ALBERTA DISTANCE LEARNING CENTRE
Mathematics 10C
MAT1791
Workbook 8.3

Student's Questions and Comments

FOR STUDENT USE ONLY

Student Name:

_____

FOR ADLC USE ONLY

Assigned to

_____

Marked by

_____

Date received

_____

Summary

	Marks Earned	Total Possible Marks	Percent
8.3 Practice – IV	**I have ____ /8 and ____ %.**		
Lesson 8.3 Assignment		13	

Teacher's Comments:

_____

Teacher's Signature

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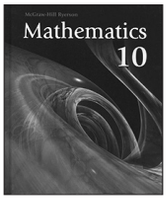

Mathematics 10

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Practice Assessment

The *Practice* section provides exercise questions and allows you to self-reflect on your conceptual understanding of the *Lesson* skills. You will mark your *Practice* work in each *Workbook* according to the following rubric.

Category	Strategy and Procedures	Response to Questions
	I have…	*I have…*
4	• used efficient and effective strategies to solve the problem(s)	• provided detailed explanations and followed directions appropriately to complete all questions
3	• used effective strategies to solve the problem(s)	• provided clear explanations and followed directions adequately to complete most questions
2	• used effective strategies inconsistently to solve the problem(s)	• provided incomplete explanations and followed some directions to complete a few questions
1	• used ineffective strategies to solve the problem(s)	• provided incomplete explanations and have not followed directions to complete some questions

Complete *Practice* exercises using your best work, showing all relevant steps needed to arrive at your solution. Refer to the *Module* to review lesson instructions. Contact your teacher for assistance or clarification as needed, or to investigate the topic further.

Check and correct your work using the solutions provided in *Appendix* in the *Module*.

Practice is worth 8 marks.

After you have assessed your work, reflect on your understanding of the concepts in the table provided at the end of each *Practice* section.

Lesson 8.3: Solving Systems of Linear Equations by Elimination

Complete the *Practice* below. When you have completed all the questions for *Lesson 8.3 Practice – IV* with your best work, mark your work by first comparing your answers to the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Practice – IV

1. Use the following example to explain why the order of subtraction is not important when solving systems of equations by elimination.

$$\begin{array}{rrcl} & 5x + 9y & = & 7 \\ -\ (& 6x + 9y & = & 25\ ) \\ \hline & -x + 0y & = & -18 \end{array} \qquad \begin{array}{rrcl} & 6x + 9y & = & 25 \\ -\ (& 5x + 9y & = & 7\ ) \\ \hline & x + 0y & = & 18 \end{array}$$

2. The subtraction of two equations is shown.

$$\begin{array}{rrcl} & 5x + 3y - 1 & = & 0 \\ -\ (& 2x - y + 4 & = & 0\ ) \\ \hline & 3x + 4y - 5 & = & 0 \end{array}$$

Explain why this subtraction is not useful for solving the linear system $5x + 3y - 1 = 0$ and $2x - y + 4 = 0$.

3. Solve the following systems of equations by elimination. Verify the solutions.

   a. $52 - a = 4b$
      $70 - a = 6b$

   b. $3x + 5y = -2$
      $x - y = -6$

c. $7x = 11 + 5y$
$8y = -6x - 9$

d. $A - 2B = -4$
$2A + 3B = 10$

4. Attempt to solve the following systems of equations. How is each pair of lines related?

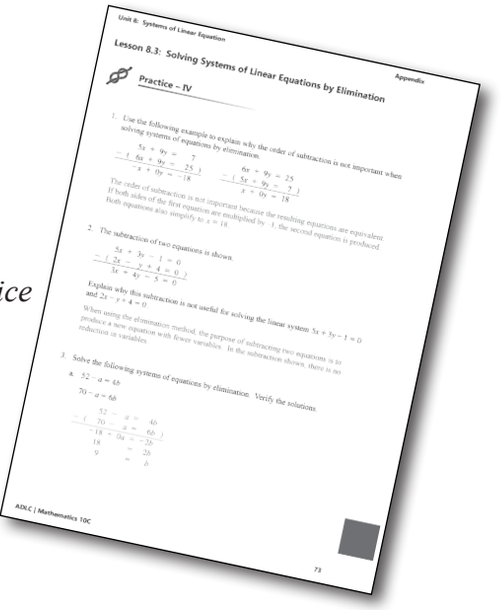
a. $x + 3y = 11$
$4x + 12y = 44$

b. $2x - 6y = 9$
$3x - 9y = 12$

Mark your work for *Lesson 8.3 Practice – IV* using the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Transfer your self-assessed mark to the front cover of the *Workbook*.

My self-assessed mark on *Lesson 8.3 Practice – IV* is _____.


Unit 8: Systems of Linear Equation

Appendix

Lesson 8.3: Solving Systems of Linear Equations by Elimination

Practice – IV

1. Use the following example to explain why the order of subtraction is not important when solving systems of equations by elimination.

$$\begin{array}{r} 5x + 9y = 7 \\ -\ (\ 6x + 9y = 25\ ) \\ \hline -x + 0y = -18 \end{array} \qquad \begin{array}{r} 6x + 9y = 25 \\ -\ (\ 5x + 9y = 7\ ) \\ \hline x + 0y = 18 \end{array}$$

The order of subtraction is not important because the resulting equations are equivalent. If both sides of the first equation are multiplied by −1, the second equation is produced. Both equations also simplify to $x = 18$.

