10

Function Operations

General Outcome

Develop algebraic and graphical reasoning through the study of relations.

Specific Outcomes

RF1 Demonstrate an understanding of operations on, and compositions of, functions.

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

Section	Understanding Concepts, Skills, and Processes
10.1	✓ sketch the graph of a function that is the sum or difference of two functions
	✓ determine the domain and range of a function that is the sum or difference of two functions
	✓ write the equation of a function that is the sum or difference of two functions
10.2	✓ sketch the graph of a function that is the product or quotient of two functions
	✓ determine the domain and range of a function that is the product or quotient of two functions
	✓ write the equation of a function that is the product or quotient of two functions
10.3	✓ determine values of a composite function
	✓ write the equation of a composite function and explain any restrictions
	✓ sketch the graph of a composite function

Assessment	Supporting Learning
Assessment *for* Learning	
Method 1: Use the introduction on page 472 in *Pre-Calculus 12* to activate students' 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 rational functions.	• Have students update their list of what they need to work on and keep track of the skills and processes that need attention. • Students who require activation of prerequisite skills may wish to complete **BLM 10–1 Chapter 10 Prerequisite Skills**. This material is on the Teacher CD of this Teacher's Resource and mounted on the www.mcgrawhill.ca/school/learningcentres book site.
Assessment *as* Learning	
As students work on each section in Chapter 10, have them keep track of any problems they are having.	• 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. • Encourage students to write definitions for the Key Terms in their own words, including reminder tips that may be helpful for review throughout the chapter. • Encourage students to write examples of their own in their notebook or math portfolio. Students should have an example for each method that is covered in the chapter.
Assessment *for* Learning	
BLM 10–1 Chapter 10 Prerequisite Skills This master provides a review of prerequisite skills needed for the chapter	• Use the Prerequisite Skills blackline master to provide additional opportunities for students to demonstrate their readiness for the chapter material.

Chapter 10 Planning Chart

Section/ Suggested Timing	Prerequisite Skills	Materials/Technology	Teacher's Resource Blackline Masters	Exercise Guide	Assessment			Web Link www.mcgrawhill.ca/school/learningcentres
					Assessment *as* Learning	Assessment *for* Learning	Assessment *of* Learning	
Chapter Opener • 30–45 min (TR page 257)			BLM 10–1 Chapter 10 Prerequisite Skills BLM U4–1 Unit 4 Project Checklist					• careers involving laser research
10.1 Sums and Differences of Functions • 90–120 min (TR page 258)	Students should be familiar with • determining the equation of a line given the graph • determining the domain and range of a function • adding and subtracting algebraic expressions • graphing functions	• grid paper • graphing technology	Master 3 Centimetre Grid Paper BLM 10–2 Section 10.1 Extra Practice	**Essential:** #1a), b), 2a) b), 3–13 **Typical:** #1c), d), 2c), d), 3–11, one of 14–16, 17 or 18, C1–C3 **Extension/Enrichment:** #14, 17, 19–22, C1, C3	TR pages 259, 262	TR pages 261, 262		
10.2 Products and Quotients of Functions • 90–120 min (TR page 263)	Students should be familiar with • multiplying and dividing algebraic expressions • identifying non-permissible values for a rational expression	• grid paper • graphing technology	Master 3 Centimetre Grid Paper BLM 10–3 Section 10.2 Extra Practice	**Essential:** #1–4, 5a), b), 7 **Typical:** #1–4, 5c), d), 6–8, 9 or 10, C2–C3 **Extension/Enrichment:** #8, 10, 11, 13, C2–C3	TR pages 264, 267	TR pages 266, 267		
10.3 Composite Functions • 120–150 min (TR page 268)	Students should be familiar with • creating and interpreting mapping diagrams • simplifying algebraic expressions • evaluating functions	• grid paper • graphing technology	Master 3 Centimetre Grid Paper BLM 10–4 Section 10.3 Extra Practice	**Essential:** #1–6, 8, 9, 11, 12, 15, 16 **Typical:** #1–5, 7–10, 13, 14, 16–19, C1, C3, C4 **Extension/Enrichment:** #7, 10, 14, 17, 19–23, C1, C4	TR pages 269, 272	TR pages 270–272		• information about the Global Climate Observing System (GCOS)
Chapter 10 Review and Practice Test • 60–90 min each (TR page 273)		• grid paper • graphing technology	Master 3 Centimetre Grid Paper BLM 10–2 Section 10.1 Extra Practice BLM 10–3 Section 10.2 Extra Practice BLM 10–4 Section 10.3 Extra Practice BLM 10–5 Chapter 10 Study Guide BLM 10–6 Chapter 10 Test BLM 10–7 Chapter 10 BLM Answers	Have students do at least one question related to any concept, skill, or process that has been giving them trouble. **Chapter 10 Review minimum:** #2–4, 6–13 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. **Chapter 10 Practice Test minimum:** #1–10, 13		TR page 273	TR page 273 BLM 10–6 Chapter 10 Test	