Chapter 2 Lesson Plans

MathLinks 7 Pre-Planning for Chapter 2

STRAND/ORGANIZER: Number

General Outcomes: Develop number sense.

1. Before getting started with lesson planning for Chapter 2 Operations on Decimal Numbers, you need to understand what skills your students have already been exposed to.

- If students in your jurisdiction have *not* completed the new Grade 6 WNCP (2006) curriculum, they should have some understanding of the following outcomes from the previous curriculum:
  Grade 6 (1995):
  - ☑ Solve problems that involve arithmetic operations on decimals to thousandths, using appropriate technology (2-digit whole number multipliers and dividers).
  - ☑ Estimate the solution to calculations involving whole numbers and decimals (2-digit whole number multipliers and divisors).
  - ☑ Use a variety of methods to solve problems with multiple solutions.

- If students in your jurisdiction *have* completed the new Grade 6 WNCP (2006) curriculum, they should have some understanding of the following:
  - ☑ Demonstrate an understanding of multiplication and division of decimals (1-digit whole number multipliers and 1-digit natural number divisors).
    - Place the decimal point in a product using front-end estimation.
    - Place the decimal point in a quotient using front-end estimation.
    - Correct errors of decimal point placement in a given product or quotient without using paper and pencil.
    - Predict products and quotients of decimals using estimation strategies.

- Solve a given problem that involves multiplication and division of decimals using multipliers from 0 to 9 and divisors from 1 to 9.

☑ Explain and apply the order of operations, excluding exponents, with and without technology (limited to whole numbers).
- Demonstrate and explain with examples why there is a need to have a standard order of operations.
- Apply the order of operations to solve multi-step problems with or without technology.

2. Note that not every section within each chapter is meant to be a stand-alone lesson. In order to allow students time to experience the depth and breadth of the concept, some sections may take two or three classes to complete. The Teacher's Resource has suggested time lines.
Before starting Chapter 2, read through the **Chapter Opener** (p. 42), **Key Words** (p. 42), **Math Links** (pp. 42, 51, 59, 67), and **Wrap It Up!** (p. 77). These sections will provide a sense of how the chapter concepts are tied together and how students will be asked to apply their learning. The Wrap It Up! consolidates work on the chapter Math Links.

3. Each chapter begins with a **Foldables** feature (p. 43) which provides unique ways for students to:
- organize their learning
- keep track of key words and examples
- organize their thinking
- keep track of what they need to work on in the particular chapter and for review later in the course

Foldables are exciting ways for students to engage themselves in learning. Most take approximately 10 min to make.

A materials centre at the back of the classroom can make it easier for students to produce Foldables. This centre could be as large as a table at the back of the classroom or as simple as a box on a handy shelf. Stock the area with paper, scissors, glue, tape, and markers.

Most chapters have one Foldables design in the student edition and another Foldables design for vocabulary in the Teacher's Resource.

You may wish to help students stay organized and keep their Foldables for year-end reference by providing either:
- a file folder and storage box in the classroom, or
- a page-protector pouch that students can keep in their binders.

4. As part of your pre-planning for each chapter, review the related chapter in:
- the Teacher's Resource (teaching notes include support for meeting the needs of all learners, a list of common errors, language learning skills, and scoring rubrics for the Wrap It Up!),
- the related Blackline Masters (BLMs), which provide additional questions, scaffolding of all Math Links (including the Wrap It Up!), a chapter test, and assessment assistance,
- *MathLinks 7 Practice and Homework Book*, which provides additional exercises and scaffolding for concepts, and
- the Teacher Centre of the McGraw-Hill Ryerson Online Learning Centre provides examples of student work for the challenges and tasks, scoring rubrics, additional challenges for students, and final exams.

MathLinks 7 Chapter 2, Lesson 1

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcomes:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Resource/Materials:

- *MathLinks 7*, pp. 42–43
- BLM 2–2 Operations on Decimal Numbers
- Get Ready (pp. 14–15 *MathLinks 7 Practice and Homework Book* or alternative in the Teacher Centre of the Online Learning Centre)

***MathLinks* 7 Adapted Resource/Material:**

Get Ready, pp. 58–59

Starting Chapter 2

If you do not have access to the Teacher's Resource, begin Chapter 2 by telling students that this chapter is about performing operations on decimal numbers. They will gain additional strategies for estimating and performing operations with decimal numbers. You may wish to have students discuss and provide examples of decimals they see day to day and what types of operations are performed on them.

