

Lesson Plan Template Draft: SACC Active Learning Guide Book
Lesson 4.5 Linear Equations and Problem Solving (hybrid)

<p>Teaching Point/Objectives:</p> <p>Students will be able to solve real-life situational problems.</p>	<p>Length of lesson:</p> <p>40 mins.</p>	<p>Materials:</p> <ul style="list-style-type: none"> ● MyMathLab ● Videos ● Beginning and Intermediate Algebra, 6th edition, Elayn Martin-Gay, Pearson ● White board ● Computer ● Document Camera ● Overhead Projector ● Various Color Markers
<p>Active learning strategies that this lesson employs:</p> <p>Since this lesson employs all of the principles and methods used in sections 4.1, 4.2 and 4.3, we will use the situations set forth in those lessons and apply them here. In this lesson, we solve verbal and real-life situational problems using previously developed skills. This lesson will be combined with the other lesson in section 4.</p>		
<p>Real-world connection / focus / word problem connecting lesson to real-world: (What is the connection between this content and a student’s future study or the “real world”? What is the context of this lesson? What problem will you use to hook students into the lesson to make a real-world connection to content that they are going to learn today?)</p> <p>How are you using this context to introduce or reinforce the teaching point?</p> <p>This is an application lesson of the 2 algebraic methods of solving linear simultaneous equations.</p> <p>We can use the verbal problems that were in 4.1, 4.2 and 4.3, if there seemed too advanced for those lessons.</p>		

Anticipated time	Stage and aim	Procedure
10 mins.	The students will learn how to mathematically set up a problem from the written words.	<p>The teacher will begin by outlining the procedure to set up a verbal problem. The teacher will impress upon the students how important it is to read the problem very carefully. The steps to use will be put on the board:</p> <ul style="list-style-type: none"> · Highlight the important information that will help to write the 2 equations by translating the words into mathematical expressions. Sometimes, a picture will be helpful. · Define the variable that are being used by indicating what they represent. · Write 2 equations. Form the equations indicating how the different mathematical expressions are related. · Use either the substitution method or the elimination method to solve the equations. · Check the answers by substituting the ordered pair in both of the original equations. · Answer the question indicating what the unknowns represent.

<p>30 mins.</p>	<p>The students will recognize that algebraically solving a system of linear equations is equivalent to finding the point of intersection of 2 straight lines on a graph.</p>	<p>Below are some sample verbal problems that will be presented. The students will work in groups to try to reason out these problems. The teacher will be walking around and will be assisting students and groups individually. If the teacher finds that similar questions, problems and issues are occurring, the teacher will use traditional teaching methods and present the problems with the solutions drawing the answers out of the students.</p> <p>1. 3 cups of hot chocolate and 3 donuts cost \$11.25. At the same prices, 4 cups of hot chocolate and 2 donuts cost \$10. What is the price of a cup of hot chocolate? How much is a donut?</p> <p>Let x = the cost of a hot chocolate y = the price of a donut</p> $3x + 3y = 11.25$ $4x + 2y = 10$ <p style="text-align: right;">Solve</p> <p>using elimination</p> <p>2. 2 small pitchers and 1 large pitcher can hold 8 cups of lemonade. One large pitcher minus one small pitcher constitutes 2 cups of lemonade. How many cups of lemonade can each pitcher hold?</p> <p>Let x = the large pitcher y = small pitcher</p> $2x + y = 8$ $y - x = 2$ <p style="text-align: right;">Rewrite eq. 2 and use substitution</p>
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3. A DJ must play 12 commercials during his one-hour radio show. Each commercial is either 30 seconds or 60 seconds long. If the total commercial times is 10 mins., how many commercials are 30 seconds? How many are 60 seconds?

Let x = the number of 30-second commercials
 y = the number of 60-second commercials

$$x + y = 12$$

$$.5x + y = 10$$

elimination use

4. A small plane consisting of coach and first-class seats has a total of 152 seats. The number of coach seats are 5 more than 6 times the number of first class seats. Find the number of coach and first class seats.

Let c = the number of coach seats

f = the number of first class seats

$$c + f = 152$$

$$c = 5 + 6f$$

use substitution

5. A college basketball team made 40 field goals in a game, some 2-pointers and the rest 3-pointers. In total they scored 89 points. How many of each type field goals were made?

		<p>Let x = the number of 2-point goals y = the number of 3-point goals</p> $x + y = 40$ $2x + 3y = 89$ Use either method <p>6. A certain number of dogs and a certain number of chickens have a total of 148 legs and 60 heads between them. How many dogs and how many chickens are there?</p> <p>Let d = the number of dogs c = the number of chickens</p> $c + d = 60$ $4c + 2d = 148$ Use either method <p>7. An artist sells two sizes of prints. Small prints are \$20 and large prints are \$45. The artist would like to sell twice as many small prints as large prints. If the rental space to display the prints is \$510 for the day, how many of each prints must he sell in order to break even?</p> <p>Let S = the number of small prints L = the number of large prints</p> $20S + 45L = 510$ $S = 2L$ Use substitution <p>8. The perimeter of a wooden deck is 90'. If the deck's length is 5' less than 4 times the width, find the dimensions of the deck.</p> <p>Let W = the width of the deck L = the length of the deck</p> $2L + 2W = 90$
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		<p style="text-align: center;">$L = 4x - 5$</p> <p style="text-align: right;">Use substitution</p> <p>Add additional examples as time permits.</p> <p>In the HYBRID model, we have half classroom time to cover the same material in the regular and intensive models. Therefore, we do not have the luxury of being able to have students spend much time working on their own or in groups to reinforce the skills necessary to be able to solve these problems quickly and efficiently. They need to do this during their weekly on line MyMathLab homework and on line test session. They can do each of the homework problems as many times as they wish (the problems regenerate with difference numerical values) until they are comfortable with each type of problem. When they are ready, they can take the weekly on line test.</p>
<p>Anticipated problems and potential solutions in this lesson (These can be either problems with logistics / timing, or problems to anticipate with students' knowledge / grasp of the content. Where will students have difficulties? What would you want a newer teacher to anticipate?)</p> <p>I expect many issues. Students in general find verbal problems very difficult. They usually need a lot of exposure to become even somewhat comfortable with the process.</p>		

Differentiation: In what places in the lesson are you differentiating for students in different ability groups?

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Where are these on your lesson plan?

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Ideas for extensions, notes, considerations, or alternative plans: