Chapter 2 Lesson Plans

MathLinks 8 Pre-Planning for Chapter 2

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

1. Before getting started with lesson planning for Chapter 2 Ratios, Rates, and Proportional Reasoning, you need to understand what skills students have already been exposed to.

- If students in your jurisdiction have *not* completed the new Grade 7 WNCP (2006) curriculum, they should have some understanding of the following outcomes from the previous curriculum:
  Grade 7 (1995):
  ☑ Distinguish between rate and ratio, and use them to solve problems.
  ☑ Explain, demonstrate and use proportions in solving problems.
- If students in your jurisdiction *have* completed the new Grade 7 WNCP (2006) curriculum, they should have some understanding of the following:
  Grade 7 (2006):
  ☑ Demonstrate an understanding of circles by:
  - describing the relationships among radius, diameter and circumference of circles
  - relating circumference to pi
  - determining the sum of the central angles
  - constructing circles with a given radius or diameter
  - solving problems involving the radii, diameters and circumferences of circles.

  ☑ Express probabilities as ratios, fractions and percents.

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

a concept, some sections may take two or three classes to complete. The Teacher's Resource suggests time lines.

3. Before starting Chapter 2, read through the **chapter opener** (p. 42), **Key Words** (p. 43), **Math Links** (pp. 45, 50, 54, 62, 69), and **Wrap It Up!** (p. 73). These sections will provide a sense of how the chapter concepts are tied together and how students will be asked to apply their learning.

4. The chapter begins with a **Literacy Link** showing a graphic organizer (p. 43) and a **Foldable** feature (p. 44).

a) The Frayer model helps students organize their learning and activate previously learned concepts. **Master 17 Frayer Model** provides a reproducible copy.

b) Foldables provide unique ways for students to:

- organize their learning
- keep track of key words and examples
- organize their thinking
- track what they need to work on in the particular chapter and use for review later in the course

5. As part of your pre-planning for the chapter, review the related material in:

- the Teacher's Resource for support in meeting the needs of all learners, a list of common errors, language learning skills, and rubric notes for the Wrap It Up! questions,
- the Blackline Masters (BLMs) for additional questions, scaffolding of all Math Links, a chapter test, and assessment assistance,
- the *MathLinks 8 Practice and Homework Book* for additional exercises and scaffolding for concepts, and
- the Teacher Centre of the McGraw-Hill Ryerson Online Learning Centre for examples of student work for the Challenges and Tasks, scoring rubrics, additional Challenges for students, and final exams.

MathLinks 8 Chapter 2, Lesson 1

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcomes:

N4 Demonstrate an understanding of ratio and rate.

N5 Solve problems that involve rates, ratios and proportional reasoning.

Achievement Indicators:

- ☑ Express a two-term ratio from a given context in the forms 3:5 or 3 to 5.
- ☑ Express a three-term ratio from a given context in the forms 4:7:3 or 4 to 7 to 3.
- ☑ Express a part to part ratio as a part to whole fraction, e.g., frozen juice to water; 1 can concentrate to 4 cans of water can be represented as $\frac{1}{5}$, which is the ratio of concentrate to solution, or $\frac{4}{5}$, which is the ratio of water to solution.

Resource/Materials:

- *MathLinks 8*, pp. 42–45
- Master 17 Frayer Model
- BLM 2–1 Chapter 2 Math Link Introduction
- BLM 2–2 Chapter 2 Get Ready or *MathLinks 8 Practice and Homework Book*, pp. 12–13
- BLM 2–4 Chapter 2 Problems of the Week
- sample chapter Foldable
- 11 × 17 sheet of paper
- ruler
- scissors (optional)

Teacher's Resource:

pp. 51–55

***MathLinks 8* Adapted Resource:**

Get Ready, pp. 54–55

Math Link, p. 56

Introduction:
Before working on Chapter 2, review the Get Ready and the Math Link (p. 45). Decide whether students will complete both of the activities or only one of them. The Get Ready assesses how well students know the prerequisite skills for this chapter. The Math Link also activates students' prior knowledge and skills related to Chapter 2 and, in addition, introduces the chapter problem.

Read the chapter opener together (p. 42). Read through the What You Will Learn (p. 42) and the Key Words (p. 43). How many students can already define or describe the key words?

