

GED 2002 Teachers' Handbook of Lesson Plans

Content Area Mathematics	Lesson Topic/Theme Simple Algebraic Equation Solving	Correlation to Math Framework 05.10	Lesson Number - 46
Title: Algebra Match Objectives/Learner Outcomes At the end of this lesson, the learner will be able to: <ul style="list-style-type: none"> • Solve basic algebraic equations 		Materials/Resources/Internet Sites/Handouts/Worksheets <ul style="list-style-type: none"> • Handout – <i>Algebra Match – Side A</i> • Handout – <i>Algebra Match – Side B</i> • 3 x 5 cards • Pens and pencils 	
Pre-Requisite Knowledge The learner should be able to: <ul style="list-style-type: none"> • Identify the different parts of an algebraic equation • Solve basic addition, subtraction, multiplication, and division problems • Apply basic calculation rules to simple algebraic equations 		Key Words <ul style="list-style-type: none"> • Equation • Variable • Operation 	
Anticipatory Set/Introduction <p>Say: Algebra shows us how to use equations to solve problems. It really is the mathematics of everyday life. We use it to make change, calculate tax, see how much we are getting paid, and even check our gas mileage.</p> <p>Another example of the use of algebra is when we use ratios and proportions to search for an unknown. Think about the space program. In the shuttle photographs, we know the height of the space shuttle, the width of a photograph negative, and the length of the camera lens. We can actually use the algebraic proportion equation to find distances in the photographs. This is just one example of the use of algebra in real life.</p>			

Preview Questions for Lesson

1. What does an algebraic equation look like?
2. How is algebra used in real life?
3. What is the difference between algebra and basic mathematics?

Instructional Outline

Begin the lesson by discussing the parts of an algebraic equation. Discuss how solving equations is just like solving regular math problems where one adds, subtracts, multiplies, and divides. Write some sample equations on the board. Review with students how to solve for the unknown in the equation. An example would be $5y + 15 = 25$. The answer would be 2, because $2 \times 5 = 10 + 15 = 25$. You may wish to review how to add, subtract, multiply, and divide to solve the unknown variable.

Say: Today we are going to play the **Algebra Match** game. Each of you will select a card. When you have your card, find the person in the room who has the same letter on the back. Put your two cards together so that you have a complete equation. (You may wish to model an example for the students.) Be the first team to solve the equation! Have students model for the class how they solved their equation.

Process/Activities

Before class, make up the 3 x 5 cards. On the back of two cards, write the letter "A." Do the same with "B," "C," and so on until you have enough for each student to get one card. The purpose of this is so that each student will be paired up with another student who has the same letter.

On one of the cards, write an equation, such as:

- $4x + 18 =$
- $3x - 24 =$
- $3x^2 + 2 =$

On the corresponding card for that letter, write a number from 20 to 100. Mix up the cards at random; making sure that half of the students get an equation and the other half get a number. Have the student pair up with the person who has the same letter on the back of his/her card. Have them put the two cards together and solve the equation. For example, if one "A" had $4x + 18 =$ and the other "A" had 48, their equation would be $4x + 18 = 48$. They would solve for x, which would be 7.5.

Select students to present their problems on the board.

Product/Evaluation/Summary

Have students create their own equations and answers. Place them on 3 x 5 cards and play **Algebra Match**.

Teaching to Different Types of Learners			
	Visual	Auditory	Kinesthetic/Tactile
Learning Activity	Write the directions for the activity on paper or on an overhead transparency. Visual learners like to see the problem.	Verbally provide students with the directions to the game. You may wish to monitor the noise factor in the room where students are attempting to solve the problems.	Provide students with a step-by-step process on how to play the game. Show them how the cards fit together to create an algebraic equation.
Special Differentiation Strategies	Provide students with a written copy of equations that are solved correctly and the step-by-step method used for each operation.	Check for comprehension of the activity through asking questions of the group regarding what they are to do.	Provide students with algebra blocks to assist them in solving their equation.
Evaluation	Have students develop their own Algebra Match game. Use the game as a review activity in a future class.	Have students orally “walk-through” solving sample algebraic equations.	Have students use algebra blocks to create equations for the class.
The Family and Adult Literacy Connection		ESE/ESOL Accommodations	
<p>Early algebra is an approach to early mathematics teaching and learning. It includes the different topics in mathematics, but in novel ways. Students in early elementary school know how to add one number to another. However, they may not be asked to consider expressions such as $n + 3$ where n might refer to any number. Share with parents that young learners are able to understand how to generalize math through the use of algebraic notations. Show students how a matching game like they have just played can be used at all levels to assist learning in math. Have the students develop cards at the appropriate academic level for their children. Have them use variables, such as x or a, to show the “unknown” of the equation. With early elementary children, an example would be: $x + 2 = 2$ or $3 + 1 = b$. Children would then solve for the variable. Teaching young children that letters can be used in mathematics assists them in later applying this knowledge to algebra.</p>		<p>Provide students with a template on solving basic equations. Students may also wish to use algebra blocks or a similar type of manipulative to assist them in solving their equations.</p>	

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Algebra Match – Side A

$4x + 18 =$

$3g - 14 =$

$3x - 24 =$

$25 - 4y =$

$3x^2 + 2 =$

$3z + 2z =$

$-32 \div x =$

$35 \times g^2 =$

$56 \div y =$

$4y - 3y =$

$112 \div c =$

$45 \div 2b =$

$g \times 10 =$

$5 \times 7h =$

$e^2 \times 18 =$

$63 - 2z =$

$5x^2 \times 12 =$

$7y + 3y =$

$4g^3 + 8 =$

$9g \div g =$

$238 - 5x =$

$6g^3 + 5 =$

$d^3 + 2d =$

$16 - 2x^2 =$

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Algebra Match – Side B

20	80
25	85
30	90
35	95
40	100
45	24
45	36
55	48
60	56
65	66
70	72
75	84