

Lesson Plan

Grade 10 Academic Math

Lesson: 2 - 4

Unit: Linear Systems

Topic: Solving Linear Systems by Elimination

✚ homework check: Principles of Mathematics 10 p. 39 # 4, 5, 9, 16

✚ note: Solving Systems by Elimination

Another method for solving linear systems is elimination. Elimination uses either addition or subtraction to eliminate one of the variables. It may occasionally be necessary to multiply the equations first in order for the coefficients of the variables to be equal. For example, use elimination to solve the following systems.

a)

$$2x + 3y = 8$$

$$x - 2y = -3$$

In order to eliminate one of the variables, we need to multiply equation two either by 2 to eliminate the x's or by 3 to eliminate the y's.

$$2x + 3y = 8$$

$$2x - 4y = -6$$

subtract both equations

$$0x + 7y = 14$$

$$\frac{7y}{7} = \frac{14}{7}$$

$$y = 2$$

Substitute back into equation two to solve for x

$$x - 2(2) = -3$$

$$x - 4 = -3$$

$$x = -3 + 4$$

$$x = 1$$

Therefore, the point of intersection is $(1, 2)$

- b) At Lisa's Sub Shop, two ham subs and four roast-beef subs cost \$34. Five ham subs and six roast-beef subs cost \$61. What is the cost of each sub?

Let the cost of a ham sub be represented by x .

Let the cost of a roast-beef sub be represented by y .

Write the equations represented by the information costs supplied.

$$2x + 4y = 34$$

$$5x + 6y = 61$$

If we wish to eliminate the x variable, we must multiply equation one by 5 and equation two by 2

$$10x + 20y = 170$$

$$10x + 12y = 122$$

After subtracting these equations, we get

$$0x + 8y = 48$$

$$\frac{8y}{8} = \frac{48}{8}$$

$$y = 6$$

Now we can substitute back into equation one and solve for y .

$$2x + 4(6) = 34$$

$$2x + 24 = 34$$

$$2x = 34 - 24$$

$$2x = 10$$

$$\frac{2x}{2} = \frac{10}{2}$$

$$x = 5$$

Therefore, the cost of a ham sub is \$5 and the cost of a roast-beef sub is \$6.

✏ homework assignment: Principles of Mathematics 10 p. 54 # 4, 6, 11