Linear Inequalities

General Outcomes
- Represent algebraic expressions in multiple ways.

Specific Outcomes

PR4 Explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context.

By the end of this chapter, students will be able to:

Section	Understanding Concepts, Skills, and Processes
9.1	✓ represent single variable linear inequalities verbally, algebraically, and graphically
	✓ determine if a given number is a possible solution of a linear inequality
9.2	✓ solve single-step linear inequalities and verify solutions
	✓ compare the processes for solving linear equations and linear inequalities
	✓ compare the solutions of linear equations and linear inequalities
	✓ solve problems involving single-step linear inequalities
9.3	✓ solve multi-step linear inequalities and verify their solutions
	✓ compare the processes for solving linear equations and linear inequalities
	✓ solve problems involving multi-step linear inequalities

Assessment	Supporting Learning
Assessment *for* Learning	
Method 1: Use the Math Link introduction on page 339 in *MathLinks 9* to activate student prior knowledge about the skills and processes that will be covered in this chapter. **Method 2:** Have students develop a journal entry to explain what they personally know about linear relationships, including what the graph of a linear relation looks like, and about linear equations, including the different ways that these equations can show the relationship between two sets of data.	• **BLM 9–1 Chapter 9 Math Link Introduction** provides scaffolding for the Math Link introduction. • Have students use the What I Need to Work On section of their chapter Foldable to keep track of the skills and processes that need attention. They can check off each item as they develop the skill or process at an appropriate level. • Students who require activation of prerequisite skills may wish to complete the Get Ready materials available on **BLM 9–2 Chapter 9 Get Ready**, in the *MathLinks 9 Practice and Homework Book*, and at the www.mathlinks9.ca book site.
Assessment *as* Learning	
Literacy Link (page 337) At the beginning of the chapter, work with students to model the use of a concept map.	• Explain to students that the term *linear inequalities* is positioned in the middle of the concept map because that is the central theme of this chapter. • As students move through the sections of the chapter, have them add to their concept map so that, by the time they finish the chapter, they will have a useful tool for reviewing the skills and concepts covered in the chapter.
Chapter 9 Foldable As students work on each section in Chapter 9, have them keep track of any Key Words with examples and make note of problems they are having in the What I Need to Work On section of their Foldable.	• As students complete each section, have them review the list of items they need to work on and check off any that have been handled.
Assessment *for* Learning	
BLM 9–3 Chapter 9 Warm-Up This BLM includes three warm-ups, one to be used at the beginning of each section. Each warm-up provides cumulative review questions for the entire student resource to that point, as well as mental math practice.	• As students complete questions from previous chapters, note which skills they are retaining and which ones may need additional reinforcement. • Use the warm-up to provide additional opportunities for students to demonstrate their understanding of the chapter material. • Have students share their strategies for completing mental math calculations.

Problems of the Week

Have all students try at least one of the problems on **BLM 9–4 Chapter 9 Problems of the Week**. Many of these problems require students to think outside the box and experiment with a variety of approaches. Some have definitive answers; others can be answered in more than one way.

Students can take the problems home and consult with parents or guardians, work with other students when their work is completed, or try them on their own. The questions take a varying amount of time to solve, depending on the particular student and the problem itself. You may wish to give out these problems at the beginning of the chapter and discuss the solutions at appropriate times throughout your work on the chapter.