Tell students that they will learn about ratios and rates and different strategies for solving problems involving ratios and rates. Ask them what they know about ratios and rates and where they have heard the terms. Ask for examples that are familiar to them. Read the opener and point out that Gail Greenough is both an Alberta and a world champion. Explain that *ration* comes from ratio, which means calculation. Clarify that a *ration* is a fixed portion of food allowed per person or animal. Many horse feeds are determined using ratios. For example, horses need a ratio of 1 kg forage (e.g., hay) to 100 kg body weight. You might ask why providing the correct ratio of forage is important.

Procedure/Activities/Instruction:
1. Have students complete the Get Ready. Use **BLM 2–2 Chapter 2 Get Ready** or *MathLinks 8 Practice and Homework Book,* pp. 12–13.
2. Have students complete a Frayer Model (see Teacher's Resource p. 52 for question prompts). You may wish to hand out **Master 17 Frayer Model** as a template. Collect these from students before they leave the class to get a better idea of students' recall and comprehension of key terms.
3. Explain the purpose of a Foldable and show students the one you have made. Identify the materials they need to make their own. Make the Foldables together as a class or have students make their own following the instructions (p. 44). They could label it as shown or according to your directions. Explain that the Foldables will help students plan the international meal (the chapter problem) as well as keep track of their learning throughout the chapter.
4. Have students complete the Math Link. Read the Math Link as a class and survey students to see who has been to a multicultural event or volunteered at another large gathering. Explain that the chapter problem is about planning an international meal. If doing the Math Link, some students may benefit from using **BLM 2–1 Chapter 2 Math Link Introduction**, which provides scaffolding.
   Discuss and remediate any areas that students have difficulty with before beginning the next lesson.

Problems of the Week:
BLM 2–4 Chapter 2 Problems of the Week provides additional problems to encourage ongoing problem solving and opportunities for students to use

personal strategies in mathematics. These problems require students to think from different perspectives and experiment with a variety of approaches. Students can take the problems home and consult with parents, or work with a partner in class. Encourage students to complete at least one problem in each chapter.

Assessment:

1. Get Ready (Assessment *for* Learning)
2. Frayer Model (Assessment *as* Learning)
3. Math Link (p. 45) (Assessment *for* Learning). You might use **BLM 2–1 Chapter 2 Math Link Introduction**.
4. Foldable (Assessment *for* Learning)

Math Link:

Have students start a section in their notebook or use the bottom box in each section of the What I Need to Work On and Wrap It Up! ideas column of their Foldables to record ideas about the chapter problem. As a class, consider reading through each Math Link (pp. 45, 54, 62, and 69) and the Wrap It Up! (p. 73) so students have a good understanding of the chapter problem. Notes about the Math Links throughout the chapter will appear under Assessment.

Foldable Entry:

Encourage students to add the following terms from the Get Ready and Math Link to their Foldables. Have them use diagrams, illustrations, or explanations to define each term. Remind them to use their own words and examples.

ratio	equivalent fraction	multiplier

MathLinks 8 Chapter 2, Lesson 2

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:
N4 Demonstrate an understanding of ratio and rate.

Achievement Indicators:
- ☑ Express a two-term ratio from a given context in the forms 3:5 or 3 to 5.
- ☑ Express a three-term ratio from a given context in the forms 4:7:3 or 4 to 7 to 3.
- ☑ Express a part to part ratio as a part to whole fraction, e.g., frozen juice to water; 1 can concentrate to 4 cans of water can be represented as $\frac{1}{5}$, which is the ratio of concentrate to solution, or $\frac{4}{5}$, which is the ratio of water to solution.

Resource/Materials:
- *MathLinks 8*, pp. 46–47
- BLM 2–3 Chapter 2 Warm-Up
- ruler
- coloured counters (optional)
- calculator (optional)
- coloured pencils
- grid paper or Master 8 Centimetre Grid Paper
- Foldable

Teacher's Resource:
pp. 56–59

***MathLinks 8* Adapted Resource:**
2.1 Warm-Up, p. 57

Introduction:
As a class, discuss the photos (p. 46). Point out that the enlarged photo is mathematically similar to the original. If you have access to a digital camera or overhead projector, similar analogies can be made. The dimensions of the original are multiplied by the same amount to produce an image with the same proportions as the original. Have students estimate how many times larger the bigger photograph is.

In the Explore the Math, students compare an enlargement to the original.

