

NELSON

# Nelson Mathematics

Combined Grade Supplements



*Effective teaching support for combined grade classrooms!*

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Nelson

# Mathematics K-8

These practical supplements provide time-saving strategies and support for teachers implementing *Nelson Mathematics* in a combined grade class.

## Key Features

- Chapter Planning Charts with expectations for both grades side-by-side for easy planning
- At-a-glance *Comparisons of Lessons* to help you get started
- Lesson plans with suggestions that address the unique challenges of teaching combined-grade classes
- Timing and classroom management suggestions



# Detailed step-by-step ins

GRADES 7/8 CHAPTER 9

**Lesson Sequence, Chapter 9 (Pacing: 20 days)**

Includes Lesson 9A, B, and C.\*

DAY	GRADE 7 LESSON	GRADE 8 LESSON	TEACHER NOTES
1	<b>Getting Started:</b> Missing Measuring Cups Do You Remember?	<b>Getting Started:</b> Pattern Block Designs Do You Remember?	<i>If Grade 8 did not use Nelson Mathematics 7, omit Question 6. Teach it with Grade 7 in Lesson 9.5. Borrow pattern blocks from a primary classroom if necessary.</i>
2	<b>9.1: Exploration</b> Adding Fractions with Pattern Blocks	<b>9.1: Exploration</b> Adding and Subtracting Fractions Less Than 1	<i>Start the lesson with the whole class, and then teach Grade 8 while Grade 7 completes the exploration.</i>
3	<b>9.2: Direct Instruction</b> Adding Fractions with Models	<b>9.1 (continued)</b> Optional: Math Game (p. 323)	<i>It is expected that some Grade 8s will need an extra class to consolidate their understanding of addition and subtraction. Adding and subtracting larger numbers (Lesson 9.2) is taught when Grade 7 is ready for the lesson (Day 9).</i>
4	<b>9A: Exploration</b> Comparing Fractions and Decimals TR pp. 87, 90	<b>9.3: Exploration</b> Exploring Fraction Patterns	<i>Lesson 9A is a new expectation in the Revised Ontario Curriculum. Both the Grade 7 and the Grade 8 explorations can be taught at other points in the unit.</i>
5	<b>9.2 (continued)</b>	<b>9.4: Guided Activity</b> Fractions of Fractions	
6	<b>9.3: Guided Activity</b> Multiplying a Whole Number by a Fraction	<b>9.5: Direct Instruction</b> Multiplying Fractions	<i>These two lessons can be taught together.</i>
7	<b>9.4: Guided Activity</b> Subtracting Fractions with Models	<b>9.4 and 9.5 (continued)</b>	<i>Grade 8 will need extra time to master ideas from Lessons 9.4 and 9.5.</i>
8	<b>Mid-Chapter Review</b>	<b>Mid-Chapter Review</b>	<i>Grade 8: Omit questions about adding and subtracting mixed numbers, as this is taught on Day 9.</i>
9	<b>9.5: Guided Activity</b> Subtracting Fractions with Grids	<b>9.6: Direct Instruction</b> Multiplying Fractions Greater Than 1	
10	<b>9.6: Guided Activity</b> Adding and Subtracting Mixed Numbers	<b>9.2: Direct Instruction</b> Adding and Subtracting Fractions Greater Than 1	<i>Grade 8: Let earlier so that the same time</i>
11	<b>9.6 (continued)</b> <b>9.8: Direct Instruction</b> Adding and Subtracting Using Equivalent Fractions	<b>9.7: Guided Activity</b> Dividing Fractions I	<i>Be sure to for both the next one to methods t fractions. during the</i>
12	<b>9.8 (continued)</b>	<b>9.8: Direct Instruction</b> Dividing Fractions II	<i>In this les standard reciproca why this</i>

2 | Nelson Mathematics 7/8 Combined Grade Supplement

Teacher Notes help you organize your day

Lesson plans and suggest address the unique challenges of teaching combined-grade classes

Combined Grade 7/8 Supplement

GRADES 7/8 Chapter 9

**Chapter 9 Planning Chart**

When the expectation is a focus of a particular lesson, the lesson number is indicated in brackets.  
When part of the expectation is in square brackets [], that part of the expectation is not addressed in this unit.