Procedures/Activities/Instruction:

1. Have students complete the **Get Ready**.
   The purpose of the Get Ready is to provide you, the teacher, with an opportunity to assess how well students know the prerequisite skills for this chapter. At the same time, students have an opportunity to self-assess their preparedness. **BLM 2–2 Operations on Decimal Numbers** can be used for students who are strong enough in the pre-requisite skills not to have to complete the **Get Ready** or who require remediation assistance after the Get Ready.
2. To help students link learning to daily life, you may wish to begin a collage of real-world applications of decimal numbers and operations involving decimal numbers. Students could cut out headlines, bring in problems that require decimal solutions, and so forth. The collage would be a living document in the classroom, allowing students to continually add examples. The collage could

be a class effort where pictures from magazines and the Internet are posted on a class wall.

Assessment:

1. Get Ready – pp. 14–15 of the *MathLinks 7 Practice and Homework Book*, Teacher Centre of the Online Learning Centre, or pp. 58–59 of the Adapted Resource (Assessment *for* Learning)
2. **BLM 2–2 Operations on Decimal Numbers** (Assessment *for* Learning)

MathLinks 7 Chapter 2, Lesson 2

Time: 30–40 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcomes:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Resource/Materials:

- *MathLinks 7*, pp. 42–43
- BLM 2–1 Chapter 2 Self-Assessment
- sample Foldable
- 7 sheets of paper (per student)
- stapler
- scissors
- ruler

Teacher's Resource Reference:
Chapter Opener, pp. 42–43

***MathLinks* 7 Adapted Resource/Material:**
Get Ready, pp. 58–59

Introduction:
Read the **Chapter Opener** together (p. 42). Read through the **What You Will Learn** and the **Key Words**. How many students can already define or describe some or all of the key words?

The visual on page 42–43 shows Cavendish Beach in Prince Edward Island. Have any students been to PEI? How many vacationed at a beach somewhere else? Ask students to estimate the distance they travelled. Discuss how much money they took on their trip and how they kept track of their spending.

Read the **Math Link** and brainstorm with students what needs to be considered when planning a week-long vacation. Discuss their dream vacations. Have them jot down details of location and activities. This will help set up the Math Link for the chapter.

Have students complete the appropriate sections of **BLM 2–1 Chapter 2 Self-Assessment** to help them identify what they already know, can do, and

understand related to Chapter 2. Have students refer to this page regularly to see whether they have increased their level of understanding.

Procedures/Activities/Instruction:

1. Explain the purpose of a Foldable and show students the one you have made. Identify the materials they need to make their own. As a class, sequentially complete the steps to produce the Foldable as detailed on page 43. Have them label the section titles beside the numbers. You may wish to provide them with samples of 100 grids they can glue or tape into their Foldable at appropriate sections.
2. Having previously reviewed the Get Ready, decide whether any remedial teaching is required prior to starting the chapter.

Assessment:

1. Get Ready (Assessment *for* Learning)
2. Have students use **BLM 2–1 Chapter 2 Self-Assessment** and consider their level of understanding of chapter content.

Math Link:

Have students start a section in their notebooks or use the back side of their Foldable to brainstorm a vacation destination.

Foldable Entry:

Encourage students to add the following words from the Get Ready to their Foldable. Have them use diagrams, explanations, or examples to define each word.

place value > greater than < less than order of operations

MathLinks 7 Chapter 1, Lesson 3

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem involving the addition of two or more decimal numbers.
- ☑ Solve a given problem involving the subtraction of decimal numbers.
- ☑ Place the decimal in a sum or difference using front-end estimation.
- ☑ Check the reasonableness of solutions using estimation.

Resource/Materials:

- *MathLinks 7*, pp. 44–48
- 2.1 Warm-Up (Online Learning Centre)
- BLM 2–3 Place Value Charts
- BLM 2–4 Section 2.1 Extra Practice

Teacher's Resource Reference:

pp. 44–48

***MathLinks 7* Adapted Resource/Materials:**

2.1 Warm-Up, p. 60
Section 2.1, pp. 61–62

Introduction:

Start the lesson by discussing how students might estimate or calculate the distance shown on the map (p. 44).

Procedure/Activities/Instruction:

1. Students could work individually or in pairs when reviewing the Discuss the Math. You may wish to complete this as a class to generate more discussion, especially if your students have not travelled far.
2. Once students have completed the Discuss the Math, have them complete the Reflect on Your Findings independently.

