



# Everyday Algebra Lesson Plan

## Objectives

At the end of the everyday algebra lesson, students will be able to:

- Write algebraic expressions to represent real-world problems.
- Use the properties of numbers to simplify expressions.
- Evaluate equations by isolating the variable.

## BACKGROUND INFORMATION

Algebra is the use of patterns, relationships, and rules to translate a mathematical idea from words to symbols, the mathematical language. These symbols, or terms, can be numbers, letters, or even groups of symbols, for example,  $3x2$ ,  $(x-y)$ . Many of these relationships are the familiar formulas we use in geometry; others are the translation of relationships described in word problems as expressions or equations, then evaluated or solved by applying mathematical rules.

This lesson should take approximately 2 hours to complete, if all components are utilized.

Vocabulary for this lesson is found in the [GED Connection Mathematics workbook p.250](#). The rules for signed numbers and the vocabulary page may be reviewed before the video segments.

## Video

Before watching the videos, suggest to students that they look for general rules they can apply to many problems. Introduce the first video segment, *Equations*, by reminding them that setting up a problem as an equation is a basic strategy for solving word problems.

Show the video [Equations](#).

After the video, focus on these points:

- The equation is a statement that two expressions or numbers are equal. Equations can be used to describe many mathematical situations.
- The equal sign means “the same value as.” It is a balance point between two expressions or variables.
- Letters in equations represent unknowns or variables. Most math problems describe a situation in which at least one of the numbers in the problem is unknown.

Before showing the next video, *Formulas*, remind students that they use algebra when they use formulas to solve for an unknown value.

Show the video [Formulas](#).

After the video, focus on these points:

- We use algebra when we use a formula to solve real-world problems, like calculating interest, cost, distance, or a geometry problem.
- We substitute the numbers we know for the variables in the equation.

- A variable by itself on one side of the equation is “isolated”; we isolate the variable to solve the equation.
- We isolate the variable by using inverse operations--the opposite of the operation used with the variable. In  $x - 3 = 7$ , add 3, the inverse of subtraction, to both sides of the equation.
- Provide the students with a copy of the [GED® Formulas page](#), from the *GED Connection Mathematics* workbook, p. 340. You might demonstrate or allow students to work in pairs with one or two formulas, using real world problems.

Introduce this final video, *Evaluating Expressions*, with the questions, “What are some of the properties you remember from arithmetic?” and “How does algebra change the way you think about a problem?”

Show the video [Evaluating Expressions](#).

After the video, focus on these points:

- Review associative, commutative, and distributive properties. Practice with formulas for simple interest, or total cost found at the bottom of the [GED® Formulas page](#).
- Using the properties of numbers, simplify by combining like terms in the expressions and evaluate the equation using the order of operations.
- We use algebra to define real world problems in terms that represent the pieces of the problem, then solve by using the rules learned in arithmetic.

## Worksheets/Practice

This [worksheet packet](#) (from the *GED Connection Mathematics* workbook) provides practice and reinforces concepts presented in the videos.

Skill Practice, p. 51

Skill Practice, p. 261, problems 1- 6

[These pages](#) from *GED Connection Mathematics* workbook include step-by-step explanations and practice for common types of algebra word problems, including those that require both geometry and algebra. Answer pages are included.

[This worksheet](#) is a review of the commutative, associative and distributive properties with a skill practice and answer sheet.

## Online Activities

Further practice can be found online at LiteracyLink ([www.pbs.org/literacy](http://www.pbs.org/literacy)). Or students may follow [this link](#) to practice solving equations at four levels of difficulty. For more resources and an overview of the 2002 GED® test, click [www.gedmathstrategies.com](http://www.gedmathstrategies.com).

### Test Tips:

- Consider using “guess and check” to solve difficult problems. In other words, try each answer choice in the problem situation to see which works, starting with the middle value.
- Check your answer by substituting it for the variable in the original equation.
- Remember that you will be able to use a calculator on the GED® Mathematics Test. Practice using the calculator to solve problems with negative numbers or variables.

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