Procedure/Activities/Instruction:

1. Have students complete the warm-up questions for section 2.1 on **BLM 2–3 Chapter 2 Warm-Up** to reinforce material learned previously.
2. Divide students into small groups and have them use rulers to carry out the Explore. Once complete, have students discuss their findings as a class.

Assessment:

1. Section 2.1 on **BLM 2–3 Chapter 2 Warm-Up** (Assessment *for* Learning)
2. Reflect on Your Findings #5 (p. 47) (Assessment *as* Learning)

Foldable Entry:

Have students record the following terms in their Foldables. Have them develop a problem that can be written both as a two-term and a three-term ratio.

two-term ratio	three-term ratio

Math Learning Log:

Have students describe three enlargements they have seen including the ratio of the lengths of the sides to the original.

MathLinks 8 Chapter 2, Lesson 3

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:
N4 Demonstrate an understanding of ratio and rate.

Achievement Indicators:
- ☑ Express a two-term ratio from a given context in the forms 3:5 or 3 to 5.
- ☑ Express a three-term ratio from a given context in the forms 4:7:3 or 4 to 7 to 3.
- ☑ Express a part to part ratio as a part to whole fraction, e.g., frozen juice to water; 1 can concentrate to 4 cans of water can be represented as $\frac{1}{5}$, which is the ratio of concentrate to solution, or $\frac{4}{5}$, which is the ratio of water to solution.

Resource/Materials:
- *MathLinks 8,* pp. 47–54
- *MathLinks 8 Practice and Homework Book*, pp. 14–15
- BLM 2–5 Section 2.1 Extra Practice
- BLM 2–6 Section 2.1 Math Link
- ruler
- coloured counters (optional)
- calculator (optional)
- coloured pencils
- grid paper or Master 8 Centimetre Grid Paper

Teacher's Resource:
pp. 57–64

***MathLinks 8* Adapted Resource:**
2.1, pp. 58–67

Introduction:
Start the lesson by recalling the class activity from the previous day. Explain that students will walk through some worked examples and then apply their knowledge to solve problems.

Procedure/Activities/Instruction:

1. Work through Examples 1 and 2 (pp. 47–50) as a class. Have students complete each Show You Know before going on.
2. As a class, discuss the Key Ideas (pp. 50–51). Challenge students to compare the terminology and examples in their Foldables to the information in the Key Ideas. Ask how they might improve their work in their Foldables.
3. Assign questions as outlined in the Assessment section below. Have students begin with the Communicate the Ideas. They could write their answers to these questions in their Math Learning Log. Collect this part of the assignment and review student responses. This will provide additional insight into students' understanding.
   Ensure that students are successful with the Practise questions before proceeding to the Apply questions. For #16, refer students to the Literacy Link (p. 53) that describes *A prime*. Support for re-teaching or alternative approaches for students who are not successful with the Practise questions can be found in the Teacher's Resource under Assessment – Supporting Learning (p. 64).

Assessment:

1. Show You Know questions (pp. 48, 50) (Assessment *for* Learning)
2. Communicate the Ideas questions (p. 51) (Assessment *as* Learning)
3. Student assignments (Assessment *for* Learning)
   Essential: #1–6, 9, 11, 12, 19, Math Link
   Typical: #1–6, 9, 11–19, Math Link
   Extension/Enrichment: #1, 2, 20–22, Math Link
   Note: Some students may benefit from completing **BLM 2–5 Section 2.1 Extra Practice**, if they have not already done so.
   If students complete the assigned questions before the end of class, have them begin the Math Link (p. 54). They may need additional class time to complete the Math Link. **BLM 2–6 Section 2.1 Math Link** is available for students who may benefit from scaffolding to get started on the Math Link.
4. The *MathLinks 8 Practice and Homework Book* provides additional problems (Assessment *for* Learning).

Foldable Entry:

Have students write the page reference and question numbers they had difficulty with in the What I Need to Work On section of their Foldables.

Math Learning Log:

Have students complete the following statement: I have seen ratios used in daily life to …

MathLinks 8 Chapter 2, Lesson 4

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcomes:

N4 Demonstrate an understanding of ratio and rate.

N5 Solve problems that involve rates, ratios and proportional reasoning.

