Adult Basic Education
Level II Mathematics

Mathematics 2019
Algebra Readiness I

Study Guide

Level II Mathematics Courses
Mathematics 2011: Whole Numbers
Mathematics 2012: Fractions
Mathematics 2013: Decimals
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Mathematics 2015: Interest
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Newfoundland
Labrador

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To the Student

Who should do Mathematics 2019: Algebra Readiness I?
Mathematics 2019: Algebra Readiness I and **Mathematics 2020: Algebra Readiness II** are both required if you plan on studying Degree and Technical Profile Mathematics (Academic) or Business-Related College Profile Mathematics (Academic) in Level III. **Mathematics 2019** is a pre-requisite for **Mathematics 2020**. These two courses are more challenging and have more content than the other ABE Level II Mathematics courses. These two courses are optional if you plan on studying General College Profile Mathematics (General) in Level III. This course focuses on equations, ratios, rates, proportions, similar triangles, the Pythagorean Theorem, squares and square roots.

You do not have to complete all the Level II Mathematics courses to move into ABE Level III. The decision to do all or some of the Level II Mathematics courses will be made based on your instructor's assessment. The following will be taken into consideration in this assessment: your previous education, your CAAT (or another standardized test) result, your work experience, your future employment/post-secondary goals, your progress in Level II courses, or any other factor impacting your future success in Level III. For example, if you wish to pursue the Degree and Technical Profile (Academic) in Level III, you will likely have to complete all Level II Mathematics courses. If you intend to pursue the General College Profile (General) in Level III, you may only have to complete a selection of Level II Mathematics courses.

What is the Mathematics 2019 Study Guide?
The Study Guide describes all the work that is required for the completion of this course. It also contains references and notes to help you.

How should I Use the Study Guide?
Before beginning to do the work in this Study Guide, you will need to talk to your instructor about the course and the resources you will need. You should work through the Study Guide page by page, consulting with your instructor as you go.

How is the Study Guide organized?
The Study Guide is organized in two columns, as follows:

Required Work	**Suggested Resources/Notes**
This column provides a numbered list of all the work you are required to do for the course.	This column gives important information on the resources being used and some notes to help you complete the required work.

Important Notes
This Study Guide is intended to make it possible for you to work independently in Adult Basic Education. If you use the Study Guide correctly, you may be able to work on your own for certain periods of time. You should always make sure that your instructor is aware of what you are doing. Feel free to ask your instructor for help and guidance at all times.

You should complete all the **Required Work** in this study guide without a calculator. A calculator can be used to check your answers, but it should not be used to simply complete the **Required Work** faster.

Unit 1: Equations

Required Work	Suggested Resources/Notes

1. Read Lesson 1 on page 49 in the text, and then complete numbers 1-11 (all items).
 	
2. Read Lesson 2 on page 50 in the text, and then complete numbers 1-11 (all items).
 	
3. Read Lesson 3 on page 51 in the text, and then complete the following:
 	
   a) Numbers 1-4 (all items)
 	
   b) Solve each word problem on page 52.
	• Think: What happens when you substitute numbers for the letters in the expressions?
	
	• Understand how to express the equations in words.
	
	• Think: What is an equation?
	
	• Check your answers as shown at the top of page 51.
	
	• Ask your instructor for help if you do not fully understand each word problem.
	
	• It may be helpful to draw a diagram for each word problem before doing calculations.

Unit 1: Equations

Required Work	Suggested Resources/Notes

4. Read Lesson 4 on page 53 in the text, and then complete the following:
 	
   a) Numbers 1-4 (all items)
 	
   b) Solve each word problem on page 54.
 	
5. Read Lesson 5 on page 55 in the text, and then complete the following:
 	
   a) Numbers 1-4 (all items)
 	
   b) Solve each word problem on page 58.
 	
6. Read Lesson 6 on page 57 in the text, and then complete the following:
 	
   a) Numbers 1-4, (all items)
 	
   b) Solve each word problem on page 56.
 	