GRADE 7	GRADE 8
<p><b>Overall Expectations</b></p> <ul style="list-style-type: none"> <li>represent, compare, and order numbers, including integers</li> <li>demonstrate an understanding of addition and subtraction of fractions (and integers,) and apply a variety of computational strategies to solve problems (involving whole numbers and decimal numbers) <b>(1, 2, 3, 4, 5, 6, 7, 8)</b></li> </ul> <p><b>Specific Expectations</b></p> <ul style="list-style-type: none"> <li>represent, compare, and order decimals and fractions, using a variety of tools <b>(9A)</b></li> <li>add and subtract fractions with simple like and unlike denominators, using a variety of tools and algorithms <b>(1, 2, 4, 5, 6, 8)</b></li> <li>demonstrate, using concrete materials, the relationship between the repeated addition of a fraction and the multiplication of that fraction by a whole number <b>(3)</b></li> <li>divide whole numbers by simple fractions using concrete materials <b>(9B)</b></li> <li>use a variety of mental strategies to solve problems involving the addition and subtraction of fractions <b>(9C)</b></li> </ul>	<p><b>Overall Expectations</b></p> <ul style="list-style-type: none"> <li>represent, compare, and order equivalent representations of numbers (including those involving positive exponents) <b>(2, 4, 7, 9)</b></li> <li>solve problems involving whole numbers, decimal numbers, fractions, and integers using a variety of computational strategies <b>(1, 2, 4, 5, 6, 7, 8)</b></li> <li>represent linear growing patterns (where the terms are whole numbers) using graphs, algebraic expressions, and equations <b>(3)</b></li> </ul> <p><b>Specific Expectations</b></p> <ul style="list-style-type: none"> <li>represent, compare, and order rational numbers (i.e., positive and negative fractions and decimals to thousandths) <b>(1, 4, 7, 9. Mental Imagery)</b></li> <li>solve problems involving addition, subtraction, multiplication, and division with simple fractions <b>(1, 2, 5, 6, 7, 8)</b></li> <li>represent the multiplication and division of fractions, using a variety of tools and strategies <b>(4, 5, 6, 7, 8, 9, 10)</b></li> </ul> <p>• use estimation when solving problems involving operations with whole numbers, decimals, percents, integers, and fractions, to help judge the reasonableness of a solution <b>(2, 6, 7, 8)</b></p> <p>• determine a term, given its term number, in a linear pattern that is represented by a graph or an algebraic expression <b>(3)</b></p> <p>• evaluate algebraic expressions with up to three terms, by substituting fractions, decimals, and integers for the variables <b>(10)</b></p>

Chapter Planning Charts with expectations for both grades side-by-side for easy planning

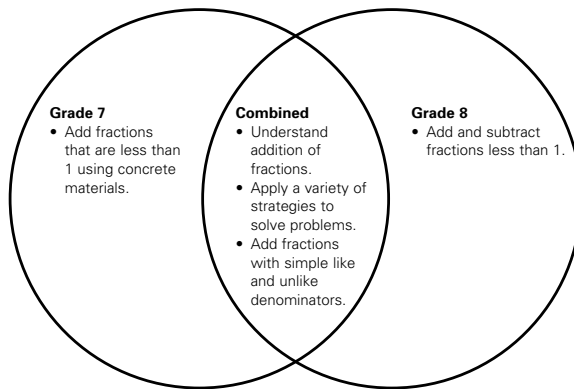
# Instructions for easy classroom

GRADES 7/8

DAY 2 Chapter 9

## Lessons 9.1 and 9.1

### Comparison of Lessons



**9.1: Adding Fractions with Pattern Blocks**  
Exploration  
SB pp. 306–307  
TR pp. 14–17  
Masters Booklet:  
• 2.5 cm Triangle Dot Paper p. 39

**9.1: Adding and Subtracting Fractions Less Than 1**  
Guided Activity  
SB pp. 286–289  
TR pp. 14–17  
• Fraction Strips (Master) TR p. 66

Comparisons of Lessons show content similar in breadth at each grade level

#### DEALING WITH HOMEWORK ♦ 5–10 MIN

Students have self-checked their assigned homework from the last class. Have students post questions they could not solve. Assist these students after you have taught the lesson. Check homework of students you think may have had difficulty. Refer to **Initial Assessment** on Grade 7 TR p. 13 and Grade 8 TR p. 17. Complete an initial assessment for all students.