Achievement Indicators:

- ☑ Identify and describe ratios and rates from real-life examples, and record them symbolically.
- ☑ Express a given rate using words or symbols, e.g., 20 L per 100 km or 20 L/100 km.
- ☑ Express a given ratio as a percent and explain why a rate cannot be represented as a percent.
- ☑ Explain the meaning of $\frac{a}{b}$ within a given context.
- ☑ Provide a context in which $\frac{a}{b}$ represents a:
  - fraction
  - rate
  - ratio
  - quotient
  - probability.

Resource/Materials:

- *MathLinks 8*, pp. 55–59
- BLM 2–3 Chapter 2 Warm-Up
- ruler
- paper clips, standard and large size
- flyers for products showing unit pricing
- calculator (optional)
- Foldable

Teacher's Resource:

pp. 65–70

***MathLinks 8* Adapted Resource:**

2.2 Warm-Up, p. 68
2.2, pp. 69–72

Introduction:
Students will learn about rates. As a class, read and discuss the information about rates in the section opener (p. 55). Have students discuss the similarities and differences between taking a horse's heart rate and their own. Ask them to explain what heart rate means. Identify the units of comparison (beats per minute) as a lead-in to the section. Have students give other examples of rates (e.g., batting average, driving speed). Write students' examples on the board and have them record additional examples in their Foldables.

In the Explore the Math, students compare measurements made using different units and then determine the conversion rate.

Procedure/Activities/Instruction:
1. Have students complete the warm-up questions for section 2.2 on **BLM 2–3 Chapter 2 Warm-Up** to reinforce material learned previously. You may wish to review their work.
2. Collect, orally mark, or take up the previous lesson's homework. Remind students to note any questions they had difficulty with in the What I Need to Work On section of their Foldables.
3. Have students complete the Explore the Math independently or in small groups. Have students complete Reflect on Your Findings #4 (p. 56) and compare answers with a partner. Discuss the results as a class to gauge if students have understood the big question in the Explore the Math or if further reinforcement is needed.
4. As a class, walk through Example 1 (pp. 56–57) that shows how to determine unit rates. Have students complete the Show You Know question and then discuss the solution as a class. Walk through Example 2 (pp. 57–58) as a class. This example shows how to compare prices using unit rates. Have students complete the Show You Know question and then discuss their results orally.
5. Assign Communicate the Ideas #1 to 3 (p. 59).

Assessment:
1. Section 2.2 on **BLM 2–3 Chapter 2 Warm-Up** (Assessment *for* Learning)
2. Show You Know questions (pp. 57–58) (Assessment *for* Learning)
3. Communicate the Ideas #1 to 3 (p. 59) (Assessment *as* Learning)

Foldable Entry:
Have students use their Foldables to define each of the following terms. Have them provide an example of each.

rate	unit rate	unit price

Math Learning Log:
Have students complete the following statement: I think unit prices are important because …

MathLinks 8 Chapter 2, Lesson 5

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcomes:

N4 Demonstrate an understanding of ratio and rate.

N5 Solve problems that involve rates, ratios and proportional reasoning.

Achievement Indicators:

- ☑ Identify and describe ratios and rates from real-life examples, and record them symbolically.
- ☑ Express a given rate using words or symbols, e.g., 20 L per 100 km or 20 L/100 km.
- ☑ Express a given ratio as a percent and explain why a rate cannot be represented as a percent.
- ☑ Explain the meaning of $\frac{a}{b}$ within a given context.
- ☑ Provide a context in which $\frac{a}{b}$ represents a:
  - fraction
  - rate
  - ratio
  - quotient
  - probability.
- ☑ Solve a problem involving rate, ratio or percent.

Resource/Materials:

- *MathLinks 8*, pp. 60–62
- *MathLinks 8 Practice and Homework Book*, pp. 16–17
- BLM 2–7 Compare a Ratio and a Rate
- BLM 2–8 Section 2.2 Extra Practice
- BLM 2–9 Section 2.2 Math Link
- ruler
- coloured pencils

Teacher's Resource:

pp. 71–72

***MathLinks 8* Adapted Resource:**
2.2, pp. 72–76

Introduction:
Review unit rates, unit prices, and rates from the previous lesson. Students will now apply their learning and understanding to solve problems.

