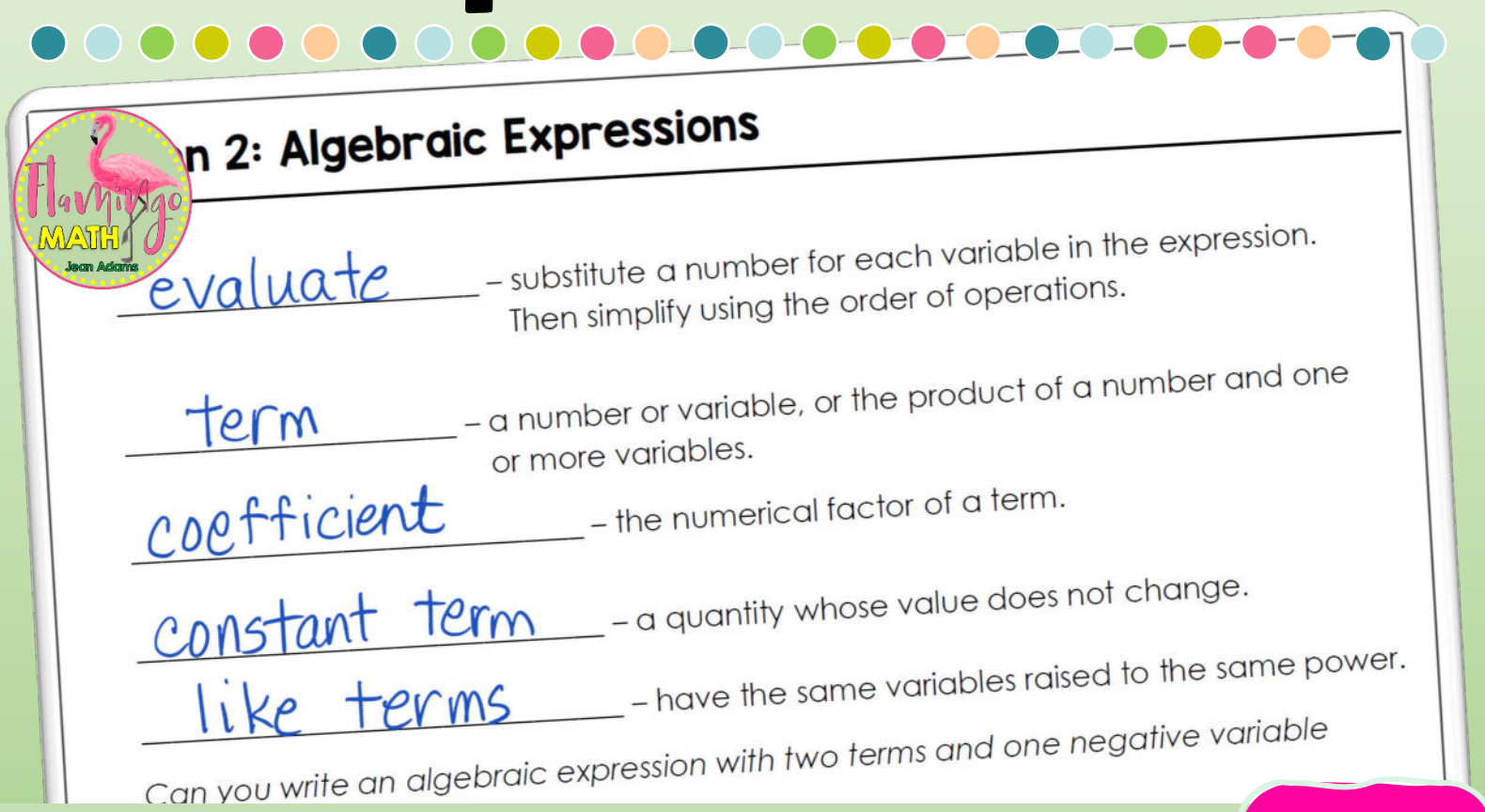
Algebra 2 Honors

Algebraic Expressions



Completely Editable

1.2

Lesson 2: Algebraic Expressions

_____ – substitute a number for each variable in the expression. Then simplify using the order of operations.

_____ – a number or variable, or the product of a number and one or more variables.

_____ – the numerical factor of a term.

_____ – a quantity whose value does not change.

_____ – have the same variables raised to the same power.

Can you write an algebraic expression with two terms and one negative variable coefficient?

Converting Words to Expressions

EX #1: Write an algebraic expression for each phrase.

A. The difference of 7 and 4

B. The product of 3 and *x*

C. The number *y* increased by 2

D. The quotient of 48 and 3

E. The number *n* is doubled, then decreased by 1

F. Five less than *w*

G. Two times the sum of *a* and *b*

H. The inverse of a number increased by its absolute value

I. The absolute value of the difference of two numbers

J. The inverse of the absolute value of twice some number

Converting Expressions to Words

EX #2: Write a verbal expression for each algebraic expression.

A. $5n - 1$

B. $2n + 3$

C. $\frac{x+7}{2}$

D. $3(x + 8)$

E. -6^2

F. $(-6)^2$

Modeling with Expressions

EX #3: Model each situation with an expression.

A. *You had $150, but you are spending $2 each day.* _____

B. *You start with $15 and save $8 every week.* _____

C. *You receive your regular salary plus a 5% bonus of your regular pay.*

_____

D. *Your cell phone plan allows 750 text messages and you text 25 messages every day.*

_____

Evaluating Expressions

EX #4: Evaluate each expression for the given values of the variables.