3. Discuss Examples 1 and 2 with students. Ensure students can differentiate between the two methods. Have them do the Show You Know following each example.
4. You may wish to assign **BLM 2–4 Section 2.1 Extra Practice** and clarify any areas of concern before assigning questions.

Assessment:
1. Have students complete the Show You Know for both examples. (Assessment for Learning)
2. **BLM 2–4 Section 2.1 Extra Practice** (optional)

Foldable Entry:
Encourage students to add the following words from section 2.1 to their Foldable. Have them use diagrams, illustrations, or explanations to define each word.

estimate overestimate underestimate
front-end estimation relative size

Encourage students to come up with a memory device to distinguish between the importance of place values *before* the decimal and those *after*. For example, "When I say this number, the numbers after the decimal end in -ths."

Math Learning Log:
Have students write about the method of estimation they prefer and why. Also, have them identify when it is better to overestimate and when is preferable to underestimate.

MathLinks 7 Chapter 1, Lesson 4

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem involving the addition of two or more decimal numbers.
- ☑ Solve a given problem involving the subtraction of decimal numbers.
- ☑ Place the decimal in a sum or difference using front-end estimation.

Resource/Materials:

- *MathLinks 7,* pp. 48–51
- *MathLinks 7 Practice and Homework Book*, pp. 16–17
- BLM 2–1 Chapter 2 Self-Assessment
- BLM 2–4 Section 2.1 Extra Practice
- BLM 2–5 Section 2.1 Math Link
- Foldable

Teacher's Resource Reference:

pp. 48–51

***MathLinks* 7 Adapted Resource/Materials:**

pp. 63–67

Introduction:

Start the lesson by reviewing the skills that students completed in the Discuss the Math of the previous lesson. You may wish to have them review their responses to their Learning Log entries from the previous day.

An oral review of the terminology placed in the Foldable would also be beneficial.

Procedure/Activities/Instruction:

1. Review the Key Ideas on page 48. Is there anything students would like to add to their Foldable from this section?
2. Assign questions as outlined in the Assessment section below.

3. Have students begin with the Communicate the Ideas. They could write their answers in their Math Learning Log. Collect this part of the assignment and review student responses. This will provide additional insight into students' understanding.

Assessment:

1. Have all students complete Communicate the Ideas #1 and 2. (Assessment *as* Learning)
2. Student assignments (Assessment *for* Learning)
   Essential: #4, 6, 8, 11, 15, Math Link
   Typical: #3, 4, 6, 8, 11–13, 15, 16, 18, 19, 23, Math Link
   Extension/Enrichment: #3, 12, 14, 17–19, 22–25, Math Link
   Students who need remediation may benefit from completing **BLM 2–4 Section 2.1 Extra Practice** or pages 16–17 of the *MathLinks 7 Practice and Homework Book.*
3. Students who require extra support or guidance with the Math Link may benefit from using **BLM 2–5 Section 2.1 Math Link**.
4. Have students use **BLM 2–1 Chapter 2 Self-Assessment** to assess how far they have progressed during this section. (Assessment *of* Learning)

Math Learning Log:

Have students complete this sentence:
Decimal numbers are important in society because…

Math Link:

If students complete the assigned questions before the end of class, have them complete the Math Link on page 51.

MathLinks 7 *Chapter 2, Lesson 5*

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem involving the multiplication of decimal numbers.
- ☑ Place the decimal in a product using front-end estimation.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with 2-digit multipliers or 1-digit divisors (whole numbers or decimals) without the use of technology.

Resource/Materials:

- *MathLinks 7*, pp. 52–56
- 2.2 Warm-Up (Online Learning Centre)
- Master 10 Hundred Grids
- BLM 2–1 Chapter 2 Self-Assessment
- BLM 2–6 Section 2.2 Extra Practice

Teacher's Resource Reference:

pp. 52–56

***MathLinks* 7 Adapted Resource/Materials:**

2.2 Warm-Up, p. 68
Section 2.2, pp. 69–71

Introduction:

Ask students for some products they remember from a recent visit to a store. You may wish to bring in a flyer that itemizes costs. List any decimal prices from the flyer on the board. Discuss how the prices may represent one item or part of one item. How would they determine the cost of multiple items? Introduce the lesson as one that will help them to simplify multiplication of decimals. Students will estimate and then calculate products of decimals.