Chapter 9 Planning Chart

Section/ Suggested Timing	Prerequisite Skills	Materials/Technology	Teacher's Resource Blackline Masters	Exercise Guide	Extra Support	Assessment as Learning	Assessment for Learning	Assessment of Learning
Chapter Opener • 40–50 minutes (TR page 465)	Students should be familiar with • using symbols to describe relationships • using the term *between* in mathematics • using inequality symbols • solving inequalities	• sheet of 11 × 17 paper • four sheets of 8.5 × 11 paper • stapler • ruler • scissors • glue	BLM 9–1 Chapter 9 Math Link Introduction BLM 9–2 Chapter 9 Get Ready BLM 9–3 Chapter 9 Warm-Up BLM 9–4 Chapter 9 Problems of the Week		Online Learning Centre	Master 2 Communication Peer Evaluation TR page 464 Chapter 9 Foldable, TR page 464	TR page 464	
9.1 Representing Inequalities • 50–60 minutes (TR page 469)	Students should be familiar with • using symbols to describe relationships • using the term *between* in mathematics • using inequality symbols • solving inequalities	• grid paper • ruler • coloured pencils, straws, or small wood sticks	Master 2 Communication Peer Evaluation BLM 9–3 Chapter 9 Warm-Up BLM 9–5 Section 9.1 Extra Practice BLM 9–6 Section 9.1 Math Link	**Essential:** #1–3, 5–7, 9, 10b), 11, 13, 15, 17, Math Link **Typical:** #1–3, 5–7, 9, 10b), 11, 16, 19, 21, Math Link **Extension/Enrichment:** #2–4, 8, 10, 13, 23–25, Math Link	*MathLinks 9 Practice and Homework Book* *MathLinks 9 Solutions Manual*	Master 2 Communication Peer Evaluation TR pages 471, 480 Math Learning Log, TR page 480 Chapter 9 Foldable, TR page 480	TR pages 476, 480	
9.2 Solving Single-Step Inequalities • 50–60 minutes (TR page 481)	Students should be familiar with • using symbols to describe relationships • using the term *between* in mathematics • using inequality symbols • solving inequalities	• long strip of paper or number line • ruler • two different-coloured tokens or markers • algebra tiles • coloured counters	Master 2 Communication Peer Evaluation BLM 9–3 Chapter 9 Warm-Up BLM 9–7 Chapter 9 Number Line BLM 9–8 Section 9.2 Extra Practice BLM 9–9 Section 9.2 Math Link	**Essential:** #1–4, 5a), 5d), 6a), 6b), 7a), 7d), 8, 9, 12, 14, 16a), 17 **Typical:** #1–4, 5a), 5d), 6a), 6b), 7a), 7d), 8, 9, 12, 14, 16, 17, 18 **Extension/Enrichment:** #1–4, 5c), 5d), 6b), 6c), 13, 17, 19–25	*MathLinks 9 Practice and Homework Book* *MathLinks 9 Solutions Manual*	Master 2 Communication Peer Evaluation TR pages 482, 490 Math Learning Log, TR page 490 Chapter 9 Foldable, TR page 490	TR pages 486, 490	
9.3 Solving Multi-Step Inequalities • 50–60 minutes (TR page 491)	Students should be familiar with • using symbols to describe relationships • using the term *between* in mathematics • using inequality symbols • solving inequalities	• small blocks • balance scale	Master 2 Communication Peer Evaluation BLM 9–3 Chapter 9 Warm-Up BLM 9–10 Section 9.3 Extra Practice BLM 9–11 Section 9.3 Math Link	**Essential:** #1–3, 6, 8, 11 **Typical:** #1–3, 6, 8, 10–14 **Extension/Enrichment:** #2, 7, 8, 11, 13–14, 16–18, 20	*MathLinks 9 Practice and Homework Book* *MathLinks 9 Solutions Manual*	Master 2 Communication Peer Evaluation TR pages 492, 498 Math Learning Log, TR page 498 Chapter 9 Foldable, TR page 498	TR pages 495, 498	
Chapter 9 Review • 40–50 minutes (TR page 499)			BLM 9–5 Section 9.1 Extra Practice BLM 9–8 Section 9.2 Extra Practice BLM 9–10 Section 9.3 Extra Practice	Have students do at least one question related to any concept, skill, or process that has been giving them trouble.	*MathLinks 9 Practice and Homework Book* *MathLinks 9 CAB*	Chapter 9 Foldable, TR page 499	TR page 500	
Chapter 9 Practice Test • 40–50 minutes (TR page 501)			BLM 9–12 Chapter 9 Test	Provide students with the number of questions they can comfortably do in one class. Choose at least one question for each concept, skill, or process. **Minimum:** #1–5, 8, 9, 11–13, 15	*MathLinks 9 CAB*	TR page 502	TR page 502	BLM 9–12 Chapter 9 Test
Chapter 9 Math Link: Wrap It Up! • 30–40 minutes (TR page 503)			Master 1 Project Rubric BLM 9–1 Chapter 9 Math Link Introduction BLM 9–6 Section 9.1 Math Link BLM 9–9 Section 9.2 Math Link BLM 9–11 Section 9.3 Math Link BLM 9–13 Chapter 9 Wrap It Up!		Online Learning Centre			TR page 503 Master 1 Project Rubric
Chapter 9 Challenge: Not for Profit • 30–40 minutes (TR page 505)			Master 1 Project Rubric BLM 9–15 Chapter 9 BLM Answers		Online Learning Centre		TR page 506	TR page 506 Master 1 Project Rubric
Chapter 9 Challenge: The Inequalities Game • 30–40 minutes (TR page 508)		• deck of playing cards (joker and face cards removed)	BLM 9–14 Inequalities Game Board		Online Learning Centre		TR page 508	