176–177.

8. For each polynomial, what is the degree and number of terms?

a) $4 - b$ **b)** $fg + 2g$

c) $8x^2 - xy - y^2$

9. State the degree and number of terms for each polynomial.

a) $3xy + 1$ **b)** $11k^2 + 7k - 5$

c) 6

10. Refer to the polynomials below to answer each question.

$3b^2$	$2 + p$
$4st + t - 1$	$2x^2 - y^2$

a) Which ones are binomials?

b) Which ones have degree 2?

c) What is the variable in the monomial?

d) Which polynomials have a constant term?

For help with #11 to #14, refer to Example 3 on page 177.

11. What expression is represented by each set of algebra tiles?

a)

b)

c)

12. Write the expression represented by each set of algebra tiles.

a)

b)

c)

13. Model each polynomial.

a) $x^2 + x - 1$

b) $3x + 2$

c) $-2x$

14. Use a model to represent each polynomial.

a) $-x^2 + 3$

b) $2x^2 - 3x$

c) 8

Apply

15. Represent each of the following with a diagram and an expression.

a) binomial

b) monomial of degree 1

c) monomial of degree 2 with a coefficient of 9

d) polynomial with four terms that is of degree 2

16. Use your knowledge of algebra tiles to answer the following questions.

a) How are the dimensions of a 1-tile and an x-tile related?

b) The rectangle shown was formed using an x^2-tile and three x-tiles. What is an expression for the length of the rectangle?

17. Write an algebraic expression for each of the following.

a) the product of 6 and x

b) the sum of $2x$ and 3

c) the length of the rectangle below, which is made from algebra tiles

18. Make a model of an algebraic expression that includes at least one x^2-tile, at least two x-tiles, and two 1-tiles. Use materials or a diagram. Then, use symbols to show your expression. What type of polynomial is it?

19. For the polynomial $6x^2 - 5$, state the following.

a) number of terms

b) coefficient of the first term

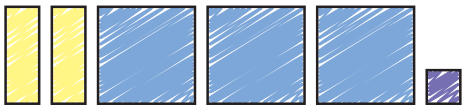
c) number of variables

d) degree of polynomial

e) constant term

20. Let  represent x^2,  represent x, and  represent 1. The same diagrams in yellow represent negative quantities.

a) What is an expression for the polynomial shown?



b) Make up a trinomial. Draw diagrams to represent your trinomial.

21. Write each statement as an algebraic expression. Include what your variables represent.

a) Eight and a number are added together.

b) Omar has some money in his wallet. How much money does he have after a friend gives him $5?

c) A page is 4 cm longer than its width.

d) The product of a number and 5 is increased by 2.

e) The result of 3 times the number of people decreased by 21.

22. Describe a situation that could be modelled by each given polynomial.

a) $3x + 5$ **b)** $10 - x$

23. Marion gives French lessons in the evening. She charges \$20 for adults and \$15 for children. The expression $20a + 15c$ represents her earnings.

a) What do the variables a and c represent?

b) How much does Marion make if she gives lessons to four adults and nine children? Show your work.

c) Write a new expression for Marion's earnings if she charges \$3 more for adults and \$2 more for children.

24. Tickets for a school concert are \$10 for adults and \$5 for students. Write an expression that shows the total income for the school concert. Tell what your variables represent.

25. A hockey league awards teams two points for a win, one point for a shoot-out loss, and no points for a loss in regulation time.

a) Write an algebraic expression to represent the total points for a hockey team.

b) What variable(s) did you use? Indicate what each variable represents.

c) In the first 20 games of the season, Team A had 12 wins and 4 shoot-out losses. How many losses in regulation time did the team have?

d) What were the total points for Team A?

e) Team A was tied with Team B after 20 games. However, Team B had a different record than Team A. Show two possible records for Team B. Use your expression to show that the two hockey teams had the same number of total points.

26. A banquet hall can be rented for parties. An expression for the rental cost is $5n + 75$, where n is the number of people.

a) What type of polynomial is $5n + 75$, and what is its degree?

b) What could the numbers 5 and 75 represent?

c) How much does it cost to rent the banquet hall for 150 people?

Extend

27. On a true/false test, there is a penalty for incorrect answers. Miranda's teacher advises the students not to guess at any of the 25 questions. The teacher awards 2 points for a correct answer, -1 point for a wrong answer, and 0 points if the question is not answered.

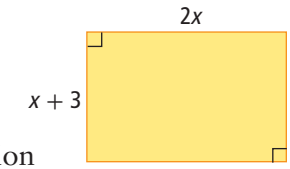
a) Write a polynomial to represent a student's score on this test.

b) What are the maximum and minimum scores possible on this test? Explain.

c) What are all of the possible scores if Miranda got 20 questions correct? Explain.

28. What is the degree of $xy - abx + cdy - qr - prqz$ if x, y, and z are variables and a, b, c, d, p, q, and r are coefficients?

29. Ricardo draws the following rectangle with dimensions in metres.



a) What is an expression for the perimeter of the rectangle?

b) Write an equation showing how the length and width of the diagram would be related if the dimensions given were for a square.

c) Solve your equation in part b) to find the value of x. Show your work.