Procedure/Activities/Instruction:

1. Collect, orally mark, or take up the previous day's homework. Remind students to note any questions they had difficulty with in the What I Need to Work On section of their Foldable.
2. You may wish to review what students have done by using the Warm-Up 2.2.
3. Have students work in pairs to complete the Discuss the Math (pp. 52–53).
4. Have students complete the Reflect on Your Findings and compare answers with a partner. Listen to student discussions to gauge whether they have understood the big question in the Discuss the Math or whether further reinforcement is needed.
5. Complete each method for Examples 1, 2, and 3 with students. Have them do the Show You Know following each example. Ask questions to ensure they have understood both methods. You may wish to hand out **Master 10 Hundred Grids** for students to use in their Foldables and assignments.

Assessment:

1. Have students complete the Show You Know for each example. (Assessment *for* Learning)
2. Assign **BLM 2–6 Section 2.2 Extra Practice** to students who need additional practice.
3. Have students complete Communicate the Ideas #1–2 individually. Review student responses to gain insight into students' level of understanding.
4. Have students update **BLM 2–1 Chapter 2 Self-Assessment**. (Assessment *of* Learning)
5. You may wish to have a supply of Sudoku puzzles available for students to work on.

Foldable Entry:

Have students record examples of multiplication using estimation and hundred grids.

Math Learning Log:

Have students answer the following questions in their Math Learning Logs: What is the purpose of estimating before you multiply? Why might you estimate after calculating?

MathLinks 7 Chapter 2, Lesson 6

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem involving the multiplication of decimal numbers.
- ☑ Place the decimal in a product using front-end estimation.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with 2-digit multipliers or 1-digit divisors (whole number or decimal) without the use of technology.

Resource/Materials:

- *MathLinks 7*, pp. 56–59
- *MathLinks 7 Practice and Homework Book*, pp. 18–19
- BLM 2–1 Chapter 2 Self-Assessment
- BLM 2–6 Section 2.2 Extra Practice
- BLM 2–7 Section 2.2 Math Link
- Foldable

Teacher's Resource Reference:

pp. 56–59

***MathLinks* 7 Adapted Resource/Materials:**

pp. 72–75

Introduction:

Write a sample question on the board (such as, John purchased 3 limes at $0.47 each and 2 bags of peanuts for $3.29 each. How much did his bill come to before tax?). Solve the question as a class. Tell students that this lesson will continue to use their skills in solving problems involving multiplication of decimals.

Procedure/Activities/Instruction:

1. Review the Key Ideas on page 56. Is there anything students would like to add to their Foldable from this section?
2. Assign questions as outlined in the Assessment section below.

Assessment:

1. Student assignments (Assessment *for* Learning)
   Essential: #3, 5, 7, 10, 15, Math Link
   Typical: #3, 5, 7, 8, 10, 11, 13, 15, 18, 21, Math Link
   Extension/Enrichment: #16, 18, 20, 21, Math Link
   Struggling learners may benefit from completing **BLM 2–6 Section 2.2 Extra Practice**.
2. Students who require extra support or guidance with the Math Link may benefit from **BLM 2–7 Section 2.2 Math Link**.
3. Additional questions or replacement questions could be chosen from the *MathLinks 7 Practice and Homework Book* on pp.18–19.
4. Have students use **BLM 2–1 Chapter 2 Self-Assessment** to assess how far they have progressed during this section.

Math Learning Log:

Have students explain how adding and subtracting decimals is different from multiplying them.

MathLinks 7 Chapter 2, Lesson 7

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem involving the division of decimal numbers.
- ☑ Place the decimal in a quotient using front-end estimation.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with 2-digit multipliers or 1-digit divisors (whole number or decimal) without the use of technology.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with more than a 2-digit multiplier or 1-digit divisor (whole number or decimal), with the use of technology.

Resource/Materials:

- *MathLinks 7*, pp. 60–65
- 2.3 Warm-Up (Online Learning Centre)
- Master 4 Vertical and Horizontal Number Lines
- Master 10 Hundred Grids
- BLM 2–1 Chapter 2 Self-Assessment
- BLM 2–8 Section 2.3 Extra Practice
- base ten blocks
- calculator

Teacher's Resource Reference:

pp. 60–61
Warm-Up p. 60

***MathLinks* 7 Adapted Resource/Materials:**

2.3 Warm-Up, p. 76
pp. 77–79

Introduction:
This section will have students focus on estimating and then calculating the quotient of decimals. Given that students may have already been working on examples of groceries or store-related purchases, ask them the following:

You see 4 pieces of corn advertised for $3.29. How could we determine the approximate cost of one piece of corn? Encourage students to identify as many ways as possible, Write them on the whiteboard so students can use those to help support their work when completing the examples.