Procedure/Activities/Instruction:
1. Collect, orally mark, or take up the Communicate the Ideas answers.
2. Assign questions as outlined in the Assessment section below. Ensure that students are successful with the Practise questions before proceeding to the Apply questions. Support for re-teaching or alternative approaches for students who are not successful with the Practise questions can be found in the Teacher's Resource under Assessment – Supporting Learning (p. 72).

Assessment:
1. Student assignments (Assessment *for* Learning)
   Essential: #4, 6–8, 10, 13, Math Link
   Typical: #4, 6– 8, 10–16, Math Link
   Extension/Enrichment: #14–19, Math Link
   Note: Some students may benefit from completing **BLM 2–8 Section 2.2 Extra Practice**, if they have not already done so.
   Encourage students who work faster to start the Math Link (p. 62). Students may need additional class time to complete the Math Link. **BLM 2–9 Section 2.2 Math Link** is available for students who may benefit from scaffolding to get started on the Math Link.
2. The *MathLinks 8 Practice and Homework Book* provides additional problems (Assessment *for* Learning).
3. Math Learning Log (Assessment *as* Learning)

Foldable Entry:
Have students write the page reference and question numbers they had difficulty with in the What I Need to Work On section of their Foldables.

Math Learning Log:
Have students complete **BLM 2–7 Compare a Ratio and a Rate**.

Have students comment on two or three items they feel they have improved on, and explain how they have improved.

MathLinks 8 Chapter 2, Lesson 6

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:
N5 Solve problems that involve rates, ratios and proportional reasoning.

Achievement Indicator:
☑ Solve a given problem involving rate, ratio or percent.

Resource/Materials:
- *MathLinks 8*, pp. 63–67
- BLM 2–3 Chapter 2 Warm-Up
- ruler
- computer access
- short story
- stopwatch
- sticky notes

Teacher's Resource:
pp. 73–78

***MathLinks 8* Adapted Resource:**
2.3 Warm-Up, p. 77
2.3, pp. 78–81

Introduction:
Read the section title, opening paragraph, and article as well as the big question in the Explore the Math (p. 63). Read the Did You Know? (p. 64) to clarify the importance of speed and accuracy in typing performance.

In the Explore the Math, students use proportional reasoning in a typing speed test.

Procedure/Activities/Instruction:
1. Have students complete the warm-up questions for section 2.3 on **BLM 2–3 Chapter 2 Warm-Up** to reinforce material learned previously.
2. Collect, orally mark, or take up the previous lesson's assessment questions. Remind students to note any question they had difficulty with in the What I Need to Work On section of their Foldables.

3. Have students complete the Explore the Math with a partner. Discuss their results as a whole class. Have them list questions or concepts they are having difficulty with in the What I Need to Work On section of their Foldables.
4. Example 1 and Example 2 (pp. 64–66) illustrate how to solve rate and ratio problems using proportional reasoning. Work through each example. Direct students to the Literacy Link (p. 65) about a slough and the Did You Know?. (p. 65) that explains one way that biologists use rates. Have students complete the Show You Know questions (pp. 65–66) with a partner and then share their responses with the class.
5. Assign and then collect all students' individual work for Communicate the Ideas #1 and 3 (p. 67).

Assessment:

1. Section 2.3 on **BLM 2–3 Chapter 2 Warm-Up** (Assessment *for* Learning)
2. Reflect on Your Findings #7 (p. 64) (Assessment *as* Learning)
3. Show You Know questions (pp. 65–66) (Assessment *for* Learning)
4. Communicate the Ideas #1 and 3 (p. 67) (Assessment *as* Learning)
5. Math Learning Log (Assessment *as* Learning)

Foldable Entry:

Have students use their Foldables to explain the following term.

proportion

Math Learning Log:

Have students complete the following statement: The difference between a rate and a unit rate is …

Have students comment on two or three items they feel they have improved on and explain how they have improved.

MathLinks 8 Chapter 2, Lesson 7/8

Time: 80–100 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcome:
N5 Solve problems that involve rates, ratios and proportional reasoning.

Achievement Indicator:
☑ Solve a given problem involving rate, ratio or percent.

Resource/Materials:
- *MathLinks 8*, pp. 67–69
- *MathLinks 8 Practice and Homework Book*, pp. 18–19
- BLM 2–10 Section 2.3 Extra Practice
- BLM 2–11 Section 2.3 Math Link
- sample recipes

Teacher's Resource:
pp. 79–81

***MathLinks 8* Adapted Resource:**
2.3, pp. 81–86

Introduction:
Begin the class with an oral recall of the key terms students recorded in their Foldables. This lesson provides students with an opportunity to apply their understanding of ratios and rates from the previous lessons to solve proportional reasoning problems.