7. <u>Assignment #1</u>: Complete all items and word problems in *Lesson 7: Solving Equations Review* on pages 59-60 in the text. This assignment will be graded and is part of the official evaluation for the course.
 	
8. <u>Unit 1 Review #1</u>: Complete the *Chapter 3 Practice Test* on page 61 in the text. This is the first part of the review for the <u>Unit 1 Test</u> later in the course.
	• Check your answers as shown at the top of page 53.
	
	• Remember to perform the same operations to both sides of the equal sign.
	
	• Remember to simplify an equation before solving it.
	
	• Show all steps and calculations in your workings.
	
	• You should show all your calculations on the assignment. You may use a calculator to check your answers. Ask your instructor if you need any help with the assignment.
	
	• Your instructor may require you to complete additional work if you do not get a satisfactory grade on <u>Assignment #1.</u>

Required Work	Suggested Resources/Notes

9. Read Lesson 1 on page 63 in the text, and then complete numbers 1-12 (all items).
 	
10. Read Lesson 2 on page 64 in the text, and then complete numbers 1-5 (all items).
 	
11. Read Lesson 3 on page 65 in the text, and then complete numbers 1-4.
 	
12. Read Lesson 4 on page 66 in the text, and then complete numbers 1-4.
 	
13. Read Lesson 5 on page 67 in the text, and then complete the following:
 	
    a) Numbers 1-3
 	
    b) Solve each word problem on page 68.
 	
14. Read Lesson 6 on page 69 in the text, and then complete the following:
 	
    a) Numbers 1-5
 	
    b) Solve each word problem on page 70.
	• Think: What does it mean when no number precedes the letter; e.g. x, y, a, b?
	
	• Check your answers as shown at the top of page 64.
	
	• Remember that a number and letter together means to multiply; e.g. 2x, 5y, 1/2p.
	
	• Remember that you can choose any letter you wish to represent the unknown quantity.
	
	• Be able to explain which numbers represent distance, rate, and time.
	
	• Remember to always write out the formulas in your calculations.

Required Work	Suggested Resources/Notes
15. <u>Assignment #2</u>: Complete the *Chapter 4 Practice Test* on page 71 in the text. This assignment will be graded and is part of the official evaluation for this course. It is also the second part of the review for the **Unit 1 Test**. 16. <u>Unit 1 Test</u>: Write the test for **Unit 1: Equations**.	• You should show all your calculations on the assignment. You may use a calculator to check your answers. Ask your instructor if you need any help with the assignment. • Your instructor may require you to complete additional work if you do not get a satisfactory grade on <u>Assignment #2.</u> • The review for the <u>Unit 1 Test</u> consists of **Required Work** item number 8 and <u>Assignment #2</u>. • Only write the <u>Unit 1 Test </u>if you fully understand the material contained in the two review sections.

Unit 2: Ratio, Rate, and Proportions

Required Work	Suggested Resources/Notes
1. Read Lesson 1 on page 73 in the text, and then complete numbers 1-12 (all items). 2. Read Lesson 2 on page 74 in the text, and then complete numbers 1-10 (all items). 3. Read Lesson 3 on page 75 in the text, and the complete numbers 1-5 (all items). 4. Read Lesson 4 on page 76 in the text, and then complete numbers 1-5.	• Think: Why is it important to write the numbers in the ratio in the same order as they appear in the question? • Remember: The first number in a ratio is the numerator and the second number is the denominator. • Think: How can you determine if two ratios are equal? • Remember to cross-multiply. • Ask your instructor for help if you do not fully understand each word problem. • It may be helpful to draw a diagram for each word problem before doing calculations.

Unit 2: Ratio, Rate, and Proportions

Required Work	Suggested Resources/Notes

5. Read Lesson 5 on page 77 in the text, and then complete the following:
 	
    a) Numbers 1-4 (all items)
 	
    b) Solve each word problem on page 78.
 	