Procedure/Activities/Instruction:
1. Collect, orally mark, or take up the previous day's homework. Also, remind students to complete the section called What I Need to Work On in their Foldable. Samples of questions or concepts that they are having difficulty with should be listed there. Students who would benefit from remediation may complete the Warm-Up questions.
2. Read the opening paragraph on page 60 and discuss scrapbooking and how estimating may help a scrapbooker decide on purchases.
3. Have students work independently to complete the Explore. It is important that students become competent estimators. Model several approaches so students may find one that is comfortable. It is important that all students are able to use front end estimation to accurately estimate the quotient and aid in the placement of the decimal.
4. You may wish to have students respond orally or in writing to the Reflect on Your Findings on page 61.
5. Review the Examples using the varied approaches such as using grids and number lines or base ten blocks. It is important that students can use varied approaches without a calculator to solve quotients first. Students with difficulty on the Show You Know should be encouraged to try **BLM 2–8 Section 2.3 Extra Practice.**
6. Assign all the Communicate the Ideas questions to all students.
7. Have students place new entries into their Foldables. Encourage them to include diagrams.

Assessment:
1. Have students complete the Show You Know questions on pages 61 and 63. (Assessment *for* Learning)
2. Students should be assigned all the Communicate the Ideas questions on page 65. (Assessment *as* Learning)

Foldable Entry:
Have students complete the following sentence stems in their Foldable. Encourage students to include diagrams.

Two methods to estimate a quotient are …
Three ways to calculate a quotient are …

MathLinks 7 Chapter 2, Lesson 8

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Place the decimal in a quotient using front-end estimation and a number line.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with 2-digit multipliers or 1-digit divisors (whole number or decimal) without the use of technology.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with more than a 2-digit multiplier or 1-digit divisor (whole number or decimal), with the use of technology.

Resource/Materials:

- *MathLinks 7*, pp. 64–67
- *MathLinks 7 Practice and Homework Book,* pp. 20–21
- BLM 2–1 Chapter 2 Self-Assessment
- BLM 2–8 Section 2.3 Extra Practice (If not previously used)
- BLM 2–9 Section 2.3 Math Link

Teacher's Resource Reference:

pp. 65–67

***MathLinks* 7 Adapted Resource/Materials:**

pp. 80–82

Introduction:

Start with a quick oral reactivation of division of decimals. Have students share their Foldable entries from the previous day.

Procedure/Activities/Instruction:

1. Review the Key Ideas on page 64. Is there anything students would like to add to their Foldable from this section?
2. Assign questions as outlined in the Assessment section below.

Assessment:

1. Student assignments (Assessment *for* Learning)
   Essential: #4, 6, 8, 12, 16, Math Link
   Typical: #4, 6, 8, 12, 14–17, 20, Math Link
   Extension/Enrichment: #11, 16, 18–22, Math Link
   Students who require remediation may benefit from completing **BLM 2–8 Section 2.3 Extra Practice,** if they have not already done so.
   Note: **BLM 2–9 Section 2.3 Math Link** is available for students who require extra support or guidance with the Math Link.
2. Additional or alternative questions can be chosen from the *MathLinks 7 Practice and Homework Book* (pp. 20–21).
3. Have students use **BLM 2–1 Chapter 2 Self-Assessment** to assess how far they have progressed during this section. Have students comment on two or three items they feel they have improved on, noting how they have improved. (Assessment *as* Learning)

Math Link:
Have students complete the Math Link when they have finished the assigned questions.

MathLinks 7 Chapter 2, Lesson 9

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem that involves operations on decimals (limited to thousandths) taking into consideration the order of operations.

Resource/Materials:

- *MathLinks 7*, pp. 68–70
- BLM 2–1 Chapter 2 Self-Assessment
- BLM 2–10 Section 2.4 Extra Practice
- calculator

Teacher's Resource Reference:

pp. 68–70

***MathLinks* 7 Adapted Resource/Materials:**

2.4 Warm-Up, p. 83
pp. 84–85

Introduction:

Ask students if they have ever seen a skill testing question such as ones that are often found in draw tickets or on the backs of cereal boxes. Talk to them about the fact the skill testing questions are generally math questions with multiple operations. To win your prize, you must answer the skill testing question.

