

Yo-Yo Math

Purpose

Students will write simple algebraic expressions in one or two variables and evaluate them by substitution.

Materials

For the teacher: chalk, chalkboard

For each student: index card, paper, pen or pencil

For every 2 students: 20 index cards

Activity

A. Pre-Activity Preparation

1. Prepare index cards with simple expressions of the form $ax + b$, where “a” and “b” are particular numbers (e.g., $2x + 1$, $3x - 4$). Prepare enough index cards for each student to have one.
2. Prepare a deck of 20 index cards for each group of two students with numbers for substitution on them. Choose numbers that when substituted into the expression produce only whole number solutions.

B. Introduction

1. Write the expression “ $5x + 2$ ” on the board. Ask students if they know why the value of the expression is unknown. Explain that the value is unknown because the variable can represent any number.
2. Tell students that because the number that we substitute for the variable determines the expression’s value, the value will vary.
3. Have a student volunteer a number to substitute for x . Have students find the value of the expression after the substitution.
4. Have another student volunteer a different number to substitute for x . Ask students if they think the value of the expression will be higher or lower with the new substitution. Have students find the value of the expression with the new substitution.

(continued)



INCORPORATING TECHNOLOGY

Have students visit www.shodor.org/interactivate/activities. Have them explore the “Function Machine” that can be found when you click on the “Functions and Algebra Concepts” section.



EXTENDING THE ACTIVITY

Have students consider expressions whose values will decrease as the numbers substituted increase. Have them write a few expressions of this type (e.g., $392 - x$, $1/x$).

Standards Links
5.1.3, 5.2.1, 5.3.1

Activity (continued)


C. Practice Activity


1. Divide the class into groups of two. Give each student an expression and each group a deck of number cards.
2. Have both members of each group draw a number card. Instruct students to find the value of their expressions using the number on the card they drew. Have students compare their values; the student in each group with the higher value gets one point. If the values are equal, both students get a point.
3. Have students continue to draw cards, find the values of their expressions, and compare results until all number cards have been drawn.

Questions for Review

Basic Concepts and Processes

While students are working on the activity, ask the following questions:

 What is the value of $2x + 7$ when 5 is substituted for x ?

 How did you find the value of the expression?