6. Read Lesson 6 on page 79 in the text, and then complete the following:
 	
    a) Numbers 1-7
 	
    b) Solve each word problem on page 80.
 	
7. Assignment #3: Complete numbers 1-7 on the *Chapter 5 Practice Test* on page 95 in the text. This assignment will be graded and is part of the official evaluation for this course. This assignment will also be the review for the Unit 2 Test.
 	
8. Unit 2 Test: Write the test for **Unit 2: Ratio, Rates and Proportions**.
	• Be able to name each numerator and denominator and tell what it represents.
	
	• Think: Look at the gears at the top of page 79. Why does it take gear D 14 revolutions per minute to equal gear C's 4 revolutions per minute?
	
	• You should show all your calculations on the assignment. You may use a calculator to check your answers. Ask your instructor if you need any help with the assignment.
	
	• Your instructor may require you to complete additional work if you do not get a satisfactory grade on Assignment #3.
	
	• Only write the Unit 2 Test if you fully understand the material contained in the review.

Unit 3: Triangle Geometry and Square Roots

Required Work	Suggested Resources/Notes

1. Read Lesson 1 on page 143 in the text, and then complete the following:
 	
   a) Numbers 1-2 (all items)
 	
   b) Numbers 3-6.
 	
2. Read Lesson 2 on page 144 in the text, and then complete numbers 1-3.
 	
3. Read Lesson 3 on page 145 in the text, and then complete the following:
 	
   a) Numbers 1-3 (all items)
 	
   b) Solve each word problem on page 146.
	• Think: Choose one pair of triangles and draw a third triangle similar to these two.
	
	• Understand the difference between the symbol for congruent and the symbol for similar.
	
	• Understand how to substitute the measure of each side in the given ratios.
	
	• Ask your instructor for help if you do not fully understand each word problem.
	
	• It may be helpful to draw a diagram for each word problem before doing calculations.

Unit 3: Triangle Geometry and Square Roots

Required Work	Suggested Resources/Notes
4. Read Lesson 4 on page 147 in the text, and then complete numbers 1-13 (all items).	• Be able to explain the difference between squares and square roots.
5. Read Lesson 5 on page 148 in the text, and then complete numbers 1-11.	• Understand that you must square the sides of the triangles before adding them.
6. Study the *Squares and Square Roots* table on page 149 in the text.	
7. Read Lesson 6 on page 150 in the text, and then complete numbers 1-12 (all items).	• Understand that in the formula, c is the measure of the hypotenuse and a or b are the other sides.

8. Read Lesson 7 on page 151 in the text, and then complete the following:
 	
  a) Numbers 1-11
 	
  b) Solve each word problem on page 152.
	• Understand how to find the missing side of the first triangle, and then use it to find the sides of the second triangle.

9. Read Lesson 8 on page 153 in the text, and then complete the following:
 	
  a) Numbers 1-12
 	
  b) Solve each word problem on page 154.	

10. Read Lesson 9 on page 155 in the text, and then complete the following:
 	
  a) Numbers 1-3
 	
  b) Solve each word problem on page 156.	

Unit 3: Similar Triangles and Square Roots

Required Work	Suggested Resources/Notes
11. <u>Assignment #4</u>: Complete the *Chapter 10 Practice Test* on page 157 in the text. This assignment will be graded and is part of the official evaluation for this course. This assignment is also the review for the <u>Unit 3 Test</u>. 12. <u>Unit 3 Test</u>: Write the test for **Unit 3: Similar Triangles and Square Roots**. You have completed four assignments and three unit tests in **Mathematics 2019: Algebra Readiness I**. Your instructor will advise you if you need to complete a final exam for this course.	• You should show all your calculations on the assignment. You may use a calculator to check your answers. Ask your instructor if you need any help with the assignment. • Your instructor may require you to complete additional work if you do not get a satisfactory grade on <u>Assignment #4.</u> • Only write the <u>Unit 3 Test </u>if you fully understand the material contained in the review.