This section will allow student to use the order of operations to complete the calculations on decimals. It will be important for each student to determine how his or her calculator completes operations on numbers. As a class, complete the calculation in the cartoon to determine the order of operations for their calculators. Calculators that do not get the consensus answer should be flagged and figured out.

Procedure/Activities/Instruction:

1. Collect, orally mark, or take up the previous day's homework. Also, remind students to complete the section called What I Need to Work On in their Foldable. Samples of questions or concepts that they are having difficulty with should be listed there.
2. Have students complete the Discuss the Math independently.
3. As a class, review student responses to the Reflect on Your Findings.
4. Review Examples 1 and 2 on page 69. Make sure that students understand how their calculator handles the order of operations. You may wish to use **BLM 2–10 Section 2.4 Extra Practice** for the entire class to ensure they are correctly using their calculator. This scaffolded approach may assist those students experiencing difficulty in knowing how to follow the order of operations.

Assessment:

1. Have students complete the Communicate the Ideas #1 and 2 (Assessment *as* Learning) and #3 (Assessment *for* Learning).
2. Have students comment on two or three items they feel they have improved on, noting how they have improved. (Assessment *as* Learning)

Foldable Entry:

Have students place the following terms in their Foldable. Encourage them to use examples and note any memory aids.

order of operations	brackets

MathLinks 7 Chapter 2, Lesson 10

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

☑ Solve a given problem that involves operations on decimals (limited to thousandths) taking into consideration the order of operations.

Resource/Materials:

- *MathLinks 7*, pp. 70–73
- *MathLinks 7 Practice and Homework Book,* pp. 22–23
- BLM 2–1 Chapter 2 Self-Assessment
- BLM 2–10 Section 2.4 Extra Practice (if not already used)

Teacher's Resource Reference:

pp. 71–73

***MathLinks* 7 Adapted Resource/Materials:**

pp. 86–89

Introduction:

Orally review the order of operations and provide students with a warm-up problem.

Procedure/Activities/Instruction:

1. Review the Key Ideas on page 70. Is there anything students would like to add to their Foldable from this section?
2. Assign questions as outlined in the Assessment section below.

Assessment:

1. Student assignments (Assessment *for* Learning)
   Essential: #4, 6, 8, 9, 11, 15
   Typical: #3, 4, 6, 9, 13, 15–17, 21
   Extension/Enrichment: #3, 9, 10, 14, 16, 17, 22–24
2. Additional questions or replacement questions could be chosen from the *MathLinks 7 Practice and Homework Book* (pp. 22–23).

3. Have students use **BLM 2–1 Chapter 2 Self-Assessment** to assess how far they have progressed during this section. Have students comment on two or three items they feel they have improved on, noting how they have improved. (Assessment *as* Learning)

Math Learning Log:
Have students explain how to remember the order of operations in a series of decimal number calculations.

MathLinks 7 Chapter 2, Lesson 11

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem involving the addition of two or more decimal numbers.
- ☑ Solve a given problem involving the subtraction of decimal numbers.
- ☑ Solve a given problem involving the multiplication of decimal numbers.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with 2-digit multipliers or 1-digit divisors (whole number or decimal) without the use of technology.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with more than a 2-digit multiplier or 1-digit divisor (whole number or decimal), with the use of technology.
- ☑ Place the decimal in a sum or difference using front-end estimation.
- ☑ Place the decimal in a product using front-end estimation.
- ☑ Place the decimal in a quotient using front-end estimation.
- ☑ Check the reasonableness of solutions using estimation.
- ☑ Solve a given problem that involves operations on decimals (limited to thousandths) taking into consideration the order of operations.

Resource/Materials:

- *MathLinks 7*, pp. 74–75
- *MathLinks 7 Practice and Homework Book*, pp. 24–25
- BLM 2–1 Chapter 2 Self-Assessment
- BLM 2–10 Section 2.4 Extra Practice (if not already used)
- Foldable

Teacher's Resource Reference:

pp. 74–75

***MathLinks* 7 Adapted Resource/Materials:**
pp. 90–94

Introduction:
Students are now at the chapter review, which serves as a self-assessment tool.

