

Linear Systems

Strand

Modelling Linear Relations

Student Text Pages

194–233

Suggested Timing

10–15 min

Related Resources

BLM 5.CO.1 Literacy Link: Venn Diagram
BLM 5.CO.2 Career Profile Report Rubric

Key Terms

elimination method
linear system
point of intersection
substitution method

Additional information and teaching materials for this chapter are available on the McGraw-Hill Ryerson web site at <http://mcgrawhill.ca/books/foundations10>. You will need your password to access this material.

Chapter Curriculum Specific Expectations Solving and Interpreting Systems of Linear Equations

In this chapter, students will

ML3.01 determine graphically the point of intersection of two linear relations (e.g., using graph paper, using technology)

ML3.02 solve systems of two linear equations involving two variables with integral coefficients, using the algebraic method of substitution or elimination

ML3.03 solve problems that arise from realistic situations described in words or represented by given linear systems of two equations involving two variables, by choosing an appropriate algebraic or graphical method

Teaching Suggestions

Chapter Opener

- Ask students if they have been to a theme park with family or friends. Discuss the cost of attending a theme park and the rides associated with it. Ask students who have been to a theme park if they used the pay-one-price option or the pay-as-you-go option.
- Discuss the advantages of each option. For example, a parent or guardian who is accompanying children and does not plan to go on any rides might choose the pay-as-you-go option.
- You may wish to do an Internet search for theme parks and prices for entry or entry and rides. You may wish to show a graph of two lines intersecting that represent the prices.

Literacy Link

- Have students make a Venn diagram to summarize methods involved in solving linear systems. Remind students to put examples that could be solved by more than one method into areas shared by the appropriate circles of the diagram.
- Use **BLM 5.CO.1 Literacy Link: Venn Diagram** for this activity.
- You may wish to have students review the methods used to solve linear systems in the previous sections at the start of each new section, or review all the methods in Chapter Review.
- For more information on the Think Literacy program, visit <http://www.edu.gov.on.ca/eng/studentsuccess/thinkliteracy>.

Career Profile

- If there is a cosmetology program offered at your school, you may wish to have students visit the class to see what is involved in a career in aesthetics.

- Have students discuss their understanding of a career in aesthetics. As an extension to the discussion, have students research this career and other similar careers, and prepare a report and poster based on the following criteria:
 - What does an aesthetician do? What education, training, and skills are required?
 - List ways and give examples in which an aesthetician uses linear systems, including the setting of prices.
 - Include pictures of aestheticians at work.
 - What other careers are similar? How are the education, training, and skills for these careers different?
- You may wish to use **BLM 5.CO.2 Career Profile Report Rubric** to assist you in assessing your students.
- Then, using their research, have students discuss:
 - What an aesthetician does
 - What type of education and training are needed for this career
 - What other careers are similar
 - What are the differences in the training and education required for the various similar careers
 - How owners of aesthetics businesses set prices, which must cover factors such as the rental of space, cost of products, and living expenses for the business owner
- Have students include their research in their Portfolios.

Chapter 5 Planning Chart

Section Suggested Timing	Student Text Page(s)	Teacher's Resource Blackline Masters	Assessment	Tools
Chapter 5 Opener • 10–15 min	194–195	• BLM 5.CO.1 Literacy Link: Venn Diagram	• BLM 5.CO.2 Career Profile Report Rubric	
Get Ready! • 80–160 min	196–197	• BLM 5.GR.1 Practice: Get Ready • BLM G1 Grid Paper	• BLM 5.GR.2 Get Ready Self-Assessment Checklist	• grid paper
5.1 Solve Linear Systems by Graphing • 80–160 min	198–204	• BLM 5.1.1 Practice: Solve Linear Systems by Graphing • BLM G1 Grid Paper	• BLM 5.1.2 Achievement Check Rubric • BLM A2 Thinking General Scoring Rubric	• graphing calculators • grid paper • rulers
5.2 Solve Linear Systems by Substitution • 80–160 min	205–211	• BLM 5.2.1 Practice: Solve Linear Systems by Substitution • BLM G1 Grid Paper		• graphing calculators • grid paper
5.3 Solve Linear Systems by Elimination • 80–160 min	212–218	• BLM 5.3.1 Practice: Solve Linear Systems by Elimination • BLM G1 Grid Paper		• graphing calculators • grid paper
5.4 Solve Problems involving Linear Systems • 80–160 min	219–225	• BLM 5.4.1 Practice: Solve Problems Involving Linear Systems • BLM G1 Grid Paper	• BLM 5.4.2 Achievement Check Rubric • BLM A1 Knowledge/Understanding General Scoring Rubric • BLM A3 Communication General Scoring Rubric	• graphing calculators • grid paper
Chapter 5 Review • 80 min	226–227	• BLM 5.CR.1 Chapter 5 Review • BLM G1 Grid Paper		• graphing calculators • grid paper
Chapter 5 Practice Test • 80 min	228–229	• BLM G1 Grid Paper	• BLM 5.PT.1 Chapter 5 Practice Test • BLM 5.CT.1 Chapter 5 Test	• graphing calculators • grid paper
Chapter 5 Problem Wrap-Up • 20 min	229	• BLM G1 Grid Paper	• BLM 5.CP.1 Chapter 5 Problem Wrap-Up Rubric	• graphing calculators • grid paper
Task: Charity Fundraising • 80 min	230–231	• BLM G1 Grid Paper	• BLM 5.T.1 Task: Charity Fundraising Rubric	• calculators • graphing calculators • grid paper • rulers
Chapters 3 to 5 Review • 80 min	232–233	• BLM G1 Grid Paper	• BLM A9 Self-Assessment Recording Sheet • BLM A16 Self-Assessment Checklist	• graphing calculators • grid paper