### Combined Grades

#### INTRODUCTION ♦ 5–10 MIN

You will need an overhead projector, pattern blocks, and triangle dot paper for Grade 7 and fraction strips for Grade 8. Remind students that what is meant when talking about fractions depends on the way they are being used.

Ask students for some examples from real life, such as

- $\frac{1}{2}$  of a pizza (equal parts of a whole)
- $\frac{1}{5}$  of the schoolyard (equal area, but not necessarily the same shape)
- $\frac{3}{4}$  of a class (part of a set of boys and girls)

Note: If Grade 8 did not use Nelson Mathematics in Grade 7, then this is a good time to introduce a model to show fractions on a grid as this is used in Example 2. Using the overhead projector, place counters on a  $4 \times 7$  grid as shown.

Explain that the grid shows  $\frac{3}{4}$  of 28 students. Ask students to show you how the same grid could be used to model  $\frac{2}{7}$ . (Remove counters; show 2 vertical rows of 4.)

Ask students what size of grid they would use to model both thirds and fifths. ( $3 \times 5$ )

Tell students that in today's class they will learn about adding fractions that are part of a whole.

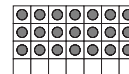
#### TEACHING AND LEARNING ♦ 5 MIN

Use the four shapes of pattern blocks on the overhead projector with the whole class.

Ask students to show you which block equals  $\frac{1}{2}$  if the hexagon is 1.

Ask which two blocks together equal  $\frac{1}{2}$ .

Ask Grade 8 to use their fraction strips to show that  $\frac{1}{3}$  plus  $\frac{1}{6}$  is the same as  $\frac{1}{2}$ .



At-a-glance list of materials needed for each lesson!

# om management.

Work with Each Grade	
GRADE 7	GRADE 8
<p><b>Work with Grade 7</b> <math>\blacktriangleright</math> 5–10 min <b>Teaching and Learning</b> Read the instructions with Grade 7.</p> <p>Check comprehension of the following vocabulary: <i>individually, hexagon, equation, combinations</i>.</p> <p>Read the Communication Tip with students.</p> <p><b>On their own</b> Students work with a partner to complete prompts A to F.</p> <p>Students record their answers for the exploration on triangular dot paper.</p> <p><b>Work with Grade 7</b> <math>\blacktriangleright</math> 5–10 min <b>Teaching and Learning</b></p> <p><b>Reflecting</b> Discuss prompt F and Reflecting Question 1 with students.</p> <p><b>On their own</b> Direct the students to complete the exploration during the remainder of the class.</p> <p>Emphasize that students should clearly explain their thinking in their written responses.</p> <ul style="list-style-type: none"> <li>Assign the Mental Math activity on p. 307 for homework.</li> </ul>	<p><b>On their own</b> Have students read the introduction to the lesson on their own and complete prompt A. They then read prompts B to E. You will work with them as soon as the Grade 7s are working on their own.</p> <p><b>Work with Grade 8</b> <math>\blacktriangleright</math> 5–10 min <b>Teaching and Learning</b> Discuss students' solutions for prompt A.</p> <p>Go over other prompts with students to ensure that they can proceed.</p> <p><b>On their own</b> Direct the students to complete prompts B to E as well as the Reflecting questions.</p> <p><b>Work with Grade 8</b> <math>\blacktriangleright</math> 10–15 min <b>Teaching and Learning</b></p> <p><b>Reflecting (5 min)</b> Briefly discuss the Reflecting questions.</p> <ul style="list-style-type: none"> <li>Example 1: Ask students what other fractions could be used to label the number line.</li> <li>Example 2: If students are unfamiliar with using grids to model adding and subtracting fractions, model Question 6 of Getting Started, p. 285.</li> </ul> <p><b>Consolidation</b> Encourage students to use fraction strips, or a grid, to complete their homework.</p> <p><b>On their own</b></p> <ul style="list-style-type: none"> <li>Assign Questions 4 and 6–10.</li> <li>For students having difficulty, assign Questions 4, 6, 7, and 9.</li> <li>For Extra Challenge, assign Questions 7, 11, 13*, 14, and 15.</li> </ul> <p>(Students will work on questions from this lesson for two days.)</p> <p>*Question 13 is the Key Assessment Question.</p>

Effective timing suggestions!

#### CLASSROOM MANAGEMENT TIP

- If possible, have pattern blocks or fraction strips on the desks of all students. This avoids the stigma of having to get concrete materials, which sometimes implies “needing” to use them.

Classroom management tips!

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