Procedure/Activities/Instruction:
1. You will need to decide how you wish students to approach chapter reviews. These reviews are opportunities for students to verify that they have mastered the concepts and identify any areas of weakness prior to Assessment *of* Learning taking place. There are a number of approaches that could be used, including:
   - Have students use the notes they have been recording under What I Need To Work On in the Foldable to help them select questions within the review.
   - Have students complete at least one related item from each section.
   - Have students review their assignments, identify areas of weakness, and select review questions accordingly.
   - You, the teacher, could select the questions to be completed by the class or individual students.
2. Extra practice could also come from:
   - **BLM 2–10 Section 2.4 Extra Practice**
   - Link It Together and Vocabulary Link found in the *MathLinks 7 Practice and Homework Book* (pp. 24–25)
   - Key Word Builder (p. 100 of the Adapted resource)
   - additional material available in the Teacher Centre of the McGraw-Hill Ryerson Online Learning Centre

Assessment:
1. Chapter 2 Review (Assessment *for* Learning)
   Assignments should be completed within the class time in order to allow students to get assistance.
2. After the review, students may wish to update **BLM 2–1 Chapter 2 Self-Assessment**. (Assessment *as* Learning)

Foldable Entry:
Encourage students to use the terminology in the Foldable. As they do the review, they could note what areas in the What I Need to Work On section they now understand. This is a good opportunity for students to note their personal growth.

MathLinks 7 Chapter 2, Lesson 12

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem involving the addition of two or more decimal numbers.
- ☑ Solve a given problem involving the subtraction of decimal numbers.
- ☑ Solve a given problem involving the multiplication of decimal numbers.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with 2-digit multipliers or 1-digit divisors (whole number or decimal) without the use of technology.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with more than a 2-digit multiplier or 1-digit divisor (whole number or decimal), with the use of technology.
- ☑ Place the decimal in a sum or difference using front-end estimation.
- ☑ Place the decimal in a product using front-end estimation.
- ☑ Place the decimal in a quotient using front-end estimation.
- ☑ Check the reasonableness of solutions using estimation.
- ☑ Solve a given problem that involves operations on decimals (limited to thousandths) taking into consideration the order of operations.

Resource/Materials:

- *MathLinks 7*, pp. 76–77
- BLM 2–1 Chapter 2 Self-Assessment
- BLM 2–11 Chapter 2 Test
- calculator
- Foldable

Teacher's Resource Reference:

pp. 76–77

***MathLinks* 7 Adapted Resource/Materials:**
pp. 95–98
Key Word Builder, p. 100

Introduction:
Students are now at the practice test. This could serve as a final self-assessment tool or as a summative tool. (Assessment *of* Learning)

Procedure/Activities/Instruction:
1. You will need to decide how you wish students to approach the practice test. These are opportunities for students to verify that they have mastered the concepts and identify any areas of weakness prior to Assessment *of* Learning. Provide students with a number of questions that they can comfortably do in one class. Choose at least one question for each concept, skill, or process.
2. You may wish to use **BLM 2–11 Chapter 2 Test**, or items from the computerized assessment bank (CAB), for this purpose.
3. Students who complete their chapter test could begin the **Wrap It Up!** on page 77 of the student resource (p. 99 in the Adapted resource).

Assessment:
1. Chapter 2 Practice Test (Assessment *for* Learning)
Assignments should be completed within the class time in order to allow students to get assistance.
2. **BLM 2–11 Chapter 2 Test** (Assessment *of* Learning)
Essential: #5–16

Foldable Entry:
Foldable entries should be used to assist with areas of concern.

MathLinks 7 Chapter 2, Lesson 13

Time: 40–50 min

STRAND/ORGANIZER: Number **Wrap It Up**

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem involving the addition of two or more decimal numbers.
- ☑ Solve a given problem involving the subtraction of decimal numbers.
- ☑ Solve a given problem involving the multiplication of decimal numbers.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with 2-digit multipliers or 1-digit divisors (whole number or decimal) without the use of technology.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with more than a 2-digit multiplier or 1-digit divisor (whole number or decimal), with the use of technology.
- ☑ Place the decimal in a sum or difference using front-end estimation.
- ☑ Place the decimal in a product using front-end estimation.
- ☑ Place the decimal in a quotient using front-end estimation.
- ☑ Check the reasonableness of solutions using estimation.
- ☑ Solve a given problem that involves operations on decimals (limited to thousandths) taking into consideration the order of operations.

