Evaluating Expressions

STRAND: Patterns, Functions and Algebra

STRAND CONCEPT: Algebraic Expressions

SOL: 7.11, 8.14a

Remediation Plan Summary

Students play a card game that provides practice in evaluating algebraic expressions, using order of operations and variables. Exponents are limited to 1, 2, 3, or 4 and bases are limited to positive integers.

Common Misconceptions

Students will attempt to multiply the power and the base when simplifying exponents. Students will ignore the order of operations and work from left to right.

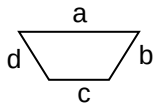
Materials

Decks of "expression cards" (templates attached)

Introductory Activity

Display the introductory activity. Have students use a variable to write an expression to represent each of the following sentences:

- If there are 5,280 feet in a mile, how many feet are in *m* miles?
- At Kings Dominion, all snow cones cost $1.00. How much would *s* cones cost?
- At a local grocery store, bread costs $1.50 a loaf. How much would *b* loaves cost?
- If there are 5 calories in a gram of protein and 10 calories in a gram of fat, use a variable expression to show the number of calories from fat and protein in any food.
- Write an expression to represent the perimeter of the trapezoid shown



Plan for Instruction

- Arrange students into teams of two and distribute a deck of "expression cards" to each pair.
- Tell the students to shuffle the cards and place the deck face down in the center of the table. Have each player select a card and place it face down in front of him/her.
- Write $x = 2$ on the board. Explain to the students that when you say, "Go," they should turn their selected cards over and evaluate the expression shown on the card, using $x = 2$. Walk around the room and as students finish, give them a signal for a correct answer, such as a pat on the shoulder, a high five, or a "thumbs up."

- When all expressions have been evaluated, have the pairs of students exchange cards. This time, write $x = 3$ on the board, and say "Go." Check answers as before.
- After round two, have students select another expression card from the deck. Repeat rounds 1 and 2 until time is up or until all the cards have been used. Substitute any value for x that you deem appropriate for the expressions.
- This exercise can become a game by giving partners a point for each correct answer.

Pulling It All Together (Reflection)

Have the teams of students create their own deck of expression cards. As a follow-up lesson or activity teams may exchange decks and simplify for additional practice.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

a $3x + 6$	**b** $2x + 4$
c $2(x - 1)$	**d** $4x + 2$
e $3x + 6$	**f** $3x + 3$
g $15 - (x + 7)$	**h** $-3x - 1$

i $3x + 6$	**j** $\frac{x^3}{(3 \cdot 3)}$
k $5x(2^3 - 2)$	**l** $(-5^2)x$
m $2x + 6$	**n** $8^2 - x + 2$
o $x - (2 + 5)$	**p** $x^2 + 4$

q $3(x + 6)$	**r** $3^3 + \frac{10}{x}$
s $11 - x^2 + 6$	**t** $4x + 7^2$
u $\frac{21}{(2x + 1)}$	**v** $\frac{12}{(x + 8)}$
w $-2x - \frac{12}{2}$	**x** $(-6)4x + 2$