Procedure/Activities/Instruction:
1. Collect, orally mark, or take up the previously assigned Communicate the Ideas questions. Remind students to note any question they had difficulty with in the What I Need to Work On section of their Foldables.
2. Assign questions as outlined in the Assessment section below. Ensure that students are successful with the Practise questions before proceeding to the Apply questions. Support for re-teaching or alternative approaches for students who are not successful with the Practise questions can be found in the Teacher's Resource under Assessment – Supporting Learning (p. 81).

Assessment:

1. Student assignments (Assessment *for* Learning)
   Essential: #4, 6, 8, 10, 11, 14, 15, 18, Math Link
   Typical: #4, 6, 8, 10, 11, 14–18, 21–23, 25, Math Link
   Extension/Enrichment: #25–28, Math Link
   Note: Some students may benefit from completing **BLM 2–10 Section 2.3 Extra Practice**, if they have not already done so.
   Encourage students who work faster to start the Math Link (p. 69). They may need additional class time to complete the Math Link. **BLM 2–11 Section 2.3 Math Link** is available for students who may benefit from scaffolding to get started on the Math Link.
2. The *MathLinks 8 Practice and Homework Book* provides additional problems (Assessment *for* Learning).
3. Math Learning Log (Assessment *as* Learning)

Foldable Entry:
Have students write the page reference and question numbers they had difficulty with in the What I Need to Work On section of their Foldables.

Math Learning Log:
Have students comment on two or three items they feel they have improved on and explain how they have improved.

MathLinks 8 Chapter 2, Lesson 9

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcomes:

N4 Demonstrate an understanding of ratio and rate.

N5 Solve problems that involve rates, ratios and proportional reasoning.

Achievement Indicators:

- ☑ Express a two-term ratio from a given context in the forms 3:5 or 3 to 5.
- ☑ Express a three-term ratio from a given context in the forms 4:7:3 or 4 to 7 to 3.
- ☑ Express a part to part ratio as a part to whole fraction, e.g., frozen juice to water; 1 can concentrate to 4 cans of water can be represented as $\frac{1}{5}$, which is the ratio of concentrate to solution, or $\frac{4}{5}$, which is the ratio of water to solution.
- ☑ Identify and describe ratios and rates from real-life examples, and record them symbolically.
- ☑ Express a given rate using words or symbols, e.g., 20 L per 100 km or 20 L/100 km.
- ☑ Express a given ratio as a percent and explain why a rate cannot be represented as a percent.
- ☑ Explain the meaning of $\frac{a}{b}$ within a given context.
- ☑ Provide a context in which $\frac{a}{b}$ represents a:
  - fraction
  - rate
  - ratio
  - quotient
  - probability.
- ☑ Solve a given problem involving rate, ratio or percent.

Resource/Materials:

- *MathLinks 8*, pp. 70–71
- *MathLinks 8 Practice and Homework Book*, pp. 20–21
- BLM 2–4 Chapter 2 Problems of the Week
- BLM 2–5 Section 2.1 Extra Practice

- BLM 2–8 Section 2.2 Extra Practice
- BLM 2–10 Section 2.3 Extra Practice
- Foldable

Teacher's Resource:
pp. 82–83

***MathLinks 8* Adapted Resource:**
Chapter 2 Review, pp. 87–92
Key Word Builder, p. 97

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

Procedure/Activities/Instruction:
1. Decide how you wish students to approach the Chapter 2 Review. The review is an opportunity for students to verify that they have mastered the concepts and identify any areas of weakness prior to any Assessment *of* Learning. There are a number of approaches that could be used, including:
   - Have students use the notes they made in the What I Need to Work On section of their Foldables to identify any areas of weakness and to help them select review questions.
   - 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.
   - As the teacher, you might select the questions to be completed by the class or individual students.
   - Have students play the Math Game (p. 74), which provides reinforcement of the chapter concepts.
   - If students have the *MathLinks 8 Practice and Homework Book*, have them complete questions from the relevant sections.
   - You may wish to use questions from **BLM 2–5 Section 2.1 Extra Practice**, **BLM 2–8 Section 2.2 Extra Practice**, and **BLM 2–10 Section 2.3 Extra Practice**.