A. $b^2 - 4ac$ for $a = -2$, $b = 5, c = 3$	**B.** $x - x^2y$ for $x = 3$ and $y = 4$	**C.** $\frac{2(x^2-y^2)}{3}$ for $x = 6$ and $y = -3$

Simplifying Expressions

EX #5: Simplify each expression, if possible. If not possible, write *in simplest form*.

A. $8m + 7 + 11m - 13$	**B.** $12y^2 + 5x^2$
C. $-16m + 7(3m - 4)$	**D.** $5(4x^2 - 2) - 16 + 8x^2$

Understanding Vocabulary

EX #6: Name the terms, coefficients, and constants for each expression.

A. $2x^2 - 3x + 5$

Terms:

Coefficients:

B. $-4yx + 8x - 3$

Terms:

Coefficients:

The total income after buying materials from the office supply company for a flat fee of $86 and they sell p pinwheels for $2 each?

Properties for Simplifying Algebraic Expressions

Let *a*, *b*, and *c* represent real numbers.

Definition of Subtraction	
Definition of Division	
Distributive Property for Subtraction	
Multiplication by 0	
Multiplication by –1	
Opposite of a Sum	
Opposite of a Difference	
Opposite of a Product	

NOTES

Name _____ Date_____

1.2

Algebraic Expressions Practice

Problems 1 – 6, evaluate each expression for the given values of the variables.

1. $5a + 4b - 3a - 7b + 4a;\ a = -3$ and $b = 4$

2. $c(6 - b) - c^2;\ b = 5$ and $c = -2$

3. $5x^2 - 2xy + 3y;\ x = -5$ and $y = -2$

4. $-k^2 - (7k - 4m);\ k = -2$ and $m = 4$

5. $3(6x + 5y) - 2y;\ x = 3$ and $y = -3$

6. $5(3m - n) - 4(2m - n);\ m = -8$ and $n = -11$

Problems 7 – 14, combine like terms and simplify completely.

7. $6x - 9x + 14x$

8. $7 + 8a - 4b - 9 + 10b$

9. $3m + 2n^2 - (7m - 5n^2)$

10. $-2y -$

11. $2.3x - 4.4y + 1.7y - 0.6x$

12. $5(x^2$

13. $12x - 3y - (4x - 5y + 7z)$

14. $x(4 -$

Problems 15 – 18, write an algebraic expression to model each situation.

15. In the first quarter, the football team made two touchdowns and one field goal.

16. In the girl's softball game, there were three 3-run home runs and 4 hits that each scored 2 runs.

17. The junior class will sell pumpkins as a fall project. What is the total income if they sell p pumpkins for $8 each and pay the pumpkin farm a $500 fee to purchase a truckload of pumpkins?

18. Your summer job pays $8.25 per hour, and you must pay for a company shirt that costs $15. If your work x hours per week, how much will you make during the first week?

Problems 19 – 20, Solve.

19. The expression $16t^2$ models the distance in feet that an object falls during t seconds after being dropped. Find the distance an object falls during 15 seconds.

20. The expression $1500(1.1)^t$ represents the value of a $1500 investment that earns 10% interest per year, compounded annually for t years. Find the value of the investment at the end of 5 years.

Problems 21 – 25, match the property name with the appropriate equation.

21. Opposite of a Difference	**A.** $(2 + x) \div y = \frac{2+x}{y}$
22. Distributive Property	**B.** $-(3m - 7) = 7 - 3m$
23. Multiplication By 0	**E.** $4(2x - 5) = 8x - 20$

Practice Sets

Lesson Warm-Ups

1.2 Algebraic Expressions **Form A**

Name _____

Date _____Period _____

1. Write an expression to model the phrase:
Myles has $635 and is earning $120 each week as a lifeguard.

2. Evaluate the expression. $5m - 3n + 7$; $m = -4$ and $n = -6$

3. Evaluate the expression. $-2x^2 - (x + y)^2$; $x = 3$ and $y = -4$

4. Simplify. $8 - 5(a + b) + 3(a - 2b)$

5. Simplify. $4x^2 + 7 - (3x^2 + 10)$

Grade:

1.2 Algebraic Expressions **Form B**

Name _____

Date _____Period _____

1. Write an expression to model the phrase:
Sara has $1420 and is paying $72 each month for her cell phone.

2. Evaluate the expression. $7a - 4b + 12$; $a = -5$ and $b = -4$

3. Evaluate the expression. $-3m^2 - (m - n)^2$; $m = 4$ and $n = -2$

4. Simplify. $9 - 3(x + y) + 5(x - 2y)$

5. Simplify. $8a^2 + 4 - (2a^2 + 13)$

Grade:

Name _____ Date _____ Period _____

Lesson 1.2: Algebraic Expressions **Warm-Up #1**

1. Write an algebraic expression that models the phrase: *"The sum of 8 and the product of 3 and a number w."*

2. Write an algebraic expression to model: *"Alex has $825 and is earning $250 each week walking dogs."*

3. Evaluate for the given values.
$-3w + 2(x + 4w) - 5x$; $w = -4$ and $x = 3$

4. Simplify by combining like terms.
$5(x^2 - y) - 3(x^2 + 2y)$

Name _____ Date _____ Period _____

Lesson 1.2: Algebraic Expressions **Warm-Up #2**

1. Write an algebraic expression that models the phrase: *"The difference of 9 and the product of 5 and a number y."*

2. Write an algebraic expression to model: *"Amy has $450 and is earning $140 each week mowing lawns."*

3. Evaluate for the given values.
$-2w + 5(x + 3w) - 4x$; $w = -5$ and $x = 2$

4. Simplify by combining like terms.
$6(x^2 + y) - 2(x^2 - 3y)$

Daily Lesson Quiz