Chapter 5 Blackline Masters Checklist

	Title		Purpose
Chapter 5 Opener			
	BLM 5.CO.1	Literacy Link: Venn Diagram	Literacy
	BLM 5.CO.2	Career Profile Report Rubric	Assessment
Get Ready!			
	BLM 5.GR.1	Practice: Get Ready	Practice
	BLM 5.GR.2	Get Ready Self-Assessment Checklist	Self-Assessment
	BLM G1	Grid Paper	Student Support
5.1 Solve Linear Systems by Graphing			
	BLM 5.1.1	Practice: Solve Linear Systems by Graphing	Practice
	BLM 5.1.2	Achievement Check Rubric	Assessment
	BLM A2	Thinking General Scoring Rubric	Student Support
	BLM G1	Grid Paper	Student Support
5.2 Solve Linear Systems by Substitution			
	BLM 5.2.1	Practice: Solve Linear Systems by Substitution	Practice
	BLM G1	Grid Paper	Student Support
5.3 Solve Linear Systems by Elimination			
	BLM 5.3.1	Practice: Solve Linear Systems by Elimination	Practice
	BLM G1	Grid Paper	Student Support
5.4 Solve Problems Involving Linear Systems			
	BLM 5.4.1	Practice: Solve Problems Involving Linear Systems	Practice
	BLM 5.4.2	Achievement Check Rubric	Assessment
	BLM A1	Knowledge/Understanding General Scoring Rubric	Assessment
	BLM A3	Communication General Scoring Rubric	Assessment
	BLM G1	Grid Paper	Student Support
Chapter 5 Review			
	BLM 5.CR.1	Chapter 5 Review	Review
	BLM G1	Grid Paper	Student Support
Chapter 5 Practice Test			
	BLM 5.PT.1	Chapter 5 Practice Test	Diagnostic Assessment
	BLM 5.CT.1	Chapter 5 Test	Summative Assessment
	BLM G1	Grid Paper	Student Support

		Title	Purpose
Chapter 5 Problem Wrap-Up			
	BLM 5.CP.1	Chapter 5 Problem Wrap-Up Rubric	Summative Assessment
	BLM G1	Grid Paper	Student Support
Task: Charity Fundraising			
	BLM 5.T.1	Task: Charity Fundraising Rubric	Assessment
	BLM G1	Grid Paper	Student Support
Chapters 3 to 5 Review			
	BLM A9	Self-Assessment Recording Sheet	Self-Assessment
	BLM A16	Self-Assessment Checklist	Self-Assessment
	BLM G1	Grid Paper	Student Support

Get Ready!

Student Text Pages

196–197

Suggested Timing

80–160 min

Tools

- grid paper

Related Resources

BLM 5.GR.1 Practice: Get Ready

BLM 5.GR.2 Get Ready Self-

Assessment Checklist

BLM G1 Grid Paper

Common Errors

- Some students may “lose” the negative signs associated with a variable or constant.

R_x Suggest that students underline the terms that are like and then look at the signs that go with the terms. Often, underlining or using colour to highlight will help students to see which parts go together more easily.

Accommodations

ESL—Have ESL students complete the work with a partner. Also, you may wish to allow ESL students to use their dictionary or translator for the work.

Visual—Let students use photocopies of the pages so that they may use highlighters or colour to indicate what they are asked to find in each question.

Teaching Suggestions

- The Get Ready section is a basic review of the algebraic operations and graphing skills students will need to be successful in working with linear systems. You may wish to use the Get Ready as a diagnostic to identify skills with which students need help so they can be successful in this chapter. You may wish to have students use **BLM 5.GR.2 Get Ready Self-Assessment Checklist** to identify the skills with which they need extra help.
- Allow students to work in pairs on the Get Ready section and circulate while students work on the questions. Use this as an opportunity to identify students that will be stronger on the material in the chapter. This will aid in creating pairs and groups for the activities in the chapter.
- For questions 2–4, remind students that in an equation, everything is in balance. To move one item from one side to the other, add its opposite to both sides to keep the equation in balance. Likewise, both sides of an equation must be multiplied or divided by the same quantity.
- For questions 5–6, remind students to use the slope y -intercept method: start at the y -intercept value and then move up or down and over from that starting position to find other points on the line. You may wish to have students use **BLM G1 Grid Paper** for these questions.
- For question 7, remind students to state explicitly what they are using to represent the variable. For simplicity, you may suggest they use a letter that is in the word they are replacing.
- Use **BLM 5.GR.1 Practice: Get Ready** for extra practice or remediation.
- All BLMs referred to throughout this chapter can be found in the *Foundations of Mathematics 10: Teacher’s Resource* CD-ROM.

Assessment

- The Get Ready is an excellent form of diagnostic assessment. Use it as a means to determine students’ preparedness to move on and as a means to determine where remediation is necessary.
- The Get Ready can be used by students as a self assessment. You may wish to have students use **BLM 5.GR.2 Get Ready Self-Assessment Checklist** to identify the skills with which they need extra help.
- Students should be encouraged to seek assistance from you or a fellow student, or to ask for a remediation BLM in the areas where they feel they need help before moving on.
- This is an opportunity for students to gain confidence in what they already know.

Chapter Problem

- Have students discuss their understanding of Logan’s fundraising efforts. Ask students about other situations in which you might need to make these types of decisions.
- The Chapter Problem questions throughout the chapter are designed to help students move toward the Chapter Problem Wrap-Up. You may wish to assign these questions as students work through the sections. Alternatively, you may wish to assign the Chapter Problem questions and Chapter Problem Wrap-Up when students have completed the chapter, as part of a summative assessment.