Assessment:
1. Chapter 2 Review (pp. 70–71) (Assessment *for* Learning). Consider assigning #7, 8, 11, 12, 14, 15, 16, and 18, which are the minimum questions that will meet the curriculum outcomes. Assignments should be completed within class time in order for students to get assistance.

Foldable Entry:
Encourage students to use the terminology in their Foldables. 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 personal growth.

Problems of the Week:
This may be a good time to review students' responses to **BLM 2–4 Chapter 2 Problems of the Week**.

MathLinks 8 Chapter 2, Lesson 10

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcomes:

N4 Demonstrate an understanding of ratio and rate.

N5 Solve problems that involve rates, ratios and proportional reasoning.

Achievement Indicators:

- ☑ Express a two-term ratio from a given context in the forms 3:5 or 3 to 5.
- ☑ Express a three-term ratio from a given context in the forms 4:7:3 or 4 to 7 to 3.
- ☑ Express a part to part ratio as a part to whole fraction, e.g., frozen juice to water; 1 can concentrate to 4 cans of water can be represented as $\frac{1}{5}$, which is the ratio of concentrate to solution, or $\frac{4}{5}$, which is the ratio of water to solution.
- ☑ Identify and describe ratios and rates from real-life examples, and record them symbolically.
- ☑ Express a given rate using words or symbols, e.g., 20 L per 100 km or 20 L/100 km.
- ☑ Express a given ratio as a percent and explain why a rate cannot be represented as a percent.
- ☑ Explain the meaning of $\frac{a}{b}$ within a given context.
- ☑ Provide a context in which $\frac{a}{b}$ represents a:
  - fraction
  - rate
  - ratio
  - quotient
  - probability.
- ☑ Solve a given problem involving rate, ratio or percent.

Resource/Materials:

- *MathLinks 8*, pp. 72–73
- BLM 2–12 Chapter 2 Test
- ruler
- Foldable

Teacher's Resource:
pp. 84–85

***MathLinks 8* Adapted Resource:**
Chapter 2 Practice Test, pp. 93–95

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. Decide how you wish students to approach the practice test. Practice tests 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 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 2–12 Chapter 2 Test**, items from the computerized assessment bank (CAB), or the Challenge in Real Life as a summative assessment.

Assessment:
1. Chapter 2 Practice Test (pp. 72–73) (Assessment *for* Learning). The essential questions to meet the curriculum requirements are #1–3, 6, 9, 11, and 12. Assignments should be completed within class time in order to allow students to get assistance.
2. **BLM 2–12 Chapter 2 Test** (Assessment *of* Learning)
3. Challenge in Real Life (p. 75) (Assessment *of* Learning)

Foldable Entry:
Encourage students to use their Foldables for terminology and to note areas of personal growth.

MathLinks 8 Chapter 2, Lesson 11/12

Time: 80–100 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcomes:

N4 Demonstrate an understanding of ratio and rate.

N5 Solve problems that involve rates, ratios and proportional reasoning.

Achievement Indicators:

- ☑ Express a two-term ratio from a given context in the forms 3:5 or 3 to 5.
- ☑ Express a three-term ratio from a given context in the forms 4:7:3 or 4 to 7 to 3.
- ☑ Express a part to part ratio as a part to whole fraction, e.g., frozen juice to water; 1 can concentrate to 4 cans of water can be represented as $\frac{1}{5}$, which is the ratio of concentrate to solution, or $\frac{4}{5}$, which is the ratio of water to solution.
- ☑ Identify and describe ratios and rates from real-life examples, and record them symbolically.
- ☑ Express a given rate using words or symbols, e.g., 20 L per 100 km or 20 L/100 km.
- ☑ Express a given ratio as a percent and explain why a rate cannot be represented as a percent.
- ☑ Explain the meaning of $\frac{a}{b}$ within a given context.
- ☑ Provide a context in which $\frac{a}{b}$ represents a:
  - fraction
  - rate
  - ratio
  - quotient
  - probability.
- ☑ Solve a given problem involving rate, ratio or percent.

