

NAME \_\_\_\_\_

**Module 2** Writing and Simplifying Algebraic Expressions  
**Lesson 1** Using the Language of Algebra



**independent  
practice**

Identify the coefficient of each monomial.

1.  $8H$

8

2.  $-y$

-1

3.  $-0.003m$

-0.003

4.  $6.9N$

6.9

5.  $-\frac{c}{7}$

 $-\frac{1}{7}$ 

6.  $\frac{b}{6}$

 $\frac{1}{6}$ 

7.  $\frac{2y}{5}$

 $\frac{2}{5}$ 

8.  $\frac{4w}{9}$

 $\frac{4}{9}$ 

Give an example of a term containing . . . possible answers given

9. a rational number.

 $\frac{1}{3}$ 

10. one variable with a coefficient of 1.

 $x$ 11. the coefficient  $\frac{1}{4}$  with one variable. $\frac{x}{4}$ 12. a coefficient of  $-8$ , with one squared variable. $-8n^2$ 

13. a natural number.

714. two variables with a coefficient of  $-1$ . $-xy$ 

15. a coefficient with one cubed variable.

 $5x^3$ 16. a coefficient of  $\frac{3}{7}$  and three variables. $\frac{3abc}{7}$ 

Give an example of the following types of polynomials. possible answers given

17. Trinomial

 $x^2 + 4x - 3$ 

18. Monomial

 $2ab^3$ 

19. Binomial

 $7m + 1$

Identify each polynomial as a *monomial*, *binomial*, or *trinomial*.

20.  $xy^2 + 4xy - 2$

**Trinomial**

21.  $8.45AB^3C$

**Monomial**

22.  $3r - 5s$

**Binomial**

23.  $m^4n^3 + 3m^3n^2 + 5m^2n$

**Trinomial**

24.  $6xy + 4$

**Binomial**

25.  $a^3b^2 - a^2b^4 - 5ab^2$

**Trinomial**

26.  $3QT^3$

**Monomial**

27.  $6m + 2n - 1$

**Trinomial**

State the degree of each monomial.

28.  $7y$

**1**

29.  $6cd$

**2**

30.  $5xy^2$

**3**

31.  $mn^2p^3$

**6**

State the degree of each polynomial.

32.  $5c^5 - 3c^7 + c^9$

**9**

33.  $6a^4b - 8ab^3$

**5**

## Journal

1. Can a coefficient be a fraction? Why or why not?
2. Explain in your own words how a fraction might not be a monomial.
3. Explain in your own words how a monomial is a polynomial.
4. What is the degree of the term  $3^3x^2y^2$ ? Support your answer.
5. What is the degree of the term  $3x^3y^2z$ ? Support your answer.

## Cumulative Review

Let  $A = \{2, 4, 6\}$ ,  $B = \{6, 8, 10\}$ , and  $C = \{1, 3, 5\}$ . Find the following.

1.  $A \cup B$  **{2, 4, 6, 8, 10}**
2.  $A \cap B$  **{6}**
3.  $B \cap C$  **{ } or  $\emptyset$  or Empty Set**
4.  $B \cup C$  **{1, 3, 5, 6, 8, 10}**

Evaluate the following radicals, if possible.

5.  $\sqrt{-49}$

Not a real number

6.  $\sqrt{49}$

7

7.  $-\sqrt{49}$

-7

8.  $\sqrt[3]{-27}$

-3

9.  $-\sqrt[3]{27}$

-3

10.  $-\sqrt[3]{-27}$

3

Simplify, if possible.

11.  $-3^2$

-9

12.  $(-3)^2$

9

13.  $(-2)^3$

-8

14.  $2^3$

8

15.  $12 - 20 \div 2^2$

7

16.  $\frac{15 + 3(2)}{3}$

7

### Manipulative Problems

Model each polynomial using Algebra Tiles.

1.  $x^2 + 3x - 2$



2.  $3x^2 - 2x - 1$



3.  $-5x - 3$



4.  $-2x^2 - 3$



5.  $-x^2 - 6x - 4$



#### Possible Journal Responses

1. Yes. By definition, a coefficient is the numerical factor of a term containing one or more variables. A numerical factor can be a fraction.
2. If the fraction has a variable in the denominator or under a radical sign, then it is not a monomial.
3. A monomial is a polynomial consisting of only one term.
4. The degree of the term  $3^3x^2y^2$  is 4 because the sum of all exponents on variables is 4.
5. The degree of the term  $3x^3y^2z$  is 6 because the sum of the exponents on the variables is 3 (the exponent of x) + 2 (the exponent of y) + 1 (the exponent of z).

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