Resource/Materials:

- *MathLinks 7*, p. 77
- Master 1 Project Rubric
- BLM 2–12 Chapter 2 Wrap It Up!

Teacher's Resource Reference:

pp. 76a–77a

***MathLinks* 7 Adapted Resource/Materials:**

p. 99

Introduction:
Students will now complete the work on their dream vacation. Students should be encouraged to research actual vacation destinations.

Procedure/Activities/Instruction:
1. Decide on and communicate how much class time the students will have to complete this and how much needs to be completed at home.
2. Read through the Wrap It Up! and discuss possible destinations. Read through the guidelines and the steps with students. Clarify any questions. Remind them that the Math Links they completed throughout the chapter will assist them with their design. In addition, **BLM 2–12 Chapter 2 Wrap It Up!** provides scaffolding for students who need assistance with the process.
3. It is important that students understand how they will be graded. Review the holistic rubric for the question. You could use the version on Teacher's Resource page 77a, or cut off the right column and work with the students to complete the expected outcomes for each level. Completing the Specific Question Notes with students allows them to identify what key criteria distinguishes each level, and it also allows you to guide them to those criteria that should be considered for each level. Every student should receive a copy of the **Master 1 Project Rubric** for reference.

Assessment:
1. **Master 1 Project Rubric** (Assessment *of* Learning)

Foldable Entry:
Encourage students to use their Foldable to help them use appropriate mathematical terminology.

MathLinks 7 Chapter 2, Lesson 14

Time: 40–50 min

STRAND/ORGANIZER: Number **Game/Challenge**

General Outcome: Develop number sense.

Specific Outcome:

N2 Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.

Achievement Indicators:

- ☑ Solve a given problem involving the addition of two or more decimal numbers.
- ☑ Solve a given problem involving the subtraction of decimal numbers.
- ☑ Solve a given problem involving the multiplication of decimal numbers.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with 2-digit multipliers or 1-digit divisors (whole number or decimal) without the use of technology.
- ☑ Solve a given problem involving the multiplication or division of decimal numbers with more than a 2-digit multiplier or 1-digit divisor (whole number or decimal), with the use of technology.
- ☑ Place the decimal in a sum or difference using front-end estimation.
- ☑ Place the decimal in a product using front-end estimation.
- ☑ Place the decimal in a quotient using front-end estimation.
- ☑ Check the reasonableness of solutions using estimation.
- ☑ Solve a given problem that involves operations on decimals (limited to thousandths) taking into consideration the order of operations.

Resource/Materials:

Math Games	**Challenge**
• *MathLinks 7*, p. 78 • BLM 2–13 Decimal Delights Game Boards • coin • coloured pencils	• *MathLinks 7*, p. 79 • Project Rubric, Teacher's Resouce, p. 79a • calculator

Teacher's Resource Reference:
pp. 78–79a

***MathLinks* 7 Adapted Resource/Materials:**

pp. 101–104

Introduction:
Read through the rules of the game with students and decide whether the sum or product will be used. The totals will vary depending on the choice. You may wish to start with sum, moving to product once students are proficient at the game.

The Challenge in Real Life allows students to become high-tech crime-fighters and determine the effect of decimal values where dollars are concerned.

Procedure/Activities/Instruction:
Math Games

1. Draw the scoring line on the board. Provide a couple of examples so that students realize how to get the maximum number of points when it is their turn.
2. Have students design the game and have a partner of equal ability solve it.

Challenge in Real Life

1. Read through Rounding Digits and High-Tech Crime as a class. Discuss why rounding decimals affect large sums of money over time.
2. If you use this challenge for Assessment *of* Learning, it is important that students understand how they will be graded. Review the holistic rubric for the challenge. You could use the version on Teacher's Resource page 79a, or cut off the right column and work with the students to complete the expected outcomes for each level. Completing the Specific Question Notes with students allows them to identify what key criteria distinguish each level and also allows you to guide them to those criteria that should be considered for each level. Every student should receive a copy of the scoring rubric for reference.

Assessment:
You may decide to let students choose one activity or the other, depending on the type of assessment you are looking for.

- Math Games (Assessment *for* Learning)
- Challenge in Real Life (Assessment *of* Learning or Assessment *for* Learning)

Foldable Entry:
Encourage students to refer to their Foldable as they practise using appropriate mathematical terminology.