Resource/Materials:

- *MathLinks 8*, p. 73
- Master 1 Project Rubric
- BLM 2–13 Chapter 2 Wrap It Up!
- grid paper or Master 8 Centimetre Grid Paper

- printed recipes
- recipe from section 2.3 Math Link
- ruler
- logo design from section 2.1 Math Link
- art supplies such as coloured pencils
- Foldable

Teacher's Resource:
pp. 86–88

***MathLinks 8* Adapted Resource:**
Wrap It Up!, p. 96

Introduction:
Students will complete the chapter problem Wrap It Up! (p. 73), which consolidates their work on the Math Links throughout the chapter.

Procedure/Activities/Instruction:
1. Decide and communicate how much class time students will have to complete the Wrap It Up! and how much needs to be completed at home.
2. Read through the Wrap It Up! and clarify any misunderstandings. Tell students to include the work for the Math Links they completed in sections 2.1 and 2.3 as part of the chapter problem.
   In addition, **BLM 2–13 Chapter 2 Wrap It Up!** provides scaffolding for the chapter problem wrap-up.
3. It is important for students to understand how they will be graded. Provide each student with **Master 1 Project Rubric**. Clarify the assessment criteria using the master rubric or the version of the rubric in the Teacher's Resource (p. 88). Work with students to develop the expected outcomes for each level. If using the rubric in the Teacher's Resource, delete the content in the column with the specific question notes and work with students to complete the expected outcomes for each level. Completing specific question notes in this way allows students to identify the key criteria for each level. At the same time, you might emphasize the criteria that differentiate different levels (e.g., Level 3 and Level 4), in an effort to encourage students to improve their performance.

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

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

MathLinks 8 Chapter 2, Lesson 13

Time: 40–50 min

STRAND/ORGANIZER: Number

General Outcome: Develop number sense.

Specific Outcomes:

N4 Demonstrate an understanding of ratio and rate.

N5 Solve problems that involve rates, ratios and proportional reasoning.

Achievement Indicators:

- ☑ Express a part to part ratio as a part to whole fraction, e.g., frozen juice to water; 1 can concentrate to 4 cans of water can be represented as $\frac{1}{5}$, which is the ratio of concentrate to solution, or $\frac{4}{5}$, which is the ratio of water to solution.
- ☑ Identify and describe ratios and rates from real-life examples, and record them symbolically.
- ☑ Provide a context in which $\frac{a}{b}$ represents a:
  - fraction
  - rate
  - ratio
  - quotient
  - probability.

Resource/Materials:

Math Games	Challenge in Real Life
• *MathLinks 8,* p. 74 • 3 dice per student pair • calculator • Foldable	• *MathLinks 8,* p. 75 • Master 1 Project Rubric • BLM 2–14 Map of the Northwest Territories • 30-cm ruler • compass • calculator

Teacher's Resource:

pp. 89–92

***MathLinks 8* Adapted Resource:**
Math Games, p. 98
Challenge in Real Life, pp. 99–100

Introduction:
The game requires students to form ratios by rolling three dice and to convert ratios to decimal form.

The challenge allows students to apply their understanding of proportions and ratios to map reading.

Procedure/Activities/Instruction:
Math Games
1. Read through the game with students and then play a demonstration round.
2. Partner students according to ability.
   Note: The game could be used as reinforcement in place of the Chapter 2 Review.

Challenge in Real Life
1. Introduce the challenge by exploring as a class what students know about bush pilots and the Northwest Territories.
2. Read through Life of a Bush Pilot as a class. You may wish to distribute or make an overhead of **BLM 2–14 Map of the Northwest Territories** to give students some context. Locate Sachs Harbour on the map.
3. Clarify that the task is to measure and record distances between several communities on a map of the Northwest Territories, develop and solve proportions, calculate average cruising speed, and list all communities within a 2-h flight from a location.
4. If you use the challenge for Assessment *of* Learning, it is important that students understand how they will be graded. Review **Master 1 Project Rubric** or use the version in the Teacher's Resource (p. 92) and work with students to develop the expected outcomes for each level. If using the version in the Teacher's Resource, delete the content in the column with the specific question notes and work with students to complete the expected outcomes for each level. Completing specific question notes in this way allows students to identify the key criteria for each level. At the same time, you might emphasize the criteria that differentiate different levels (e.g., Level 3 and Level 4), in an effort to encourage students to improve their performance.

Assessment:
1. You may decide to let students choose either the game or the challenge, 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 Foldables to help them use appropriate mathematical terminology.