2. The subtraction of two equations is shown.

$$\begin{array}{r} 5x + 3y - 1 = 0 \\ -\ (\ 2x - y + 4 = 0\ ) \\ \hline 3x + 4y - 5 = 0 \end{array}$$

Explain why this subtraction is not useful for solving the linear system $5x + 3y - 1 = 0$ and $2x - y + 4 = 0$.

When using the elimination method, the purpose of subtracting two equations is to produce a new equation with fewer variables. In the subtraction shown, there is no reduction in variables.

3. Solve the following systems of equations by elimination. Verify the solutions.

a. $52 - a = 46$

$70 - a = 66$

$$\begin{array}{r} 52 - a = 46 \\ -\ (\ 70 - a = 66\ ) \\ \hline -18 + 0a = -20 \\ 18 \quad = \quad 20 \\ 9 \quad = \quad b \end{array}$$

Reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.

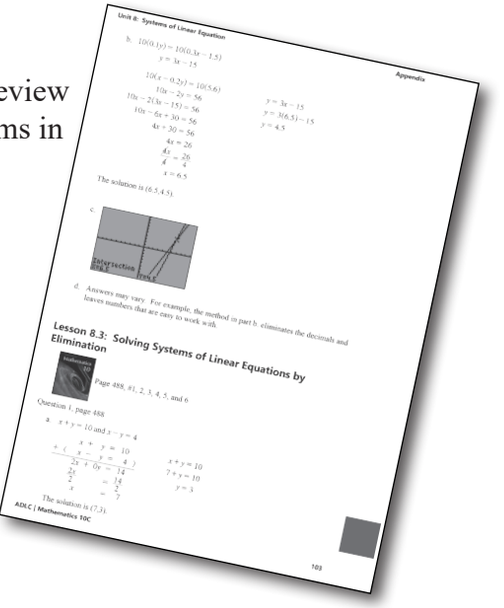
Question Number	Got it!	Almost there…	Need to retry or ask for help.
1			
2			
3			
4			

You may proceed to *Explore Your Understanding Assignment*, on the next page of this *Workbook*.

Note: Before you complete *Explore Your Understanding*, you may review your skills and get more practice by completing the following problems in *Mathematics 10*.

- Page 488, #1, 2, 3, 4, 5, and 6

Check your work in *Enhance Your Understanding*.


Unit 8: Systems of Linear Equation

Appendix

b. $10(0.1y) = 10(0.3x - 1.5)$

$y = 3x - 15$

$10(x - 0.2y) = 10(5.6)$

$10x - 2y = 56$

$10x - 2(3x - 15) = 56$

$10x - 6x + 30 = 56$

$4x + 30 = 56$

$4x = 26$

$\frac{4x}{4} = \frac{26}{4}$

$x = 6.5$

$y = 3x - 15$

$y = 3(6.5) - 15$

$y = 4.5$

The solution is (6.5, 4.5).

c.

d. Answers may vary. For example, the method in part b. eliminates the decimals and leaves numbers that are easy to work with.

Lesson 8.3: Solving Systems of Linear Equations by Elimination

Page 488, #1, 2, 3, 4, 5, and 6

Question 1, page 488

a. $x + y = 10$ and $x - y = 4$

$$\begin{array}{r} x + \ \ y = 10 \\ +\ (\ x - \ \ y = \ \ 4\ ) \\ \hline 2x + 0y = 14 \\ \frac{2x}{2} = \frac{14}{2} \\ x \quad = \quad 7 \end{array} \qquad \begin{array}{l} x + y = 10 \\ 7 + y = 10 \\ y = 3 \end{array}$$

The solution is (7, 3).

Lesson 8.3: Solving Systems of Linear Equations by Elimination

Explore Your Understanding Assignment

(2) 1. David tried to solve the system $4x + 6y = 6$ and $2x + 5y = 11$ by elimination and showed the following work.

$2x + 5y = 11$

$2 \cdot 2x + 5y = 11 \cdot 2$

$4x + 5y = 22$

$$\begin{array}{rrcl} & 4x + 6y & = & 6 \\ -\ (& 4x + 5y & = & 22\ ) \\ \hline & y & = & -16 \end{array}$$

$$\begin{aligned} 2x + 5y &= 11 \\ 2x + 5(-16) &= 11 \\ 2x - 80 &= 11 \\ 2x &= 91 \\ x &= \frac{91}{2} \end{aligned}$$

David's solution verification showed that he made an error. Identify and explain David's error.

2. Solve the following systems of equations by elimination. Verify the solutions.

(3) a. $r + 2s + 1 = 0$
$r + 5s + 28 = 0$

(3) b. $4m - 3n = 27$
$8m - 6n = 18$

(3) c. $0.6x = 1.2 + 0.3y$
$2.2x - 1.8y - 1.6 = 0$

(2) 3. Frank has \$8 000 that he plans to split into two investments. He wrote the following two equations to represent the interest he will earn from each of the two investment options.

- $2\,000A + 6\,000B = 520$
- $4\,000A + 4\,000B = 480$

Determine the interest rates, A and B, as percentages.

/13