## Writing Algebraic Expressions For Words

## Summary

Translate verbal expressions to algebraic expressions
Main Core Tie
Mathematics Grade 6
Strand: EXPRESSIONS AND EQUATIONS (6.EE) Standard 6.EE. 2

## Materials

Written values for the Bingo game on little papers in a bag

- Two-sided Cards deck for each pair
(see attached templates for expressions and words)
Worksheet: "Evaluating Expressions Bingo"
Journal page: Words For Operations Journal Page
War Card Game record


## Background for Teachers

Enduring Understanding (Big Ideas):
Algebraic expressions can represent words
Essential Questions:
How does the result change when the value of the variable is changed?
What words or symbols indicate which operation?
How can mathematical symbols model verbal expressions?
Skill Focus:
Write algebraic expressions for words
Vocabulary Focus:
algebraic expressions, variable, substitute, words for operations such as sum, difference, product and quotient, etc.
Ways to Gain/Maintain Attention (Primacy):
Sketches, games, journaling
Instructional Procedures
Starter:
Write an algebraic expression to model each of the following:
For finding the next term in this sequence: 1, 3, 9, 27...
For finding the number of blocks in the next row
Lesson Segment 1: How does the result change when the value of the variable is changed?
Q. What does it man to substitute something? Tell story of making punch and substituting salt for sugar. Q. How would the substitute change the outcome? We can substitute value in algebraic expressions. Let's do some mental substitution. Read each expression and the value to substitute.
Have the students stand as soon as they know the value of the expression after the substitution.
4 m , when $\mathrm{m}=5$
r/3
$5.5-\mathrm{y}$
Q. In the mental problems we just did, would the value of the expression have been the same if we had changed the substitute?
Evaluating Expressions Bingo

First: Have students arrange the numbers in their Bingo Game (see directions on attached worksheet).
Next: Model two or three substitution problems for them. Give them time to evaluate the expressions and write it them the square where they put their correct value. Put the values in a bag and draw them out. Students circle the value you call out. First one to fill any three-in-a-row correctly wins. 3 b when:
$b=1$
$b=-4$
$b=0$
$2 m+3$ when:
$m=-6$
$\mathrm{m}=-1$
$m=1 / 2$
$2(5-\mathrm{X})$ when:
$\mathrm{X}=0$
$X=1$
$X=-5$
Lesson Segment 2: What words indicate operations? How can mathematical symbols represent verbal expressions?
"As I have been writing these algebraic expressions in our Bingo Game for you to copy, I have been saying these expressions with words. We need to be able to read math expressions using words, and we need to be able to write math expressions when we read the words."
Write the words for and read aloud the math expressions in the Bingo game again, this time read each using a variety of words which indicate the appropriate operation. For example the second expression could be read:
the product of two and a number, $m$, increased by three
twice a number and three
three more than two times $m$
Ask students to write the words and the expression on the back of the Bingo worksheet. Then, have students work together with their team to think of different ways to write and read the expression, 3b. Do Four-Corners where one person from each team goes to a designated corner to circle up and work with others to generate a list of words that indicate an operation.
Corner 1: person 1, make a list of words that mean "add".
Corner 2: person 2, make a list of words that mean "subtract".
Corner 3: person 3, make a list of words that mean "multiply".
Corner 4: person 4, make a list of words that mean "divide, and that suggest an exponent".
After five minutes in the corner generating a list of words, each person brings their list back to their team to share the words. Have students list their words on the journal page (attached).
Using the word lists and discussion, help students complete the 12 items below the lists on the journal page.
Lesson Segment 3: Practice using a game
Copy the attached Expressions Cards as a two-sided card stock page. You'll need one page for each group of four. Students will work with a partner to complete against an opponent pair. Each group is given a set of Expressions Cards (attached). The cards are shuffled and divided so that each pair gets half the cards- each person taking 6 cards. Each player takes a turn showing either side of a card they choose. Their opponents must tell what they think is on the other side of the card. If they tell correctly (even though they may use a different word for the operation or a different order in addition or multiplication), they get to place the card in their "Expert" pile. Disagreements or uncertainty can be decided by the teacher. When all cards have been shown and discussed, the pair with the most
"Expert" cards win.
If needed, two players can play against one. Students should write each expression and its matching words from the cards when they get to put them in their "Expert" pile.
Assign any additional practice or application from text as needed.
Assessment Plan
observation, questions, game results
Bibliography
This lesson plan was created by Linda Bolin.
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