UNIT 1 • RELATIONSHIPS BETWEEN QUANTITIES AND EXPRESSIONS
Lesson 3: Interpreting Formulas and Expressions

Practice 1.3.1: Identifying Terms, Factors, and Coefficients   A

For problems 1 and 2, simplify each expression if possible, and then list the terms of the simplified expression. Identify the constant term and the factors and coefficients of non-constant terms.

1. $12a^3 + 16a + 4$

2. $21x^2 + 3x - 15x^2 + 9$

For problems 3 and 4, translate each verbal expression into an algebraic expression. Then, list the terms of the given expressions, and identify the constant term and the factors and coefficients of non-constant terms.

3. half the sum of *x* and *y*, decreased by one-third *y*

4. the product of 5 and the cube of *x*, increased by the difference of 6 and x^3

For problem 5, write an expression that has the given terms and coefficients.

5. Write an expression with 4 terms, containing the coefficients 3, 6, and 9.

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For problems 6–10, write an algebraic expression to describe each situation. Then, list the terms of the expressions. Identify the constant term and the factors and coefficients of non-constant terms.

6. Gavin agrees to buy a 6-month package deal of monthly gym passes, and in turn receives a 15% discount. Write an algebraic expression to represent the total cost of the monthly passes with the discount, if x represents the cost of each monthly pass.

7. Andre purchased 10 packs of trading cards online and received a 20% discount off each pack. Shipping cost $3.99. Write an algebraic expression to represent the total cost of the trading cards with the shipping cost, if x represents the cost of each pack of cards.

8. Nadia and some friends went to a movie. Their total cost was $30.24, which included taxes of $2.24. Write an algebraic expression to represent the price of each movie ticket, not including taxes. Let x represent the number of Nadia's friends who went to the movies.

9. Write an expression to represent the area of a trapezoid, which can be found by multiplying the height of the trapezoid by half of the sum of $base_1$ and $base_2$.

10. The surface area of a cylinder with radius r and height h is twice the product of π and the square of the radius plus twice the product of π, the radius, and the height.

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Practice 1.3.1: Identifying Terms, Factors, and Coefficients   B

For problems 1–3, simplify each expression if possible, and then list the terms of the simplified expression. Identify the constant term and the factors and coefficients of non-constant terms.

1. $8x^2 - 3x + 6x^2 + 5x - 9$

2. $5(2x + 4) + 3x$

3. $\dfrac{4x^3}{5} + 9x$

For problems 4 and 5, translate each verbal expression into an algebraic expression. Then, list the terms of the given expressions, and identify the constant term and the factors and coefficients of non-constant terms.

4. 4 more than the quotient of x squared and 3

5. the sum of x to the sixth power and 3 times x

For problem 6, write an expression that has the given terms and coefficients.

6. Write an expression with 5 terms, containing the coefficients 12, 15, 18, and 21.

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For problems 7–10, write an algebraic expression to describe each situation, and then list the terms of the expressions. Identify the constant term and the factors and coefficients of non-constant terms.

7. Colin bought 2 theater tickets and paid a service charge of 5% for buying them from a ticket broker. Write an algebraic expression to represent the total cost of the tickets. Let x represent the cost of each ticket.

8. Eddie purchased 4 packages of light bulbs and received a 15% discount. He also paid $4.85 in taxes on his purchase. Write an algebraic expression to represent the total amount Eddie paid. Let x represent the cost of each package purchased.

9. The perimeter of a rectangle is found by finding the sum of all the sides. Write an algebraic expression to represent the perimeter of a rectangle with length x meters and width 4 meters shorter.

10. Write an algebraic expression that represents $\dfrac{5}{9}$ of the difference of a given Fahrenheit temperature and 32.